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## QuEChERS

We provide a complete range of products for QuEChERS methodologies, offering all three standard QuEChERS methods: Original QuEChERS method, American AOAC Standard (Official Method 2007.01) QuEChERS method and European Standard (EN 15662) QuEChERS method.



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## SPE Columns and Cartridges

Ideal for a broad array of analytes and matrices, our SPE solutions are available in a variety of formats including Large Reservoir Capacity (LRC) columns, Polypropylene (PP)

columns and cartridges, and also glass columns. Each technology is offered with a wide selection of polymer and silica sorbents, and large and small sample volumes (50 µL to 1 L) allow you to perform scalable analyses depending upon your required detection limits.



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## SPE Application Packs

Ideal for extraction of known entities from a variety of matrices, our packs are expertly tailored to meet your application needs and are designed to support major EPA methods and applications.

➤ [VIEW PAGE](#)

# Nylon and PTFE Syringe Filters



Our Syringe Filters are lab tested and certified to bring you the highest quality syringe filters available. Our membrane materials are supplied per ISO9001:2008 certified manufacturing practices, in certified clean room conditions, using the latest manufacturing technology to ensure you receive a high quality, consistent product every time.

Select our superior premium 17 and 30 mm filters which are suitable for coarse/crude samples or higher detection limit applications (such as food, beverage, or environmental analysis) and our 4, 13 and 25 mm syringe filters are ideal for routine QA/QC analysis.

## Nylon Syringe Filters

Ideal for aqueous (non-acidic) or organic sample preparation and HPLC, GC or dissolution sample analysis. With its excellent flow characteristics, very low extractable levels and mechanical stability, Nylon offers the best combination of physical parameters to meet the most stringent analytical needs.

| Size (mm) | Pkg. | Color  | 0.22 µm Particle Part No. | 0.45 µm Particle Part No. |
|-----------|------|--------|---------------------------|---------------------------|
| 4         | 200  | Clear  | 02542900                  | 02542901                  |
| 13        | 100  | Purple | 02542902                  | 02542903                  |
| 17        | 100  | Yellow | 02542881                  | 02542880                  |
| 25        | 100  | Purple | 02542904                  | 02542905                  |
| 30        | 100  | Yellow | 02542883                  | 02542882                  |

## PTFE (Hydrophobic) Syringe Filters

Versatile filters for use with aggressive organic solvent-based solutions and are particularly suited for HPLC sample preparation. Hydrophobic PTFE syringe filters have broad chemical compatibility and high pH resistance.

| Size (mm) | Pkg. | Color | 0.22 µm Particle Part No. | 0.45 µm Particle Part No. |
|-----------|------|-------|---------------------------|---------------------------|
| 4         | 200  | Clear | 02542906                  | 02542907                  |
| 13        | 100  | Red   | 02542908                  | 02542909                  |
| 17        | 100  | Red   | 02542884                  | 02542910                  |
| 25        | 100  | Red   | 02542911                  | 02542912                  |
| 30        | 100  | Red   | 02542886                  | 02542885                  |

## PVDF (Hydrophobic Polyvinylidene Fluoride) Syringe Filters

Compatible with a wide range of mild organic solutions. PVDF membranes are not recommended for use with acetone, DMF, DMSO, or bases >6N.

| Size (mm) | Pkg. | Color  | 0.22 µm Particle Part No. | 0.45 µm Particle Part No. |
|-----------|------|--------|---------------------------|---------------------------|
| 4         | 200  | Clear  | 02542913                  | 02542914                  |
| 13        | 100  | Yellow | 02542915                  | 02542783                  |
| 17        | 100  | Maroon | 02542916                  | 02542917                  |
| 25        | 100  | Yellow | 02542918                  | 02542919                  |
| 30        | 100  | Maroon | 02542920                  | 02542921                  |

## PTFE (Hydrophilic) Syringe Filters

Versatile filters for use with aqueous and aggressive organic solvent-based solutions and are suitable for HPLC sample preparation. They have broad chemical compatibility and high pH resistance.

| Size (mm) | Pkg. | Color | 0.22 µm Particle Part No. | 0.45 µm Particle Part No. |
|-----------|------|-------|---------------------------|---------------------------|
| 4         | 200  | Clear | 02542922                  | 02542923                  |
| 13        | 100  | Red   | 02542924                  | 02542925                  |
| 25        | 100  | Red   | 02542926                  | 02542927                  |
| 30        | 100  | Red   | 02542928                  | 02542929                  |

# Supra-Clean and Supra-Poly SPE Solutions

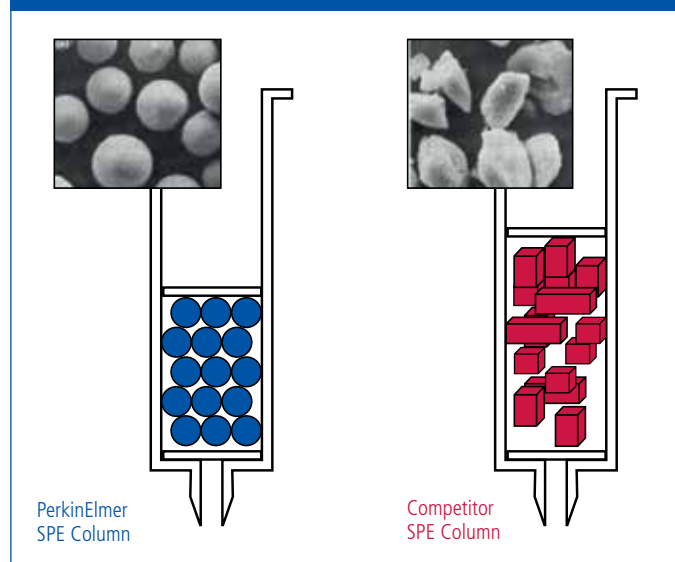
Recovery, capacity, selectivity and reproducibility are the principal sample prep demands of today's analyst. We have developed an innovative SPE product range incorporating silica and polymer based technology. Supra-Clean® (silica) and Supra-Poly® (polymer) deliver the recovery, reproducibility, and reliability desired for consistently excellent results.

Both utilize Precise Bed Technology® (PBT) with our spherical media (figure 1) allowing columns to be evenly and consistently filled with particles sized for optimum distribution. This homogeneous filling yields a +/- 1% variation in bed volume precision, ensuring you experience repeatability and optimized recovery reproducibility.

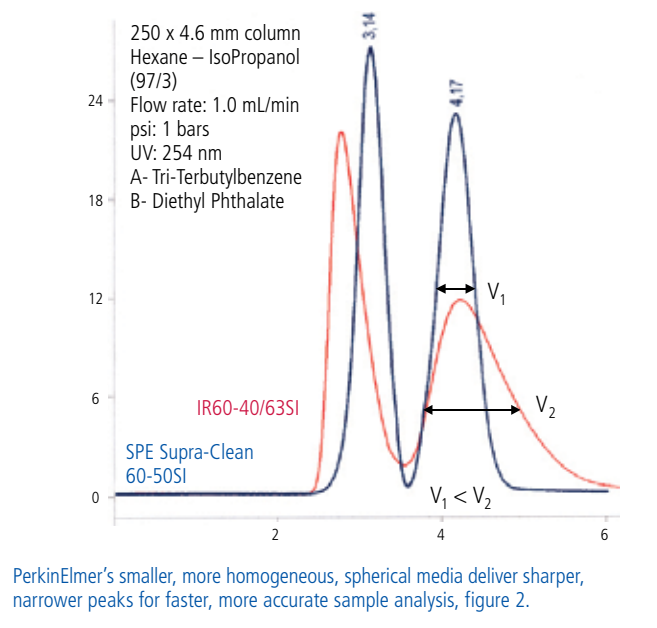
Spherical media and consistent particle distribution enable smaller elution volumes and better, more reproducible extraction, purification, concentration and recovery.



**Figure 1: Comparison of Spherical and Irregular Media.**



**Figure 2: Performance Comparison of PerkinElmer Spherical SPE Media vs. Leading Irregular SPE Silica.**



Ideal for a broad array of analytes and matrices, our SPE solutions are available in a variety of formats including Large Reservoir Capacity (LRC) columns, Polypropylene (PP) columns and cartridges, and also glass columns. Each technology is offered with a wide selection of polymer and silica sorbents, and large and small sample volumes (50  $\mu$ L to 1 L) allow you to perform scalable analyses depending upon your required detection limits.

Each finished product is delivered with an individual quality certificate.

# Supra-Clean and Supra-Poly Application Overview

| Supra-Clean Spherical Silica     |                                 |                    |                                                                 |                                                       |
|----------------------------------|---------------------------------|--------------------|-----------------------------------------------------------------|-------------------------------------------------------|
| Phase                            | Mechanism                       | Interaction Mode   | Compounds                                                       | Matrix                                                |
| C18-S                            | Hydrophobic                     | Reversed Phase     | Polar to Non-Polar compounds                                    | Biological fluids, aqueous samples                    |
| High Recovery REC18              | Hydrophobic                     | Reversed Phase     | Non-polar and mid-polar compounds including 100% water solvents | Biological fluids, aqueous samples toxins in food     |
| Phenyl (PH-S)                    | Hydrophobic                     | Reversed Phase     | Non-polar to mid-polar aromatic compounds                       | Biological fluids                                     |
| Silica (SI-S)                    | Hydrophilic                     | Normal Phase       | Polar compounds                                                 | Non-polar organics, oils, lipids                      |
| Amino (NH <sub>2</sub> -S)       | Hydrophilic                     | Normal Phase       | Polar to Mid-Polar aromatic compounds                           | Biological fluids, aqueous samples, buffered organics |
| Strong Cation Exchange (SCX)     | Ion Exchange                    | Ion Exchange       | Basic compounds                                                 | Biological fluids, aqueous samples, buffered organics |
| Weak cation Exchange (WCX)       | Ion Exchange                    | Ion Exchange       | Strong basic compounds                                          | Biological fluids, aqueous samples                    |
| Strong Anion Exchange (SAX)      | Ion Exchange                    | Ion Exchange       | Acidic compounds                                                | Biological fluids, aqueous samples                    |
| Cyano (CN-S)                     | Hydrophilic                     | Normal Phase       | Polar to Mid-Polar compounds                                    | Non-polar organics, oils, lipids                      |
| Florisil (FL-S)                  | Hydrophilic                     | Normal Phase       | Polar compounds                                                 | Ideal for polar compounds in non-polar matrix         |
| Florisil Pesticide (FL-S)        | Hydrophilic                     | Normal Phase       | Polar compounds                                                 | Ideal for polar compounds in non-polar matrix         |
| Polyamine (P6)                   | Hydrophilic                     | Reversed Phase     | Carboxylic acids, phenolics and nitroaromatics                  | Aqueous and mid-polar matrices                        |
| 300 A (C4)                       | Hydrophobic                     | Reversed Phase     | Non-polar to mid-polar compounds                                | Biological Samples                                    |
| LCC                              | Hydrophobic                     | Reversed Phase     | Non-polar to mid-polar compounds                                | Biological fluids, aqueous samples                    |
| Mixed mode (MM1)                 | Ion Exchange/ Hydrophobic       | Reversed Phase/SCX | Basic compounds                                                 | Biological samples                                    |
| Mixed mode (MM2)                 | Ion Exchange/ Hydrophobic       | Reversed Phase/WCX | Very basic compounds                                            | Biological samples                                    |
| Mixed mode (MM3)                 | Ion Exchange/ Hydrophobic       | Reversed Phase/SAX | Acidic compounds                                                | Biological samples                                    |
| Supra-Poly Spherical Polymer     |                                 |                    |                                                                 |                                                       |
| Phase                            | Mechanism                       | Interaction Mode   | Compounds                                                       | Matrix                                                |
| Extreme Capacity (XC)            | Hydrophobic                     | Reversed Phase     | Polar and non-polar                                             | Aqueous or organic                                    |
| Extreme Capacity Wide Pore (XWP) | Hydrophobic                     | Reversed Phase     | Polar and non-polar                                             | Biological and viscous samples                        |
| Hydrophilic (ATH)                | Hydrophilic                     | Reversed Phase     | Mid to non-polar compounds                                      | Aqueous or organic                                    |
| Lipophilic (ATL)                 | Lipophilic                      | Reversed Phase     | Mid to non-polar compounds                                      | Crude samples                                         |
| Environmental (AEV)              | Hydrophilic/ Hydrophobic        | Reversed Phase     | Mid to non-polar compounds                                      | Aqueous or Organic                                    |
| HLB                              | Hydrophilic/lipophilic balanced | Reversed Phase     | Mid to non-polar compounds                                      | Aqueous or organic                                    |

| Typical Applications                                                                                                     | pH Range | End-Capping | Pore Size (Å) | Surface Area (m <sup>2</sup> /g) | Particle Size (µm) | Comments                                                                              |
|--------------------------------------------------------------------------------------------------------------------------|----------|-------------|---------------|----------------------------------|--------------------|---------------------------------------------------------------------------------------|
| Drugs and drug metabolites in biological matrices, trace organic material in water, toxins in food                       | 2 – 8    | Yes         | 60            | 500                              | 50                 | 18% Carbon Load (CL)                                                                  |
| Drugs and drug metabolites in biological matrices, trace organic material in water                                       | 2 – 8    | Yes         | –             | –                                | 50                 | High capacity and better recovery especially for high aqueous conditions. 15% CL      |
| Benzodiazepines in biological matrices, extraction of aromatic compounds                                                 | 2 – 8    | No          | 60            | 500                              | 50                 | 9% CL                                                                                 |
| Aldehydes, amines, pesticides, herbicides, carotenoids, fat soluble vitamins, aflatoxins, fatty acids, and phospholipids | 2 – 8    | No          | 60            | 500                              | 50                 | Bare Silica                                                                           |
| Basic compounds, polar amine compounds, carbohydrates                                                                    | 2 – 8    | No          | 60            | 500                              | 50                 | 5% CL                                                                                 |
| Cations, antibiotics, drugs, amino acids, catecholamines, herbicides, nucleic acid bases, nucleosides, and surfactants   | 2 – 8    | No          | 60            | 450                              | 60                 | Strong Acid – Sulfonic acid; Exchange capacity 0.70 meq/g                             |
| Cations, amines, antibiotics, drugs, amino acids, catecholamines, nucleic acid bases, nucleosides, and surfactants       | 2 – 8    | No          | 60            | 450                              | 60                 | Weak Acid – Carboxylic acid; Exchange capacity 0.22 meq/g                             |
| Acidic food pigments, organic acids, phenol compounds, nucleic acids, nucleotides, surfactants                           | 2 – 8    | No          | 60            | 450                              | 60                 | Strong Base – quaternary amine; Exchange capacity 0.30 meq/g                          |
| Polar compounds in hexane and oil                                                                                        | 2 – 8    | Yes         | 60            | 500                              | 50                 | 8% CL; Mid-range polarity between silica and C18                                      |
| Pesticides, Polychlorinated Biphenyls (PCB)                                                                              | 2 – 8    | No          | –             | –                                | 200                | Standard grade. Alternative to silica for viscous matrices due to large particle size |
| Pesticides                                                                                                               | 2 – 8    | No          | –             | –                                | 200                | High purity pesticide grade. Alternative to silica for viscous matrices               |
| Aromatic and natural products; Flavones, Chalkones, Anthraquinones                                                       | 2 – 8    | No          | –             | –                                | 100                | Nylon 6                                                                               |
| Hydrophobic peptides and polypeptides                                                                                    | 2 – 8    | No          | 300           | –                                | –                  | Large pore size for isolation of large biomolecules                                   |
| Non-polar compounds in aqueous solution                                                                                  | 2 – 8    | Yes         | 60            | 500                              | 50                 | 10% CL; Lower carbon load than C18-S and REC18                                        |
| Drugs and drug metabolites                                                                                               | 2 – 8    | No          | 60            | 450                              | 60                 | Exchange capacity 0.09 meq/g                                                          |
| Drugs and drug metabolites                                                                                               | 2 – 8    | No          | 60            | 450                              | 60                 | Exchange capacity 0.10 meq/g                                                          |
| Drugs and drug metabolites                                                                                               | 2 – 8    | No          | 60            | 450                              | 60                 | Exchange capacity 0.14 meq/g                                                          |

| Typical Applications                                              | pH Range | End-Capping | Pore Size (Å) | Surface Area (m <sup>2</sup> /g) | Particle Size (µm) | Comments                                                                                              |
|-------------------------------------------------------------------|----------|-------------|---------------|----------------------------------|--------------------|-------------------------------------------------------------------------------------------------------|
| Drugs and drug metabolites biological fluids                      | 0 – 14   | No          | –             | 1500                             | 70                 | High capacity polystyrene-divinylbenzene (PSDVB)                                                      |
| Drugs and drug metabolites biological fluids                      | 0 – 14   | No          | Wide Pore     | 1200                             | 90                 | High capacity PSDVB for large biomolecules and viscous matrices                                       |
| Mid-polar and non-polar compounds in aqueous and organic solvents | 1 – 13   | No          | 70            | 800                              | 75                 | Mixed hydrophilic/hydrophobic interactions                                                            |
| Lipids                                                            | 0 – 14   | No          | 70            | 800                              | 100                | PSDVB; Alternative to high flow silica for mid-polar to non-polar compounds (<3000D) in crude samples |
| Aqueous environmental compounds that are not retained on C18      | 1 – 12   | No          | 70            | 800                              | 75                 | Advanced environmental; Polystyrene-co-2-hydroxyethyl methacrylate (PSHEMA)                           |
| Mid-polar and non-polar compounds in aqueous and organic solvents | 0 – 14   | No          | 80            | 850                              | 30 and 60          | Hydrophilic-lipophilic-balanced reversed-phase sorbent for acids, bases and neutrals                  |

# Supra-Clean Columns, Cartridges and 96 Well Plates

Supra-Clean SPE products are available in a range of media weights, volumes and formats, including easy to order selection kits and application packs.

- Pure spherical silica
- Pore size 60 – 120 Å
- 17 chemistries with pH range 2 – 8

## Columns

| Media Weight                                    | Volume | Qty. | Part No.        |
|-------------------------------------------------|--------|------|-----------------|
| <b>Supra-Clean C18</b>                          |        |      |                 |
| 50 mg                                           | 1 mL   | 50   | <b>N9306476</b> |
| 100 mg                                          | 1 mL   | 100  | <b>N9306478</b> |
| 100 mg                                          | 3 mL   | 50   | <b>N9306523</b> |
| 200 mg                                          | 3 mL   | 50   | <b>N9306462</b> |
| 500 mg                                          | 3 mL   | 50   | <b>N9306438</b> |
| 500 mg                                          | 3 mL*  | 50   | <b>N9306642</b> |
| 200 mg                                          | 6 mL   | 30   | <b>N9306634</b> |
| 500 mg                                          | 6 mL   | 30   | <b>N9306448</b> |
| 500 mg                                          | 6 mL*  | 30   | <b>N9306640</b> |
| 1 g                                             | 6 mL   | 30   | <b>N9306422</b> |
| 2 g                                             | 6 mL   | 30   | <b>N9306430</b> |
| 2 g                                             | 15 mL  | 20   | <b>N9306479</b> |
| 2 g                                             | 25 mL  | 20   | <b>N9306475</b> |
| <b>Supra-Clean REC18</b>                        |        |      |                 |
| 50 mg                                           | 1 mL   | 50   | <b>N9306519</b> |
| 100 mg                                          | 1 mL   | 100  | <b>N9306520</b> |
| 100 mg                                          | 3 mL   | 50   | <b>N9306455</b> |
| 200 mg                                          | 3 mL   | 50   | <b>N9306521</b> |
| 500 mg                                          | 3 mL   | 50   | <b>N9306522</b> |
| 200 mg                                          | 6 mL   | 30   | <b>N9306633</b> |
| 500 mg                                          | 6 mL   | 30   | <b>N9306457</b> |
| 1 g                                             | 6 mL   | 30   | <b>N9306491</b> |
| <b>Supra-Clean Strong Anion Exchange (SAX)</b>  |        |      |                 |
| 50 mg                                           | 1 mL   | 50   | <b>N9306553</b> |
| 100 mg                                          | 1 mL   | 100  | <b>N9306471</b> |
| 100 mg                                          | 3 mL   | 50   | <b>N9306554</b> |
| 200 mg                                          | 3 mL   | 50   | <b>N9306482</b> |
| 500 mg                                          | 3 mL   | 50   | <b>N9306555</b> |
| 500 mg                                          | 6 mL   | 30   | <b>N9306556</b> |
| <b>Supra-Clean Strong Cation Exchange (SCX)</b> |        |      |                 |
| 50 mg                                           | 1 mL   | 50   | <b>N9306536</b> |
| 100 mg                                          | 1 mL   | 100  | <b>N9306432</b> |
| 100 mg                                          | 3 mL   | 50   | <b>N9306537</b> |
| 200 mg                                          | 3 mL   | 50   | <b>N9306538</b> |
| 500 mg                                          | 3 mL   | 50   | <b>N9306539</b> |
| 500 mg                                          | 6 mL   | 30   | <b>N9306540</b> |

## Columns *continued*

| Media Weight                                  | Volume | Qty. | Part No.        |
|-----------------------------------------------|--------|------|-----------------|
| <b>Supra-Clean Weak Cation Exchange (WCX)</b> |        |      |                 |
| 50 mg                                         | 1 mL   | 50   | <b>N9306544</b> |
| 100 mg                                        | 1 mL   | 100  | <b>N9306545</b> |
| 100 mg                                        | 3 mL   | 50   | <b>N9306546</b> |
| 200 mg                                        | 3 mL   | 50   | <b>N9306547</b> |
| 500 mg                                        | 3 mL   | 50   | <b>N9306420</b> |
| 500 mg                                        | 6 mL   | 30   | <b>N9306407</b> |
| <b>Supra-Clean 300Å C4</b>                    |        |      |                 |
| 50 mg                                         | 1 mL   | 50   | <b>N9306590</b> |
| 100 mg                                        | 1 mL   | 100  | <b>N9306591</b> |
| 100 mg                                        | 3 mL   | 50   | <b>N9306592</b> |
| 200 mg                                        | 3 mL   | 50   | <b>N9306593</b> |
| <b>Supra-Clean Mixed-Mode (MM1)</b>           |        |      |                 |
| 50 mg                                         | 1 mL   | 50   | <b>N9306541</b> |
| 100 mg                                        | 1 mL   | 100  | <b>N9306542</b> |
| 100 mg                                        | 3 mL   | 50   | <b>N9306419</b> |
| 200 mg                                        | 3 mL   | 50   | <b>N9306543</b> |
| 500 mg                                        | 3 mL   | 50   | <b>N9306481</b> |
| 500 mg                                        | 6 mL   | 30   | <b>N9306416</b> |
| 200 mg                                        | 15 mL  | 50   | <b>N9306713</b> |
| <b>Supra-Clean Mixed-Mode (MM2)</b>           |        |      |                 |
| 50 mg                                         | 1 mL   | 50   | <b>N9306548</b> |
| 100 mg                                        | 1 mL   | 100  | <b>N9306549</b> |
| 100 mg                                        | 3 mL   | 50   | <b>N9306550</b> |
| 200 mg                                        | 3 mL   | 50   | <b>N9306551</b> |
| 500 mg                                        | 3 mL   | 50   | <b>N9306411</b> |
| 500 mg                                        | 6 mL   | 30   | <b>N9306552</b> |
| <b>Supra-Clean Mixed-Mode (MM3)</b>           |        |      |                 |
| 500 mg                                        | 6 mL   | 30   | <b>N9306649</b> |
| <b>Supra-Clean Florisil (FL-S)</b>            |        |      |                 |
| 200 mg                                        | 3 mL   | 50   | <b>N9306511</b> |
| 500 mg                                        | 3 mL   | 50   | <b>N9306512</b> |
| 500 mg                                        | 6 mL   | 30   | <b>N9306494</b> |
| 1 g                                           | 6 mL   | 30   | <b>N9306413</b> |
| 2 g                                           | 6 mL   | 20   | <b>N9306513</b> |
| 2 g                                           | 15 mL  | 20   | <b>N9306514</b> |
| 2 g                                           | 25 mL  | 20   | <b>N9306515</b> |

\* Not end-capped

Columns *continued*

| Media Weight                                       | Volume | Qty. | Part No.        |
|----------------------------------------------------|--------|------|-----------------|
| <b>Supra-Clean Florisil (FL-S) Pesticide Grade</b> |        |      |                 |
| 200 mg                                             | 3 mL   | 50   | <b>N9306516</b> |
| 500 mg                                             | 3 mL   | 50   | <b>N9306400</b> |
| 500 mg                                             | 6 mL   | 30   | <b>N9306517</b> |
| 1 g                                                | 6 mL   | 30   | <b>N9306436</b> |
| 2 g                                                | 6 mL   | 30   | <b>N9306470</b> |
| 2 g                                                | 15 mL  | 20   | <b>N9306443</b> |
| 2 g                                                | 25 mL  | 20   | <b>N9306447</b> |
| <b>Supra-Clean Silica (SI-S)</b>                   |        |      |                 |
| 100 mg                                             | 3 mL   | 50   | <b>N9306532</b> |
| 200 mg                                             | 3 mL   | 50   | <b>N9306444</b> |
| 500 mg                                             | 3 mL   | 50   | <b>N9306402</b> |
| 500 mg                                             | 6 mL   | 30   | <b>N9306466</b> |
| 1 g                                                | 6 mL   | 30   | <b>N9306404</b> |
| 2 g                                                | 6 mL   | 20   | <b>N9306533</b> |
| 2 g                                                | 15 mL  | 20   | <b>N9306534</b> |
| 2 g                                                | 25 mL  | 20   | <b>N9306535</b> |
| <b>Supra-Clean Cyano (CN-S)</b>                    |        |      |                 |
| 500 mg                                             | 3 mL   | 50   | <b>N9306645</b> |
| 500 mg                                             | 6 mL   | 30   | <b>N9306644</b> |
| <b>Supra-Clean Amino (NH<sub>2</sub>-S)</b>        |        |      |                 |
| 50 mg                                              | 1 mL   | 50   | <b>N9306528</b> |
| 100 mg                                             | 1 mL   | 100  | <b>N9306410</b> |
| 100 mg                                             | 3 mL   | 50   | <b>N9306529</b> |
| 500 mg                                             | 3 mL   | 50   | <b>N9306414</b> |
| 200 mg                                             | 6 mL   | 50   | <b>N9306530</b> |
| 500 mg                                             | 6 mL   | 30   | <b>N9306531</b> |
| <b>Supra-Clean Polyamine (P6)</b>                  |        |      |                 |
| 500 mg                                             | 3 mL   | 50   | <b>N9306518</b> |
| 500 mg                                             | 6 mL   | 30   | <b>N9306434</b> |
| <b>Supra-Clean Phenyl (PH-S)</b>                   |        |      |                 |
| 50 mg                                              | 1 mL   | 50   | <b>N9306401</b> |
| 100 mg                                             | 1 mL   | 100  | <b>N9306524</b> |
| 100 mg                                             | 3 mL   | 50   | <b>N9306525</b> |
| 200 mg                                             | 3 mL   | 50   | <b>N9306490</b> |
| 500 mg                                             | 3 mL   | 50   | <b>N9306421</b> |
| 500 mg                                             | 6 mL   | 30   | <b>N9306526</b> |
| 1 g                                                | 6 mL   | 30   | <b>N9306527</b> |
| <b>Supra-Clean LCC</b>                             |        |      |                 |
| 500 mg                                             | 3 mL   | 50   | <b>N9306643</b> |
| 500 mg                                             | 6 mL   | 30   | <b>N9306641</b> |

## 96 Well Plates

| Media Weight                                    | Volume | Qty. | Part No.        |
|-------------------------------------------------|--------|------|-----------------|
| <b>Supra-Clean C18</b>                          |        |      |                 |
| 25 mg                                           | 2 mL   | 1    | <b>N9306566</b> |
| 50 mg                                           | 2 mL   | 1    | <b>N9306567</b> |
| 100 mg                                          | 2 mL   | 1    | <b>N9306568</b> |
| <b>Supra-Clean REC18</b>                        |        |      |                 |
| 25 mg                                           | 2 mL   | 1    | <b>N9306563</b> |
| 50 mg                                           | 2 mL   | 1    | <b>N9306564</b> |
| 100 mg                                          | 2 mL   | 1    | <b>N9306565</b> |
| <b>Supra-Clean Strong Anion Exchange (SAX)</b>  |        |      |                 |
| 25 mg                                           | 2 mL   | 1    | <b>N9306581</b> |
| 50 mg                                           | 2 mL   | 1    | <b>N9306582</b> |
| 100 mg                                          | 2 mL   | 1    | <b>N9306583</b> |
| <b>Supra-Clean Strong Cation Exchange (SCX)</b> |        |      |                 |
| 25 mg                                           | 2 mL   | 1    | <b>N9306575</b> |
| 50 mg                                           | 2 mL   | 1    | <b>N9306576</b> |
| 100 mg                                          | 2 mL   | 1    | <b>N9306577</b> |
| <b>Supra-Clean Mixed-Mode (MM1)</b>             |        |      |                 |
| 25 mg                                           | 2 mL   | 1    | <b>N9306578</b> |
| 50 mg                                           | 2 mL   | 1    | <b>N9306579</b> |
| 100 mg                                          | 2 mL   | 1    | <b>N9306580</b> |
| <b>Supra-Clean Amino (NH<sub>2</sub>-S)</b>     |        |      |                 |
| 25 mg                                           | 2 mL   | 1    | <b>N9306572</b> |
| 50 mg                                           | 2 mL   | 1    | <b>N9306573</b> |
| 100 mg                                          | 2 mL   | 1    | <b>N9306574</b> |
| <b>Supra-Clean Phenyl (PH-S)</b>                |        |      |                 |
| 25 mg                                           | 2 mL   | 1    | <b>N9306569</b> |
| 50 mg                                           | 2 mL   | 1    | <b>N9306570</b> |
| 100 mg                                          | 2 mL   | 1    | <b>N9306571</b> |

## Cartridges

| Media Weight                     | Qty. | Part No.        |
|----------------------------------|------|-----------------|
| <b>Supra-Clean C18</b>           |      |                 |
| 390 mg                           | 50   | <b>N9306587</b> |
| 910 mg                           | 50   | <b>N9306588</b> |
| 1690 mg                          | 50   | <b>N9306589</b> |
| <b>Supra-Clean Silica (SI-S)</b> |      |                 |
| 300 mg                           | 50   | <b>N9306584</b> |
| 700 mg                           | 50   | <b>N9306585</b> |
| 1300 mg                          | 50   | <b>N9306586</b> |



# Supra-Poly HLB Columns and 96 Well Plates

Supra-Poly SPE products are available in a range of media weights, volumes and formats, including glass and Large Reservoir Capacity (LRC) columns.

- Contains macro-porous polymers with ultra-pure, pharmaceutical grade spherical particles
- Shorter analysis times, greater load capacity and reduced solvent usage
- Ideal for high throughput assays

## Supra-Poly HLB

| Media Weight                | Volume  | Qty. | Part No.        |
|-----------------------------|---------|------|-----------------|
| <b>30 µm Columns</b>        |         |      |                 |
| 30 mg                       | 1 mL    | 50   | <b>N9306650</b> |
| 50 mg                       | 1 mL    | 50   | <b>N9306655</b> |
| 60 mg                       | 1 mL    | 50   | <b>N9306656</b> |
| 100 mg                      | 1 mL    | 50   | <b>N9306657</b> |
| 30 mg                       | 3 mL    | 50   | <b>N9306651</b> |
| 60 mg                       | 3 mL    | 50   | <b>N9306658</b> |
| 100 mg                      | 3 mL    | 50   | <b>N9306659</b> |
| 200 mg                      | 3 mL    | 50   | <b>N9306660</b> |
| 500 mg                      | 3 mL    | 30   | <b>N9306661</b> |
| 100 mg                      | 6 mL*   | 30   | <b>N9306672</b> |
| 150 mg                      | 6 mL    | 30   | <b>N9306662</b> |
| 200 mg                      | 6 mL    | 30   | <b>N9306663</b> |
| 200 mg                      | 6 mL*   | 30   | <b>N9306673</b> |
| 500 mg                      | 6 mL*   | 30   | <b>N9306674</b> |
| 500 mg                      | 6 mL    | 30   | <b>N9306664</b> |
| 500 mg                      | 15 mL   | 20   | <b>N9306665</b> |
| 1 g                         | 15 mL   | 20   | <b>N9306666</b> |
| 30 mg                       | 15 mL** | 50   | <b>N9306668</b> |
| 60 mg                       | 15 mL** | 50   | <b>N9306669</b> |
| 100 mg                      | 15 mL** | 50   | <b>N9306670</b> |
| 200 mg                      | 15 mL** | 50   | <b>N9306671</b> |
| 1 g                         | 25 mL   | 20   | <b>N9306667</b> |
| <b>30 µm 96 Well Plates</b> |         |      |                 |
| 30 mg                       | 2 mL    | 1    | <b>N9306698</b> |
| 50 mg                       | 2 mL    | 1    | <b>N9306699</b> |
| 60 mg                       | 2 mL    | 1    | <b>N9306700</b> |

| Media Weight                | Volume  | Qty. | Part No.        |
|-----------------------------|---------|------|-----------------|
| <b>60 µm Columns</b>        |         |      |                 |
| 30 mg                       | 1 mL    | 50   | <b>N9306652</b> |
| 50 mg                       | 1 mL    | 50   | <b>N9306675</b> |
| 60 mg                       | 1 mL    | 50   | <b>N9306676</b> |
| 100 mg                      | 1 mL    | 50   | <b>N9306677</b> |
| 30 mg                       | 3 mL    | 50   | <b>N9306653</b> |
| 60 mg                       | 3 mL    | 50   | <b>N9306678</b> |
| 100 mg                      | 3 mL    | 50   | <b>N9306679</b> |
| 200 mg                      | 3 mL    | 50   | <b>N9306680</b> |
| 500 mg                      | 3 mL    | 30   | <b>N9306681</b> |
| 100 mg                      | 6 mL*   | 30   | <b>N9306692</b> |
| 150 mg                      | 6 mL    | 30   | <b>N9306682</b> |
| 200 mg                      | 6 mL    | 30   | <b>N9306683</b> |
| 200 mg                      | 6 mL*   | 30   | <b>N9306693</b> |
| 500 mg                      | 6 mL    | 30   | <b>N9306684</b> |
| 500 mg                      | 15 mL   | 20   | <b>N9306685</b> |
| 500 mg                      | 6 mL*   | 30   | <b>N9306694</b> |
| 1 g                         | 15 mL   | 20   | <b>N9306686</b> |
| 30 mg                       | 15 mL** | 50   | <b>N9306688</b> |
| 60 mg                       | 15 mL** | 50   | <b>N9306689</b> |
| 100 mg                      | 15 mL** | 50   | <b>N9306690</b> |
| 200 mg                      | 15 mL** | 50   | <b>N9306691</b> |
| 1 g                         | 25 mL   | 20   | <b>N9306687</b> |
| <b>60 µm 96 Well Plates</b> |         |      |                 |
| 30 mg                       | 2 mL    | 1    | <b>N9306695</b> |
| 50 mg                       | 2 mL    | 1    | <b>N9306696</b> |
| 60 mg                       | 2 mL    | 1    | <b>N9306697</b> |

\* Glass columns  
\*\* LRC columns

# Supra-Poly Columns and 96 Well Plates

SPE products are available in a range of media weights, volumes and formats, including easy to order selection kits and application packs.

- Contains macro-porous polymers with ultra-pure, pharmaceutical grade spherical particles
- Shorter analysis times, greater load capacity and reduced solvent usage
- Ideal for high throughput assays

## Supra-Poly Extreme Capacity 1500 m<sup>2</sup>/g (XC)

| Media Weight          | Volume | Qty. | Part No.        |
|-----------------------|--------|------|-----------------|
| <b>Columns</b>        |        |      |                 |
| 30 mg                 | 1 mL   | 50   | <b>N9306441</b> |
| 50 mg                 | 1 mL   | 50   | <b>N9306500</b> |
| 60 mg                 | 1 mL   | 50   | <b>N9306501</b> |
| 100 mg                | 1 mL   | 50   | <b>N9306403</b> |
| 60 mg                 | 3 mL   | 50   | <b>N9306502</b> |
| 100 mg                | 3 mL   | 50   | <b>N9306440</b> |
| 200 mg                | 3 mL   | 50   | <b>N9306428</b> |
| 200 mg                | 6 mL   | 30   | <b>N9306635</b> |
| 500 mg                | 6 mL   | 30   | <b>N9306405</b> |
| 1 g                   | 15 mL  | 20   | <b>N9306503</b> |
| <b>96 Well Plates</b> |        |      |                 |
| 30 mg                 | 2 mL   | 1    | <b>N9306557</b> |
| 50 mg                 | 2 mL   | 1    | <b>N9306558</b> |
| 60 mg                 | 2 mL   | 1    | <b>N9306559</b> |

## Supra-Poly Extra Wide Particle 1200 m<sup>2</sup>/g (XWP)

| Media Weight          | Volume | Qty. | Part No.        |
|-----------------------|--------|------|-----------------|
| <b>Columns</b>        |        |      |                 |
| 30 mg                 | 1 mL   | 50   | <b>N9306504</b> |
| 50 mg                 | 1 mL   | 50   | <b>N9306427</b> |
| 60 mg                 | 1 mL   | 50   | <b>N9306505</b> |
| 100 mg                | 1 mL   | 50   | <b>N9306506</b> |
| 60 mg                 | 3 mL   | 50   | <b>N9306507</b> |
| 100 mg                | 3 mL   | 50   | <b>N9306508</b> |
| 200 mg                | 3 mL   | 50   | <b>N9306509</b> |
| 500 mg                | 6 mL   | 30   | <b>N9306418</b> |
| 1 g                   | 15 mL  | 20   | <b>N9306510</b> |
| <b>96 Well Plates</b> |        |      |                 |
| 30 mg                 | 2 mL   | 1    | <b>N9306560</b> |
| 50 mg                 | 2 mL   | 1    | <b>N9306561</b> |
| 60 mg                 | 2 mL   | 1    | <b>N9306562</b> |

## Supra-Poly Environmental (AEV)

| Media Weight   | Volume | Qty. | Part No.        |
|----------------|--------|------|-----------------|
| <b>Columns</b> |        |      |                 |
| 100 mg         | 3 mL   | 50   | <b>N9306648</b> |

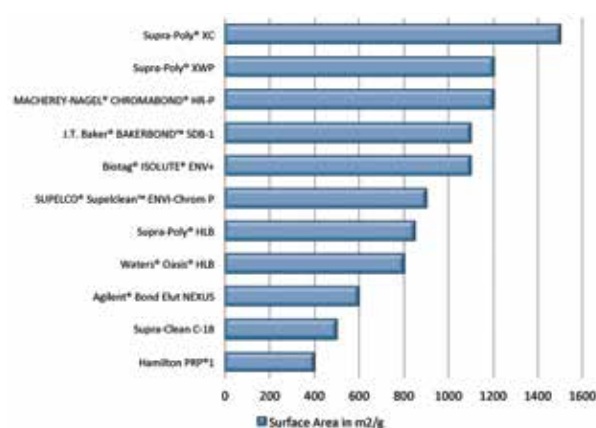
## Supra-Poly Hydrophilic (ATH)

| Media Weight   | Volume | Qty. | Part No.        |
|----------------|--------|------|-----------------|
| <b>Columns</b> |        |      |                 |
| 100 mg         | 3 mL   | 50   | <b>N9306646</b> |
| 200 mg         | 3 mL   | 50   | <b>N9306638</b> |
| 200 mg         | 6 mL   | 30   | <b>N9306636</b> |

## Supra-Poly Lipophilic (ATL)

| Media Weight   | Volume | Qty. | Part No.        |
|----------------|--------|------|-----------------|
| <b>Columns</b> |        |      |                 |
| 100 mg         | 3 mL   | 50   | <b>N9306647</b> |
| 200 mg         | 3 mL   | 50   | <b>N9306639</b> |
| 200 mg         | 6 mL   | 30   | <b>N9306637</b> |

Compared to other industry-leading SPE materials, our Extreme Capacity (XC) and Extra Wide Particles (XWP) lead market in surface area. This allows for higher capacities at lower bed weights.



# SPE Application and Selection Packs

## SPE Application Packs

Ideal for extraction of known entities from a variety of matrices, our packs are expertly tailored to meet your application needs and are designed to support major EPA methods and applications.

| Description                                                  | Media Weight | Volume | Qty. | Part No.        |
|--------------------------------------------------------------|--------------|--------|------|-----------------|
| Extraction of Basic Drugs from Biological Fluids             | 200 mg       | 3 mL   | 50   | <b>N9306605</b> |
| Extraction of Bisphenol A from Aqueous Matrix                | 1 g          | 6 mL   | 30   | <b>N9306613</b> |
| Extraction of Oil and Grease from Aqueous Matrix-EPA 1664    | 500 mg       | 3 mL   | 50   | <b>N9306612</b> |
|                                                              | 1 g          | 6 mL   | 30   | <b>N9306611</b> |
| Extraction of PAH from Soil and Oil                          | 1.5 g        | 6 mL   | 30   | <b>N9306609</b> |
| Extraction of PAH from Soil and Oil (Glass Straight Column)  | 1.5 g        | 6 mL   | 30   | <b>N9306610</b> |
| Extraction of PAH from Water Containing Humic Acids          | 1.5 g        | 6 mL   | 30   | <b>N9306608</b> |
| Extraction of PAH from Water or Soil                         | 4 g          | 6 mL   | 30   | <b>N9306606</b> |
| Extraction of PAH from Water or Soil (Glass Straight Column) | 4 g          | 6 mL   | 30   | <b>N9306607</b> |
| Extraction of PCB from Oil                                   | 1 g          | 6 mL   | 30   | <b>N9306617</b> |
|                                                              | 1 g          | 3 mL   | 50   | <b>N9306616</b> |
| Extraction of Pesticides and Herbicides from Aqueous Matrix  | 500 mg       | 3 mL   | 50   | <b>N9306614</b> |
| Extraction of Steroids from Biological Fluids                | 500 mg       | 6 mL   | 30   | <b>N9306615</b> |
| Extraction of SVOC from Water-EPA 525                        | 1 g          | 6 mL   | 30   | <b>N9306618</b> |

## SPE Selection Packs

Enables quick column selection for development of reproducible and repeatable SPE methods.

| Description                                                                     | Media Weight | Volume | Qty. | Part No.        |
|---------------------------------------------------------------------------------|--------------|--------|------|-----------------|
| Pre-Concentration of Hydrophobic Compounds from Aqueous Matrix                  | 200 mg       | 6 mL   | 50   | <b>N9306594</b> |
|                                                                                 | 200 mg       | 3 mL   | 50   | <b>N9306595</b> |
| Extraction of Hydrophobic Compounds from Aqueous Matrix                         | 500 mg       | 6 mL   | 50   | <b>N9306596</b> |
|                                                                                 | 500 mg       | 3 mL   | 50   | <b>N9306597</b> |
| Pre-Concentration of Hydrophilic Compounds                                      | 500 mg       | 6 mL   | 30   | <b>N9306598</b> |
|                                                                                 | 500 mg       | 3 mL   | 30   | <b>N9306599</b> |
| Removal of Polar Compounds from Aqueous and Organic Matrix                      | 500 mg       | 6 mL   | 30   | <b>N9306600</b> |
|                                                                                 | 500 mg       | 3 mL   | 30   | <b>N9306601</b> |
| Extraction of Acidic Basic and Neutral Compounds from Aqueous or Organic Matrix | 100 mg       | 3 mL   | 50   | <b>N9306602</b> |
| Extraction of Carboxylic Acids and Strong Bases from Aqueous Matrix             | 500 mg       | 6 mL   | 40   | <b>N9306603</b> |
| Extraction of Weak Bases from Aqueous Matrix                                    | 500 mg       | 6 mL   | 30   | <b>N9306604</b> |

### SPE Vacuum PUMPS, Manifolds and Accessories

SPE Vacuum Manifolds accommodate either 12 or 24 cartridges; 1, 3, 6, 15, and 25 mL columns can be used. Manifolds are equipped with a vacuum port to connect a standard laboratory vacuum pump. Vacuum pulls the sample through the stationary phase, metered by the stopcocks, to control the speed of the extraction process and the sample flow. Waste and wash solvents are discarded and analytes are collected in sample tubes below the manifold completing the extraction. For your convenience, manifold kits are supplied in either 12 position or 24 position configurations.



### Kit Contents

| Description                   | Qty. | 12 Position<br>Part No. | Qty. | 24 Position<br>Part No. |
|-------------------------------|------|-------------------------|------|-------------------------|
| Vacuum Manifold Kit           | 1    | <b>N9306619</b>         | 1    | <b>N9306626</b>         |
| Replacement Chamber (Glass)   | 1    | <b>N9306620</b>         | 1    | <b>N9306627</b>         |
| Cover Gasket<br>– 12 Position | 1    | <b>N9306621</b>         | 1    | <b>N9306628</b>         |
| Stopcocks<br>– 12 Position    | 12   | <b>N9306624</b>         | 24   | <b>N9306631</b>         |
| Needles<br>– Polypropylene    | 12   | <b>N9306622</b>         | 24   | <b>N9306629</b>         |
| Needles<br>– Stainless Steel  | 12   | <b>N9306623</b>         | 24   | <b>N9306630</b>         |
| Drying Attachment             | 1    | <b>N9306625</b>         | 1    | <b>N9306632</b>         |

| Description  | Qty. | 20 L/min<br>115 V | 60 L/min<br>115 V | 17 L/min<br>230 V | 58 L/min<br>230 V |
|--------------|------|-------------------|-------------------|-------------------|-------------------|
| Vacuum Pumps | 1    | <b>N9308035</b>   | <b>N9308063</b>   | <b>N9308331</b>   | <b>N9308332</b>   |

## Supra-d QuEChERS Dispersive SPE

For more than 30 years, pesticide extraction methods have evolved to ensure rugged and safe liquid chromatography (LC) or gas chromatography (GC) analysis. Initial techniques of liquid to liquid extraction and Dispersive SPE (dSPE) have been optimized to combat emulsions, loss of analytes and excessive solvent consumption.

PerkinElmer's Supra-d QuEChERS dispersive SPE turns sample preparation into an easy two-step process by using the QuEChERS method. QuEChERS (Quick, Easy, Cheap, Effective, Rugged, Safe) dispersive SPE, is the number one used sample preparation approach in pesticide residue analysis. It eliminates complex liquid extraction methods and extends the range of recovered pesticides. The QuEChERS procedure is fast and easy, improving lab productivity and resulting in fewer errors.

### Features and Benefits:

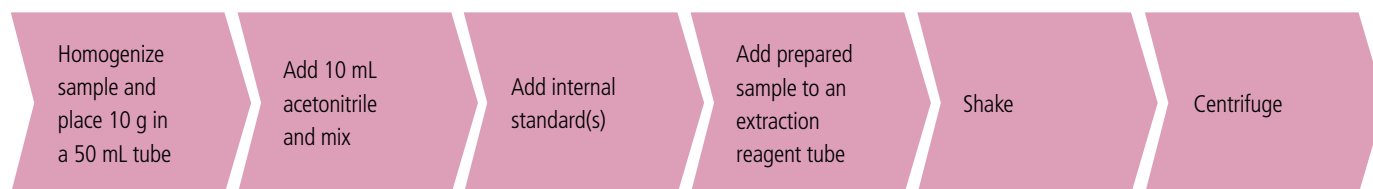
- High recoveries are achieved for more accurate analyses
- Up to 4 times faster than traditional methods
- Low solvent usage and waste for maximum cost savings



Our SPE extraction and clean-up kits have been customized for your specific sample preparation needs. They are designed for both steps of the QuEChERS method and each kit includes pre-prepared products for simplicity and error-free extractions. A certificate of quality is included in each kit, ensuring you have the best for your application. With our extensive line of dispersive SPE kits you'll be sure to find what you're looking for.

### QuEChERS simple two-step procedure:

#### Step 1: Extraction



#### Step 2: Clean-Up



# Supra-d QuEChERS For Multiple Pesticide Residue Analysis

PerkinElmer provides a complete range of products for QuEChERS methodologies, offering all three standard QuEChERS methods: Original QuEChERS method, American AOAC Standard (Official Method 2007.01) QuEChERS method and European Standard (EN 15662) QuEChERS method.



| Method                                      | Vol.     | Qty.  | MgSO <sub>4</sub>   | Na Acetate          | Na Citrate | Na Citrate Sesquihydrate | NaCl   | Part No.        | Empty Tube Part No. | Powder Pack (pkg. 50) Part No. | Powder Pack (pkg. 500) Part No. |
|---------------------------------------------|----------|-------|---------------------|---------------------|------------|--------------------------|--------|-----------------|---------------------|--------------------------------|---------------------------------|
| <b>Extraction Kits</b>                      |          |       |                     |                     |            |                          |        |                 |                     |                                |                                 |
| AOAC 2007.01                                | 50 mL    | 50    | 6 g                 | 1.5 g               |            |                          |        | <b>N9306900</b> | <b>N9306935</b>     | <b>N9306936</b>                | <b>N9306939</b>                 |
| EN 15662                                    | 50 mL    | 50    | 4 g                 |                     | 1 g        | 0.5 g                    | 1 g    | <b>N9306901</b> | <b>N9306935</b>     | <b>N9306937</b>                | <b>N9306940</b>                 |
| Original                                    | 50 mL    | 50    | 4 g                 |                     |            |                          | 1 g    | <b>N9306902</b> | <b>N9306935</b>     | <b>N9306938</b>                | <b>N9306941</b>                 |
| Description                                 | Vol.     | Qty.  | MgSO <sub>4</sub> * |                     |            |                          | PSA**  | C18***          |                     | PGC****                        | Part No.                        |
| <b>AOAC 2007.01 Clean-Up Kits</b>           |          |       |                     |                     |            |                          |        |                 |                     |                                |                                 |
| Fruit and Vegetables                        | 2 mL     | 100   | 150 mg              |                     |            |                          | 50 mg  |                 |                     |                                | <b>N9306908</b>                 |
| Fruit and Vegetables                        | 15 mL    | 50    | 1200 mg             |                     |            |                          | 400 mg |                 |                     |                                | <b>N9306909</b>                 |
| Fruit and Vegetables with Fats and Waxes    | 2 mL     | 100   | 150 mg              |                     |            |                          | 50 mg  | 50 mg           |                     |                                | <b>N9306910</b>                 |
| Waxed Fruit and Vegetables                  | 15 mL    | 50    | 1200 mg             |                     |            |                          | 400 mg | 400 mg          |                     |                                | <b>N9306911</b>                 |
| Pigmented Fruit and Vegetables              | 15 mL    | 50    | 1200 mg             |                     |            |                          | 400 mg |                 |                     | 400 mg                         | <b>N9306912</b>                 |
| Fruit and Vegetables with Pigments and Fats | 2 mL     | 100   | 150 mg              |                     |            |                          | 50 mg  | 50 mg           |                     | 50 mg                          | <b>N9306913</b>                 |
| Fruit and Vegetables with Pigments and Fats | 15 mL    | 50    | 1200 mg             |                     |            |                          | 400 mg | 400 mg          |                     | 400 mg                         | <b>N9306914</b>                 |
| <b>EN 15662 Clean-Up Kits</b>               |          |       |                     |                     |            |                          |        |                 |                     |                                |                                 |
| Fruit and Vegetables                        | 2 mL     | 100   | 150 mg              |                     |            |                          | 25 mg  |                 |                     |                                | <b>N9306920</b>                 |
| Fruit and Vegetables                        | 15 mL    | 50    | 900 mg              |                     |            |                          | 150 mg |                 |                     |                                | <b>N9306921</b>                 |
| Fruit and Vegetables with Fats and Waxes    | 2 mL     | 100   | 150 mg              |                     |            |                          | 25 mg  | 25 mg           |                     |                                | <b>N9306922</b>                 |
| Waxed Fruit and Vegetables                  | 15 mL    | 50    | 900 mg              |                     |            |                          | 150 mg | 150 mg          |                     |                                | <b>N9306923</b>                 |
| Pigmented Fruit and Vegetables              | 15 mL    | 50    | 900 mg              |                     |            |                          | 150 mg |                 |                     | 15 mg                          | <b>N9306924</b>                 |
| Pigmented Fruit and Vegetables              | 2 mL     | 100   | 150 mg              |                     |            |                          | 25 mg  |                 |                     | 2.5 mg                         | <b>N9306925</b>                 |
| High Pigmented Fruit and Vegetables         | 2 mL     | 100   | 150 mg              |                     |            |                          | 25 mg  |                 |                     | 7.5 mg                         | <b>N9306926</b>                 |
| High Pigmented Fruit and Vegetables         | 15 mL    | 50    | 900 mg              |                     |            |                          | 150 mg |                 |                     | 45 mg                          | <b>N9306927</b>                 |
| Description                                 | Method   | Vol.  | Qty.                | MgSO <sub>4</sub> * |            |                          | PSA**  | C18***          |                     | PGC****                        | Part No.                        |
| <b>Clean-up Kit</b>                         |          |       |                     |                     |            |                          |        |                 |                     |                                |                                 |
| Clean-up Kit                                | Original | 15 mL | 50                  | 900 mg              |            |                          | 300 mg |                 |                     | 150 mg                         | <b>N9306933</b>                 |

\* MgSO<sub>4</sub> removes excess water

\*\* PSA removes sugars, fatty acids, organic acids, and anthocyanine pigments

\*\*\* C18 removes nonpolar interferences

\*\*\*\* PGC (carbon) removes pigments, sterols, and nonpolar interferences

# Syringes

## Disposable Syringes

Designed for use with syringe filters, these disposable, sterile, polypropylene syringes are for general-purpose applications. Packaged in easy-to-open sealed package and they can be autoclaved out of the package.



| Description           | Pkg. | Part No. |
|-----------------------|------|----------|
| Luer-Lock Tips, 1 mL  | 100  | 02542890 |
| Luer-Lock Tips, 3 mL  | 200  | 02542891 |
| Luer-Lock Tips, 5 mL  | 100  | 02542892 |
| Luer-Lock Tips, 10 mL | 100  | 02542893 |

## Ultramicro Volume Syringes

Recommended for liquid sample injections of less than 5 µL for gas chromatography. Syringes come standard with needle length of 7 cm – optimum for PerkinElmer injectors.

| Syringe Capacity | Gauge           | OD   | ID   | Tip Description | Pkg. | Part No. |
|------------------|-----------------|------|------|-----------------|------|----------|
| 0.5 µL           | 26              | 0.47 | 0.1  | Bevel           | 1    | N9302231 |
| 1.0 µL           | 23              | 0.63 | 0.15 | Cone            | 1    | 00230177 |
| 1.0 µL           | 26 <sup>1</sup> | 0.47 | 0.15 | Cone            | 1    | 00230111 |
| 2.0 µL           | 23              | 0.63 | 0.12 | Bevel           | 1    | N9302235 |
| 5.0 µL           | 23              | 0.63 | 0.37 | Cone            | 1    | 00230178 |

<sup>1</sup> Recommended for PerkinElmer wide-bore capillary adapter

For a full listing of GC autosampler and manual syringes please refer to page 116.



# Vials, Caps and Septa

PerkinElmer offers a wide selection of superior quality products designed to work with your PerkinElmer instruments. Our precision designed products deliver the peace of mind that comes from knowing that you'll get the results you need.

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## NEW High Recovery Vials

Manufactured from the same high quality glass as our standard 2 mL vials, these high recovery vials provide efficient handling of a range sample volumes from 30 µL to 1.5 mL, with the convenience of a single vial format.



➤ VIEW PAGE

## Vial, Cap and Septa Kits

Buying a kit offers you a guaranteed proper fit between the cap and vial. Available with either glass or polypropylene vials, and a range of cap choices these autosampler vial, cap and septa kits make it surprising simple to re-stock your laboratory.



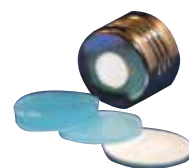
### NEW PACK SIZE

For your added convenience, the most popular kits are now available in 1000 pack size.

➤ VIEW PAGE

## NEW Ultra-Low Bleed Septa

Our ultra-low bleed septa is the benchmark for high purity septa, eliminating any possibility of contamination. Available in caps for 2 mL vials, headspace and SPME applications.



➤ VIEW PAGE

## NEW High Powered Crimpers and Decappers

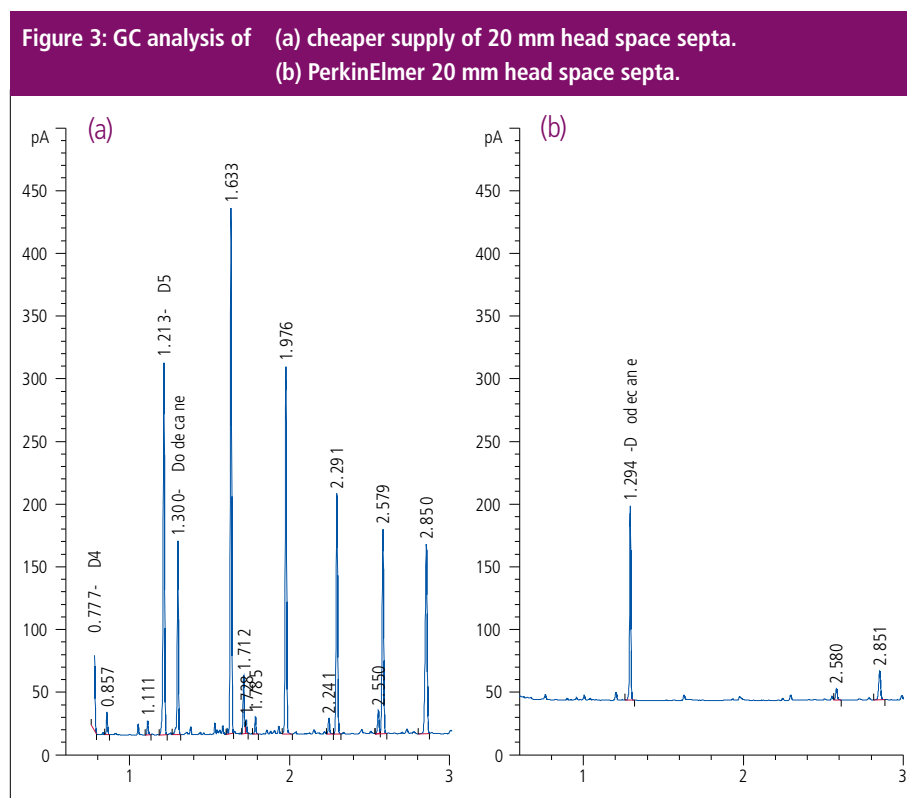
The high powered crimper and decapper is an essential laboratory accessory for any high through put environment. Realise the benefits of not only fast and accurate crimping or decapping, but also the ultimate tool in flexibility with interchangeable jaw sets.



➤ VIEW PAGE

## Quality Matters; Vials, Caps and Septa

Vials and closures are a critical part of your workflow; just as important as the instrument or column used. It is easy to think of a vial or cap as an inexpensive commodity that won't impact your results, but the reality is different. It's not only the physical attributes that can affect overall analytical performance, but also the quality of the glass and septa used. Contamination from sub-standard glass or poor quality septa (figure 3) can lead to interferences, inaccuracies and failures which ultimately effects lab productivity.



### Features and Benefits:

- Vials are made from Type I Borosilicate Glass; which meets all USP, JP and EP requirements. This glass is very hard and has a low expansion coefficient even at high temperature
- Vials are stringently tested using camera gauging technology to ensure final product meets all dimensional specifications
- All our vials, caps and septa are fit to perform on PerkinElmer and non-PerkinElmer instruments
- We stock a wide variety of sizes, colors and materials of vials, caps and septa
- All vials are packed in a clean room and those labelled with 'LC Clean' include an additional certificate of analysis
- Option for ultra low bleed septa for the ultimate in inertness. Batch certification is also available

A sample of the septa was taken and placed into an extraction solution, heated, and the resulting supernatant analyzed by GC. There is a marked difference between the two sources of septa. The poor quality (often cheaper) septa clearly shows the presence of some impurities, siloxanes. These impurities are absent from the PerkinElmer septa sample.

Taking purity and inertness of septa to the next level are PerkinElmer's range of ultra low bleed septa. Offering unsurpassed quality, no bleed is detected ensuring maximum sensitivity for applications; particularly MS, headspace and SPME. See page 31 for a full product listing.

You can rely on PerkinElmer to consistently supply only the highest quality vials, caps and septa to ensure that your analytical instruments continue to operate smoothly. All are tested to our stringent requirements and are compatible with both PerkinElmer instruments and other vendor systems. Choose from a range of glass or polypropylene vials and select your particular closure from a variety of options. Separate vials and caps can readily be purchased or select one of our kits for added convenience.

## How to Choose a Vial:

### 1. Choose a size.

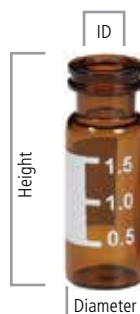
- Volume (i.e. 2 mL, high recovery or micro volume)
- Diameter and height (i.e. 12 mm x 32 mm)
- ID of the neck (i.e. 9 mm or 11 mm)
- Finish (i.e. snap, crimp or screw top)

### 2. Choose a color.

If your sample is sensitive to light you may want to consider an amber vial.

### 3. Choose a material.

Vials are available in both glass and polypropylene.  
For biological applications polypropylene vials are recommended.



## How to Choose a Seal:

### 1. Choose a septa material.

Required temperature of operation, resistance to coring, storage shelf time are a few of the variables that should be taken into consideration when choosing your septa material.

Refer to the table below for an overview of compatibility.



### 2. Decide between a pre-slit or non-slit septa.

Due to the technique and type of needle they use, pre-slit septa are ideal for LC systems, while non-slit septa are ideal for GC and GC/MS systems.

### 3. Match the size of the cap/septa with the size of your vial.

## Cap and Septa Compatibility

|                              | Aluminum/Silicone | PTFE/Silicone | PTFE/Red Rubber | PTFE/Butyl (Red or Gray) | Red or Gray Butyl |
|------------------------------|-------------------|---------------|-----------------|--------------------------|-------------------|
| Temperature Range            | Up to 220 °C      | Up to 210 °C  | Up to 160 °C    | Up to 130 °C             | Up to 130 °C      |
| Use for multiple injections? | No                | Yes           | Yes             | No                       | No                |
| Price per 1000               | Most Expensive    | Expensive     | Economical      | Economical               | Very Economical   |
| Resistance to coring         | Good              | Excellent     | Good            | Low                      | Low               |
| Recommended for storage      | Yes               | Yes           | Yes             | No                       | No                |
| <b>Solvent Compatibility</b> |                   |               |                 |                          |                   |
| Acids                        | Excellent         | Excellent     | Good            | Fair                     | Fair              |
| Alcohols                     | Good              | Good          | Fair            | Good                     | Good              |
| Chloroform                   | Good              | Good          | Poor            | Fair                     | Fair              |
| Ethyl acetate                | Excellent         | Excellent     | Good            | Fair                     | Fair              |
| Hexane                       | Good              | Good          | Poor            | Poor                     | Poor              |
| Methanol                     | Excellent         | Excellent     | Good            | Good                     | Good              |

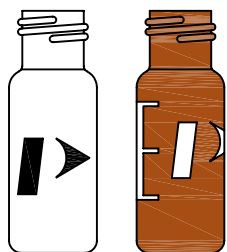
## Do You Need Anything Else?

We have a wide variety of crimpers, decappers, and vial trays to also make your analysis easier.

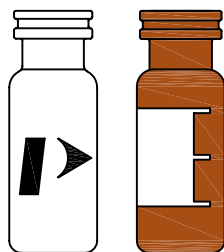
## Autosampler Vials

Our vials are manufactured from Type I Borosilicate Glass, which meets all USP, JP, and EP Pharmacopeia requirements. The glass performs excellently at high temperatures and is chemical resistant to acidic, neutral and alkali solutions. All our vials are packed in a clean environment to ensure you receive contaminant free product every time.

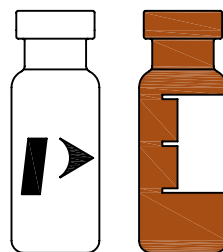
### 2 mL Autosampler Glass Vials (12 x 32 mm)



Screw Top



Snap Top



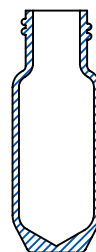
Crimp Top

| Neck ID Size (mm) | Vial Top Type | Vial Description                                             | Pkg. | Part No.        |
|-------------------|---------------|--------------------------------------------------------------|------|-----------------|
| 8                 | Screw         | Clear glass                                                  | 200  | <b>N9301069</b> |
| 8                 | Screw         | Clear glass                                                  | 100  | <b>N9302945</b> |
| 9                 | Screw         | Clear glass                                                  | 100  | <b>N9306201</b> |
| 9                 | Screw         | Clear glass with write on patch and fill lines               | 100  | <b>N9307801</b> |
| 9                 | Screw         | Clear glass with write on patch (deactivated)                | 100  | <b>N9304139</b> |
| 9                 | Screw         | Amber glass                                                  | 100  | <b>N9306220</b> |
| 9                 | Screw         | Amber glass with write on patch and fill lines               | 100  | <b>N9307802</b> |
| 9                 | Screw         | Amber glass with write on patch and fill lines (deactivated) | 100  | <b>N9304140</b> |
| 10                | Screw         | Clear glass with write on patch and fill lines               | 100  | <b>N9306053</b> |
| 10                | Screw         | Amber glass with write on patch and fill lines               | 100  | <b>N9306057</b> |
| 11                | Crimp         | Clear glass                                                  | 100  | <b>N9301385</b> |
| 11                | Crimp         | Clear glass with write on patch and fill lines               | 100  | <b>N9306223</b> |
| 11                | Crimp         | Clear glass with write on patch and fill lines (deactivated) | 100  | <b>N9304135</b> |
| 11                | Crimp         | Amber glass                                                  | 100  | <b>N9302680</b> |
| 11                | Crimp         | Amber glass with write on patch and fill lines               | 100  | <b>N9302679</b> |
| 11                | Crimp         | Amber glass with write on patch and fill lines (deactivated) | 100  | <b>N9304136</b> |
| 11                | Snap          | Clear glass                                                  | 100  | <b>N9303418</b> |
| 11                | Snap          | Clear glass with write on patch and fill lines               | 100  | <b>N9306207</b> |
| 11                | Snap          | Clear glass with write on patch and fill lines (deactivated) | 100  | <b>N9304137</b> |
| 11                | Snap          | Amber glass with write on patch and fill lines               | 100  | <b>N9306208</b> |
| 11                | Snap          | Amber glass with write on patch and fill lines (deactivated) | 100  | <b>N9304138</b> |

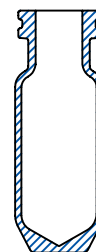
NEW

**1.5 mL Autosampler High Recovery Vials**

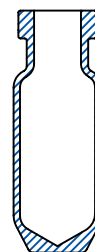
Manufactured from the same high quality Type 1 Class A borosilicate glass as our standard 2 mL vials, these high recovery vials provide efficient handling of a range sample volumes from 30 µL to 1.5 mL, with the convenience of a single vial format.



Screw Top



Snap Top



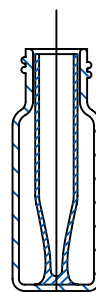
Crimp Top

| Neck ID Size (mm) | Vial Top Type | Vial Description | Pkg. | Part No.        |
|-------------------|---------------|------------------|------|-----------------|
| 9                 | Screw         | Clear glass      | 100  | <b>N2926202</b> |
| 11                | Snap          | Clear glass      | 100  | <b>N2926201</b> |
| 11                | Crimp         | Clear glass      | 100  | <b>N2926200</b> |

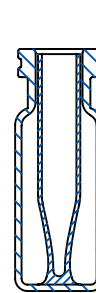
**Autosampler Vials with Fused Inserts**

For easy sampling, try our glass vials with fused sample inserts; a variety of volumes are available in either clear or amber glass. They are ideal when handling micro volume samples.

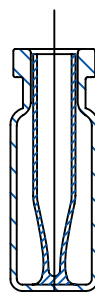
For polypropylene standard 2 mL vials and small volume vials, please refer to the table on page 28.



Screw Top



Snap Top



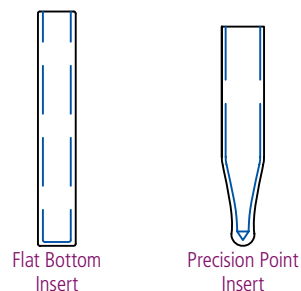
Crimp Top

| Neck ID size (mm) | Capacity | Vial Top Type | Vial Description | Pkg. | Part No.         |
|-------------------|----------|---------------|------------------|------|------------------|
| 8                 | 100 µL   | Screw         | Clear glass      | 100  | <b>N9300713</b>  |
| 8                 | 100 µL   | Screw         | Amber glass      | 100  | <b>N9300714</b>  |
| 8                 | 200 µL   | Crimp         | Clear glass      | 500  | <b>N9302136*</b> |
| 9                 | 300 µL   | Screw         | Clear glass      | 100  | <b>N9300715</b>  |
| 9                 | 300 µL   | Screw         | Amber glass      | 100  | <b>N9300716</b>  |
| 10                | 300 µL   | Screw         | Clear glass      | 100  | <b>N9300717</b>  |
| 10                | 300 µL   | Screw         | Amber glass      | 100  | <b>N9300718</b>  |
| 11                | 300 µL   | Crimp         | Clear glass      | 100  | <b>N9300709</b>  |
| 11                | 300 µL   | Snap          | Clear glass      | 100  | <b>N9300711</b>  |
| 11                | 300 µL   | Crimp         | Amber glass      | 100  | <b>N9300710</b>  |
| 11                | 300 µL   | Snap          | Amber glass      | 100  | <b>N9300712</b>  |

\*N9302136 should be used with glass vial support sleeve **N9307027**

## Autosampler Vial Inserts

Our vial inserts are made from the same Type 1 borosilicate glass as our vials and can be used for maximum sample extraction when handling micro volumes. Extend the usability of your standard 2 mL vials with the addition of a micro volume insert. Simply select the vial insert that matches with the neck ID of your vial.



| Insert Capacity | Insert Dimension (mm) | Fits Vial Neck ID (mm) | Qty. | Part No.        |
|-----------------|-----------------------|------------------------|------|-----------------|
| 150 µL          | 5 x 29 spring bottom  | 8                      | 100  | <b>N9300705</b> |
| 200 µL          | 5 x 31 flat bottom    | 8                      | 100  | <b>N9300706</b> |
| 250 µL          | 6 x 29 spring bottom  | 9, 10 or 11            | 100  | <b>N9300703</b> |
| 400 µL          | 6 x 31 flat bottom    | 9, 10 or 11            | 100  | <b>N9300704</b> |

## Polypropylene Vials

Polypropylene vials offer an alternative to glass vials and provide an ultra-inert sample environment, which is ideal for biological samples. They are also an excellent choice for applications involving high metal ion content, such as ion chromatography, AA, ICP or ICPMS.

| Volume | Neck ID Size (mm) | Vial Top Type | Vial Description    | Pkg. | Part No.        |
|--------|-------------------|---------------|---------------------|------|-----------------|
| 300 µL | 9                 | Screw         | Clear polypropylene | 100  | <b>N9301732</b> |
| 2 mL   | 9                 | Screw         | Clear polypropylene | 100  | <b>N9301733</b> |
| 2 mL   | 9                 | Screw         | Amber polypropylene | 100  | <b>N9301734</b> |
| 600 µL | 9                 | Screw         | Clear polypropylene | 500  | <b>N9302130</b> |

## Waste and Wash Vials, Caps and Septa for GC

| ID Size (mm) | Product Description                                  | Screw<br>Part No. Pkg. 1 | Screw<br>Part No. Pkg. 100 | Screw<br>Part No. Pkg. 1000 |
|--------------|------------------------------------------------------|--------------------------|----------------------------|-----------------------------|
| 13           | Clear Glass Vial – 4 mL (15 x 45 mm)                 | <b>09923031</b>          | <b>N9306247</b>            |                             |
|              | 200 µL Vial Insert                                   |                          |                            | <b>N9302681</b>             |
|              | Support for Vial Insert                              |                          |                            | <b>N9302682*</b>            |
| 13           | Black Cap with PTFE/Silicone (Ultra Low Bleed) Septa |                          | <b>N9304141</b>            | <b>N9304142</b>             |
| 13           | Black Phenolic Cap (no septa)                        | <b>09923032</b>          |                            |                             |
| 13           | Silicone Septa (no cap)                              |                          | <b>N9302780</b>            |                             |
|              | Vial Diffuser                                        | <b>N6101276</b>          |                            |                             |

\*N9302682 is pkg. 500

# Autosampler Caps and Septa

PerkinElmer offers a variety of caps and septa to fulfil your application needs. Our screw thread vial caps use the revolutionary Inter-Seal®. Using a process that bonds silicone/PTFE and other elastomeric compounds directly into thermoplastic closures eliminates liner fallout, while still providing the excellent re-sealability and multiple injection capability. No adhesives are used in this process, bonding the cap and septa at the molecular level of plastic and rubber. These septa have a very broad chemical resistance and can be used in many markets including: environmental, diagnostic packaging, pharmaceutical packaging, cosmetic and food packaging.



## Pre-Assembled Cap and Septa

For your convenience, a wide range of pre-assembled caps and septa are available, in differing pack sizes.

| Neck ID Size (mm) | Septa Type                                           | Cap Type                     | Closure Type | Pkg. | Part No.  |
|-------------------|------------------------------------------------------|------------------------------|--------------|------|-----------|
| 8                 | PTFE                                                 | Aluminium                    | Crimp        | 1000 | N9302140  |
| 8                 | PTFE/red rubber                                      | Aluminium                    | Crimp        | 1000 | 03300806  |
| 8                 | PTFE/silicone                                        | Black flanged cap            | Screw        | 100  | N9303449  |
| 8                 | PTFE/silicone (pre-slit)                             | Polyethylene                 | Snap         | 1000 | N9302141  |
| 9                 | PTFE/red rubber                                      | Blue (polypropylene)         | Screw        | 100  | N9306200  |
| 9                 | PTFE/silicone                                        | Blue (polypropylene)         | Screw        | 100  | N9306360  |
| 9                 | PTFE/silicone                                        | Blue (polypropylene)         | Screw        | 1000 | N9306361  |
| 9                 | PTFE/silicone (ultra-low bleed)                      | Blue (polypropylene)         | Screw        | 100  | N9306362  |
| 9                 | PTFE/silicone (ultra-low bleed)                      | Blue (polypropylene)         | Screw        | 1000 | N9306363  |
| 9                 | PTFE/silicone (ultra-low bleed and pre-slit)         | Blue (polypropylene)         | Screw        | 100  | N9306364  |
| 9                 | PTFE/silicone (ultra-low bleed and pre-slit)         | Blue (polypropylene)         | Screw        | 1000 | N9306365  |
| 9                 | PTFE/silicone (pre-slit)                             | Blue (polypropylene)         | Screw        | 100  | N9306203  |
| 9                 | PTFE/silicone                                        | Blue (polypropylene)         | Screw        | 1000 | N9306202  |
| 10                | PTFE/red rubber                                      | Black (polypropylene)        | Screw        | 100  | N9306206  |
| 10                | PTFE/silicone                                        | Black (polypropylene)        | Screw        | 100  | N9306205  |
| 10                | PTFE/silicone (pre-slit)                             | Black (polypropylene)        | Screw        | 100  | N9306052  |
| 11                | PTFE/red rubber                                      | Aluminium (silver)           | Crimp        | 100  | N9306015* |
| 11                | PTFE/red rubber                                      | Aluminium (green)            | Crimp        | 100  | N9302684  |
| 11                | PTFE/red rubber                                      | Aluminium (red)              | Crimp        | 100  | N9302685  |
| 11                | PTFE/red rubber                                      | Aluminium (blue)             | Crimp        | 100  | N9302686  |
| 11                | PTFE/silicone (red/white)                            | Aluminium (silver)           | Crimp        | 100  | N9307823  |
| 11                | PTFE/silicone (red/white)                            | Aluminium (silver)           | Crimp        | 100  | N9306228  |
| 11                | <b>NEW</b> PTFE/Silicone (red/white) Ultra low bleed | Aluminium (silver)           | Crimp        | 100  | N9304148  |
| 11                | <b>NEW</b> PTFE/Silicone (red/white) Ultra low bleed | Clear (polypropylene)        | Snap         | 100  | N9304149  |
| 11                | <b>NEW</b> PTFE/Silicone (red/white) Ultra low bleed | Clear (polypropylene)        | Snap         | 1000 | N9304185  |
| 11                | PTFE/silicone (red/white)                            | Clear plastic (polyethylene) | Snap         | 100  | N9303419  |
| 11                | PTFE/silicone (red/white) pre-slit                   | Clear plastic (polyethylene) | Snap         | 100  | N9303416  |
| 11                | PTFE/silicone/PTFE                                   | Aluminium (silver)           | Crimp        | 100  | N9306229  |
| 11                | PTFE/silicone/PTFE                                   | Gold magnetic                | Crimp        | 100  | N6356473  |
| 11                | PTFE/silicone/PTFE                                   | Clear plastic                | Snap         | 100  | N9303417  |
| 11                | Aluminium/PTFE                                       | Aluminium (silver)           | Crimp        | 500  | N9302139  |
| 11                | Black viton                                          | Aluminium (silver)           | Crimp        | 1000 | N9302784  |

\*Same Part No. as N9306230

# VIALS, CAPS AND SEPTA

## Un-Assembled Cap and Septa

| Neck ID Size (mm) | Description | Material                    | Closure Type | Pkg. | Part No.        |
|-------------------|-------------|-----------------------------|--------------|------|-----------------|
| 8                 | Septa       | PTFE/red rubber             | —            | 100  | <b>N9303442</b> |
| 8                 | Cap         | Phenolic cap                | Screw        | 100  | <b>N9303441</b> |
| 11                | Septa       | PTFE/silicone               | —            | 12   | <b>00091357</b> |
| 11                | Septa       | PTFE/silicone (pre-split)   | —            | 500  | <b>N9307021</b> |
| 11                | Cap         | Clear plastic cap with slit | Snap         | 500  | <b>N9307023</b> |

## Autosampler Vial, Cap and Septa Convenience Kits

Available with either glass or polypropylene vials and a range of cap choices, these autosampler vial, cap and septa kits make it surprising simple to re-stock your laboratory. For your added convenience, the most popular kits are also available in 1000 pack size.



**NEW**  
1000/Pack

| ID Size (mm)  | Septa Type               | Cap Type  | Vial Type                             | Screw Top         | Screw Top         | Screw Top          |
|---------------|--------------------------|-----------|---------------------------------------|-------------------|-------------------|--------------------|
|               |                          |           |                                       | Part No. Pkg. 100 | Part No. Pkg. 500 | Part No. Pkg. 1000 |
| 8             | PTFE/Silicone            | Black Cap | Clear Glass                           | <b>N9301945</b>   |                   |                    |
| 9             | PTFE/Red Rubber          | Blue Cap  | Clear Glass                           | <b>N9300699</b>   |                   | <b>N9300910</b>    |
| 9 (certified) | PTFE/Silicone            | Blue Cap  | Amber Glass                           | <b>N9300719</b>   |                   | <b>N9300911</b>    |
| 9             | PTFE/Silicone            | Blue Cap  | Clear Glass                           | <b>N9300700</b>   |                   | <b>N9300912</b>    |
| 9 (certified) | PTFE/Silicone            | Blue Cap  | Clear Glass                           | <b>N9300707</b>   |                   |                    |
| 9             | PTFE/Silicone (Pre-Slit) | Blue Cap  | Amber Polypropylene                   | <b>N9301735</b>   |                   |                    |
| 9 (certified) | PTFE/Silicone (Pre-Slit) | Gray Cap  | Amber Glass                           | <b>N9300720</b>   |                   |                    |
| 9             | PTFE/Silicone (Pre-Slit) | Blue Cap  | Clear Polypropylene                   | <b>N9301736</b>   |                   |                    |
| 9             | PTFE/Silicone (Pre-Slit) | Blue Cap  | Clear Polypropylene (300 µL capacity) |                   | <b>N9306080</b>   |                    |
| 9 (certified) | PTFE/Silicone (Pre-Slit) | Gray Cap  | Clear Glass                           | <b>N9300708</b>   |                   |                    |
| 9             | PTFE/Silicone (Pre-Slit) | Blue Cap  | Clear Glass                           | <b>N9300701</b>   |                   |                    |
| 10            | PTFE/Silicone (Pre-Slit) | Black Cap | Clear Glass                           | <b>N9300695</b>   | <b>N9300650</b>   | <b>N9300913</b>    |
| 10            | PTFE/Silicone (Pre-Slit) | Black Cap | Amber Glass                           | <b>N9300696</b>   |                   | <b>N9300914</b>    |

| ID Size (mm) | Septa Type               | Cap Type          | Vial Type   | Crimp Top         | Crimp Top         | Snap Top          |
|--------------|--------------------------|-------------------|-------------|-------------------|-------------------|-------------------|
|              |                          |                   |             | Part No. Pkg. 100 | Part No. Pkg. 500 | Part No. Pkg. 100 |
| 11           | PTFE/Red Rubber          | Aluminum Cap      | Clear Glass | <b>N9300502</b>   | <b>N9300503</b>   |                   |
| 11           | PTFE/Silicone            | Aluminum Cap      | Clear Glass | <b>N9300500</b>   |                   |                   |
| 11           | PTFE/Silicone            | Clear Plastic Cap | Clear Glass |                   |                   | <b>N9300702</b>   |
| 11           | PTFE/Silicone (Pre-Slit) | Clear Plastic Cap | Clear Glass |                   |                   | <b>N9300697</b>   |
| 11           | PTFE/Silicone/PTFE       | Aluminum Cap      | Clear Glass | <b>N9300501</b>   |                   |                   |
| 11           | PTFE/Silicone/PTFE       | Clear Plastic Cap | Clear Glass |                   |                   | <b>N9300698</b>   |

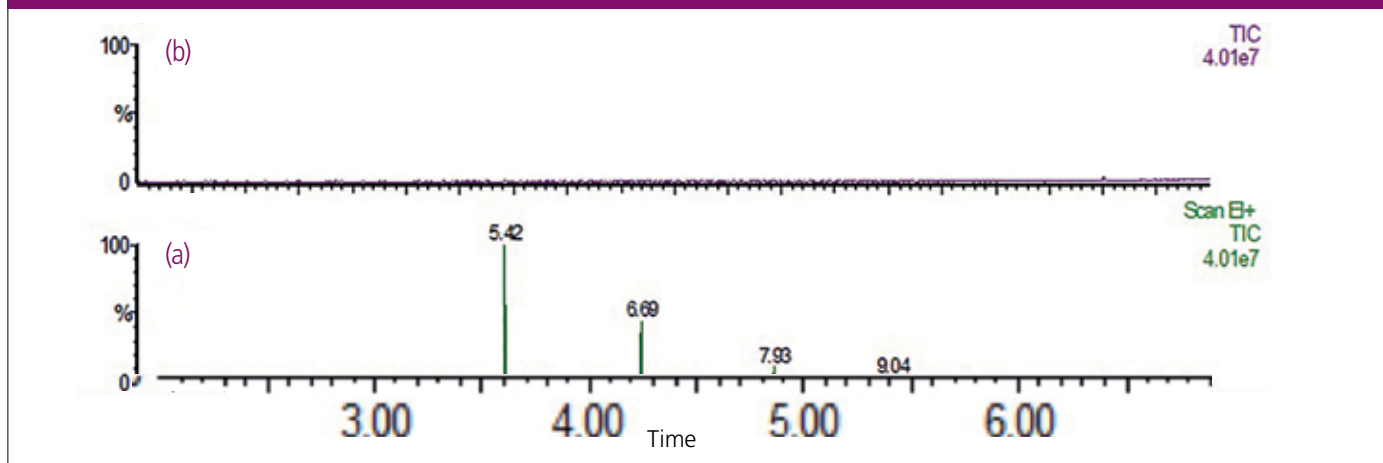


**NEW**

## Ultra Low Bleed Septa

Septa quality, as well as vial quality, is important to ensure rugged and reproducible analytical results, day in day out. PerkinElmer's range of ultra-low bleed septa offers the ultimate in purity and inertness, (figure 4). Eliminate potential contamination from septa which can lead to interferences, inaccuracies and failures which ultimately effects lab productivity. A range of septa combinations area available for standard analytical and headspace applications. The 1.3 mm thick septa are recommended for SPME applications.

**Figure 4: Comparison of Headspace Septa by GC (a) PerkinElmer Standard HS Septa. (b) PerkinElmer Ultra Low Bleed Septa.**



### 2 mL Caps with Ultra Low Bleed Septa

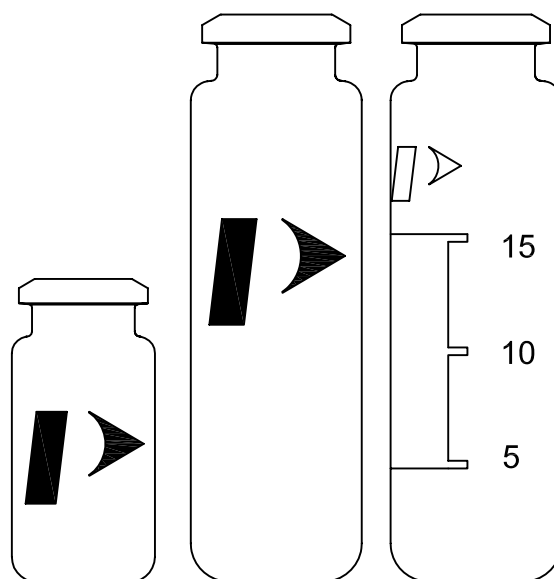
| Neck ID Size (mm) | Description               | Material              | Closure Type | Pkg. | Part No. |
|-------------------|---------------------------|-----------------------|--------------|------|----------|
| 9                 | PTFE/silicone             | Blue polypropylene    | Screw        | 100  | N9306362 |
| 9                 | PTFE/silicone             | Blue polypropylene    | Screw        | 1000 | N9306363 |
| 9                 | PTFE/silicone – pre split | Blue polypropylene    | Screw        | 100  | N9306364 |
| 9                 | PTFE/silicone – pre split | Blue polypropylene    | Screw        | 1000 | N9306365 |
| 11                | PTFE/Silicone (red/white) | Aluminium (silver)    | Crimp        | 100  | N9304148 |
| 11                | PTFE/Silicone (red/white) | Clear (polypropylene) | Snap         | 100  | N9304149 |
| 11                | PTFE/Silicone (red/white) | Clear (polypropylene) | Snap         | 1000 | N9304185 |

### Headspace Caps with Ultra Low Bleed Septa

| Septa Type                              | Cap Type               | Closure Type | Pkg. | Part No  |
|-----------------------------------------|------------------------|--------------|------|----------|
| PTFE/Silicone (blue/white) 1.5 mm thick | Bi-Metal Cap           | Crimp        | 100  | N9304181 |
| PTFE/Silicone (blue/white) 1.5 mm thick | Bi-Metal Cap           | Crimp        | 1000 | N9304182 |
| PTFE/Silicone (blue/white) 1.5 mm thick | Gold Aluminium Cap     | Crimp        | 100  | N9304183 |
| PTFE/Silicone (blue/white) 1.5 mm thick | Gold Aluminium Cap     | Crimp        | 1000 | N9304184 |
| PTFE/Silicone (blue/white) 1.5 mm thick | Aluminium Magnetic Cap | Screw        | 100  | N9304175 |
| PTFE/Silicone (blue/white) 1.5 mm thick | Aluminium Magnetic Cap | Screw        | 1000 | N9304176 |
| PTFE/Silicone (red/white) 1.3 mm thick  | Aluminium Magnetic Cap | Screw        | 100  | N9304177 |
| PTFE/Silicone (red/white) 1.3 mm thick  | Aluminium Magnetic Cap | Screw        | 1000 | N9304178 |
| PTFE/Silicone (white/blue) 1.3 mm thick | Aluminium Magnetic Cap | Screw        | 100  | N9304179 |
| PTFE/Silicone (white/blue) 1.3 mm thick | Aluminium Magnetic Cap | Screw        | 1000 | N9304180 |

## Headspace Vials

PerkinElmer offers a variety of GC headspace vials, caps and septa to fulfil your application needs. Our patented vial and cap design incorporates pressure-relief features which guarantee safe operation with the high pressure typically developed during thermostating. Ordinary vials and caps without these safety features may burst. All of our headspace vials have a greater wall thickness and round base which enables them to withstand pressure up to 60 psig. Low-volume sampling can be achieved by using a 6 mL vial and vial adapter. All PerkinElmer headspace vials are manufactured to specific tolerances that are guaranteed for fit and performance.



### Headspace Crimp Top Vials

Round bottomed vials designed for use with PerkinElmer headspace instruments.

| Vial Volume | Dimensions (OD x Height) (mm) | Description                                                   | Pkg. | Part No.        |
|-------------|-------------------------------|---------------------------------------------------------------|------|-----------------|
| 6 mL        | 21.75 x 38                    | Clear glass vial (requires Part No. <b>N6120110</b> for use)* | 125  | <b>N9302134</b> |
| 6 mL        | —                             | Low volume adaptor for 6 mL vial (Part No. <b>N9302134</b> )* | 10   | <b>N6120110</b> |
| 10 mL       | 21.75 x 46                    | Clear glass vial (requires Part No. <b>N6120111</b> for use)  | 100  | <b>N6356478</b> |
| 10 mL       | —                             | Low volume adapter for 10 mL vial (Part No. <b>N6356478</b> ) | 10   | <b>N6120111</b> |
| 20 mL       | 23 x 75.5                     | Clear glass vial (no logo)                                    | 1000 | <b>N9306216</b> |
| 20 mL       | 23 x 75.5                     | Clear glass vial with 'P' logo                                | 100  | <b>N9306079</b> |
| 20 mL       | 23 x 75.5                     | Clear glass vial with write on patch and fill lines           | 100  | <b>N9303349</b> |
| 20 mL       | 23 x 75.5                     | Clear glass vial with write on patch and fill lines           | 1000 | <b>N9303348</b> |
| 22 mL       | 23 x 75.5                     | Clear glass vial, with 'P' logo                               | 1000 | <b>B0104236</b> |

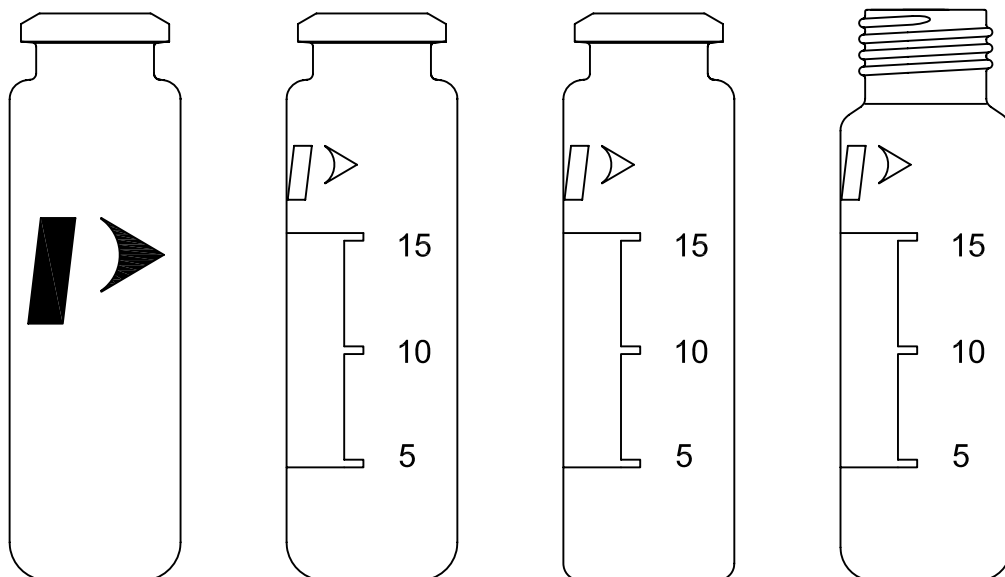
\*Not compatible with TurboMatrix HS 110 headspace sampler



### Headspace Screw Top Vials

Round bottomed vials designed for use with PerkinElmer headspace instruments.

| Vial Volume | Dimensions (OD x Height)<br>(mm) | Description                                         | Pkg. | Part No.        |
|-------------|----------------------------------|-----------------------------------------------------|------|-----------------|
| 10 mL       | 23 x 46                          | Clear glass vial, no adaptor                        | 100  | <b>N6356479</b> |
| 20 mL       | 23 x 75.5                        | Clear glass vial with 'P' logo                      | 100  | <b>N9306075</b> |
| 20 mL       | 23 x 75.5                        | Clear glass vial with 'P' logo                      | 1000 | <b>N9306078</b> |
| 20 mL       | 23 x 75.5                        | Clear glass vial with write on patch and fill lines | 100  | <b>N9306240</b> |
| 20 mL       | 23 x 75.5                        | Clear glass vial with write on patch and fill lines | 1000 | <b>N9306241</b> |



### CTC Headspace Vials

| Vial Volume | Vial Closure Type | Dimensions (OD x Height)<br>(mm) | Description                                                         | Pkg. | Part No.          |
|-------------|-------------------|----------------------------------|---------------------------------------------------------------------|------|-------------------|
| 20 mL       | Crimp             | 22.6 x 75.5                      | Clear glass vial with 'P' logo (radius bottom)                      | 100  | <b>N6356471</b>   |
| 20 mL       | Crimp             | 22.6 x 75.5                      | Clear glass vial with write on patch and fill lines (radius bottom) | 100  | <b>N6356472</b>   |
| 20 mL       | Crimp             | 22.6 x 75.5                      | Clear glass vial with write on patch and fill lines (radius bottom) | 1000 | <b>N9303351*</b>  |
| 20 mL       | Crimp             | 22.6 x 75.5                      | Clear glass vial with write on patch and fill lines (flat bottom)   | 1000 | <b>N9303352**</b> |
| 20 mL       | Screw             | 22.6 x 75.5                      | Clear glass vial with write on patch and fill lines (radius bottom) | 1000 | <b>N9306242</b>   |

\*Also suitable for Shimadzu, Tekmar and Varian

\*\* Also suitable for Agilent

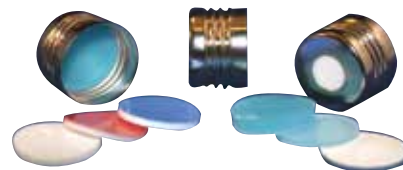
## Headspace Caps and Septa

Choose the right septa for your analysis. Although a wide variety of septa is available, chemical compatibility and temperature are the most critical to the analysis. Temperature applies not only to the vial, but also to the temperature of the instrument's needle used for pressurization and sample transfer, which is heated to prevent condensation. A needle temperature higher than the vial temperature setting can decompose the septum material. PTFE coated silicone and aluminum-coated silicone offer the highest temperature operating limits. (See Septa Recommended Chart for more details.)



### Pre-Assembled Aluminum Crimp Caps and Septa

| Septa Type                                                            | Aluminum Caps (Pre-Assembled)          | Crimp Top<br>Part No. Pkg. 100 | Crimp Top<br>Part No. Pkg. 1000 |
|-----------------------------------------------------------------------|----------------------------------------|--------------------------------|---------------------------------|
| Butyl (red)                                                           | Aluminum Cap, Star Spring and Septa    | N9304143                       | N1010070                        |
| Butyl (gray)                                                          | Aluminum Cap, Star Spring and Septa    | N9306269                       | N9306268                        |
| PTFE/Butyl (red)                                                      | Aluminum Cap, Star Spring and Septa    | N9304144                       | B4000025                        |
| PTFE/Butyl (gray)                                                     | Aluminum Cap, Star Spring and Septa    | N9306265                       | N9306264                        |
| PTFE/Butyl (gray)                                                     | Aluminum Cap                           |                                | N9302981                        |
| PTFE/Butyl (Pharma Fix Septa)                                         | Aluminum Cap                           | N9306224                       |                                 |
| PTFE/Red Rubber (red)                                                 | Aluminum Cap, Star Spring and Septa    | N9304147                       | N9302978                        |
| PTFE/Silicone (white)                                                 | Aluminum Cap, Star Spring and Septa    | N9304146                       | B4000022                        |
| PTFE/Silicone (white) Low Bleed                                       | Aluminum, Skived Pressure Relief       |                                | N9302975                        |
| PTFE/Silicone (white) Low Bleed                                       | Aluminum, Skived (non-Pressure Relief) |                                | N9302977                        |
| PTFE/Silicone (natural) Low Bleed                                     | Aluminum, Skived (non-Pressure Relief) |                                | N9302976                        |
| Aluminum/Silicone                                                     | Aluminum Cap, Star Spring and Septa    | N9304145                       | B4000028                        |
| <b>NEW</b> Ultra Low Bleed PTFE/Silicone (blue/white)<br>1.5 mm thick | Gold Aluminium Cap                     | N9304183                       | N9304184                        |



## Pre-Assembled Magnetic Crimp and Screw Caps and Septa

| Septa Type                                                         | Closure | Magnetic Caps (Pre-Assembled) | Part No. Pkg. 100 | Part No. Pkg. 1000 |
|--------------------------------------------------------------------|---------|-------------------------------|-------------------|--------------------|
| Butyl (gray)                                                       | Crimp   | Steel Magnetic Cap            | <b>N6356561</b>   |                    |
| PTFE/Butyl (red), 3.0 mm thick                                     | Screw   | Steel Magnetic Cap            | <b>N9306076</b>   |                    |
| PTFE/Butyl (red), 1.5 mm thick                                     | Crimp   | Steel Magnetic Cap            | <b>N6356560</b>   |                    |
| PTFE/Butyl (red), 1.5 mm thick                                     | Screw   | Steel Magnetic Cap            | <b>N6356477</b>   |                    |
| PTFE/Butyl (blue)                                                  | Crimp   | Bi-Metal Magnetic Cap         | <b>N6356565</b>   |                    |
| PTFE/Butyl (Pharma Fix Septa)                                      | Crimp   | Steel Magnetic Cap            | <b>N6356562</b>   |                    |
| PTFE/Silicone (red)                                                | Screw   | Steel Magnetic Cap            | <b>N6356474</b>   |                    |
| PTFE/Silicone (blue/white) 0.060 in. thick                         | Screw   | Steel Magnetic Cap            | <b>N6356476</b>   |                    |
| PTFE/Silicone (white)                                              | Screw   | Steel Magnetic Cap            | <b>N9306077</b>   |                    |
| PTFE/Silicone (natural)                                            | Crimp   | Steel Magnetic Cap            | <b>N6356558</b>   |                    |
| PTFE/Silicone (blue)                                               | Crimp   | Steel Magnetic Cap            | <b>N6356559</b>   |                    |
| PTFE/Silicone (blue)                                               | Screw   | Steel Magnetic Cap            | <b>N6356475</b>   |                    |
| PTFE/Silicone (blue)                                               | Crimp   | SPME Liner Steel Magnetic Cap | <b>N6356564</b>   |                    |
| PTFE/Silicone (blue)                                               | Crimp   | Bi-Metal Magnetic Cap         | <b>N6356566</b>   |                    |
| Aluminum/Silicone                                                  | Crimp   | Steel Magnetic Cap            | <b>N6356563</b>   |                    |
| <b>NEW</b> Ultra Low Bleed PTFE/Silicone (blue/white) 1.5 mm thick | Crimp   | Bi-Metal Cap                  | <b>N9304181</b>   | <b>N9304182</b>    |
| <b>NEW</b> Ultra Low Bleed PTFE/Silicone (blue/white) 1.5 mm thick | Screw   | Aluminium Magnetic Cap        | <b>N9304175</b>   | <b>N9304176</b>    |
| <b>NEW</b> Ultra Low Bleed PTFE/Silicone (red/white) 1.3 mm thick  | Screw   | Aluminium Magnetic Cap        | <b>N9304177</b>   | <b>N9304178</b>    |
| <b>NEW</b> Ultra Low Bleed PTFE/Silicone (white/blue) 1.3 mm thick | Screw   | Aluminium Magnetic Cap        | <b>N9304179</b>   | <b>N9304180</b>    |

## Un-Assembled Aluminum Crimp Caps and Septa

| Septa Type            | Aluminum Caps (Un-Assembled)        | Crimp Top<br>Part No. Pkg. 100 | Crimp Top<br>Part No. Pkg. 1000 |
|-----------------------|-------------------------------------|--------------------------------|---------------------------------|
| Butyl (red)           | Aluminum Cap, Star Spring and Septa | <b>B0159356</b>                | <b>B0159357</b>                 |
| Butyl (gray)          | Aluminum Cap, Star Spring and Septa | <b>N9306270</b>                | <b>N9306271</b>                 |
| Butyl (gray) Stopper  | Aluminum Cap (Ridged)               |                                | <b>N9303350</b>                 |
| Butyl (gray) Stopper  | Aluminum Cap                        |                                | <b>B0110728</b>                 |
| PTFE/Butyl (red)      | Aluminum Cap, Star Spring and Septa | <b>B0104239</b>                | <b>B0104240</b>                 |
| PTFE/Butyl (gray)     | Aluminum Cap, Star Spring and Septa | <b>N9306266</b>                | <b>N9306267</b>                 |
| PTFE/Red Rubber (red) | Aluminum Cap, Star Spring and Septa | <b>N9302979</b>                | <b>N9302980</b>                 |
| PTFE/Silicone (white) | Aluminum Cap, Star Spring and Septa | <b>B0104241</b>                | <b>B0104242</b>                 |
| Aluminum/Silicone     | Aluminum Cap, Star Spring and Septa | <b>B0104243</b>                | <b>B0104244</b>                 |
|                       | Aluminum Cap                        | <b>B0099814</b>                | <b>N9302969</b>                 |

# Headspace Vial, Cap and Septa Convenience Kits



PerkinElmer understands your challenges and offers a variety of kits so that you can easily order and restock your laboratory supplies.

## Crimp Top

| Septa Type              | Cap Type                                         | Vial Type                                                                    | Part No. Pkg. 100 | Part No. Pkg. 500 |
|-------------------------|--------------------------------------------------|------------------------------------------------------------------------------|-------------------|-------------------|
| Butyl (red)             | Aluminum Cap, Star Spring and Septa              | 20 mL Crimp Top Clear Glass with Write on Patch and Fill Lines               | <b>N9303990</b>   |                   |
| Butyl (gray)            | Aluminum Cap, Star Spring and Septa              | 20 mL Crimp Top Clear Glass with Write on Patch and Fill Lines               | <b>N9306269</b>   |                   |
| PTFE/Butyl (red)        | Aluminum Cap, Star Spring and Septa              | 20 mL Crimp Top Clear Glass with Write on Patch and Fill Lines               | <b>N9303991</b>   |                   |
| PTFE/Butyl (gray)       | Aluminum Cap, Star Spring and Septa              | 20 mL Crimp Top Clear Glass with Write on Patch and Fill Lines               | <b>N9306265</b>   |                   |
| PTFE/Silicone (natural) | Aluminum, Skived Pressure Relief (extreme bleed) | 20 mL Crimp Top Clear Glass with Write-on Patch and Fill Lines (Flat Bottom) |                   | <b>N9300901</b>   |
| PTFE/Silicone (white)   | Aluminum, Skived Pressure Relief (ultra bleed)   | 20 mL Crimp Top Clear Glass with Write-on Patch and Fill Lines (Flat Bottom) |                   | <b>N9300902</b>   |
| PTFE/Silicone (white)   | Aluminum, Skived (ultra bleed)                   | 20 mL Clear Glass with Write-on Patch and Fill Lines (Flat Bottom)           |                   | <b>N9300903</b>   |
| PTFE/Silicone (white)   | Aluminum Cap, Star Spring and Septa              | 20 mL Crimp Top Clear Glass with Write on Patch and Fill Lines               | <b>N9303992</b>   |                   |
| Aluminum/Silicone       | Aluminum Cap, Star Spring and Septa              | 20 mL Crimp Top Clear Glass with Write on Patch and Fill Lines               | <b>N9303993</b>   |                   |

## Screw Top

| Septa Type    | Cap Type                              | Vial Type                                   | Part No. Pkg. 100 |
|---------------|---------------------------------------|---------------------------------------------|-------------------|
| PTFE/Silicone | Open Top Gray Polypropylene Screw Cap | 40 mL Screw Top Clear Glass (24 mm x 98 mm) | <b>N6352030</b>   |
| PTFE/Silicone | Open Top Gray Polypropylene Screw Cap | 40 mL Screw Top Amber Glass (24 mm x 98 mm) | <b>N6352031</b>   |
| PTFE/Silicone | —                                     | —                                           | <b>N6352032*</b>  |
| —             | Open Top Gray Polypropylene Screw Cap | —                                           | <b>N6352033*</b>  |

\* N6352032 and N6352033 are only available in pkg. 72. N6352032 is septa only. N6352033 is cap only.

# Headspace Starter Kits

We offer a variety of headspace consumables so you can evaluate different types of septa and vials for your sampling requirements.

| Kits Include:                                                            | Part No.        | Headspace Starter Kit 500 | Headspace Starter Kit 100 | Headspace Mini Starter Kit | Headspace Mini Starter Kit 1000 |
|--------------------------------------------------------------------------|-----------------|---------------------------|---------------------------|----------------------------|---------------------------------|
|                                                                          |                 | Part No. B0505601         | Part No. N6710195         | Part No. N6710197          | Part No. N6710198               |
| 20 mm Hand Crimper                                                       | <b>N9302785</b> | 1                         | 1                         | 1                          | 1*                              |
| 20 mL Clear Glass Crimp Top Vials                                        | <b>N9306079</b> | 500                       | 500                       | 100                        | 1000                            |
| PTFE/Butyl (red) Septa with Pre-Assembled Aluminum Crimp Caps            | <b>B0104239</b> | 100                       | 100                       | 100                        |                                 |
| PTFE/Silicone (white) Septa with Pre-Assembled Aluminum Crimp Caps       | <b>B0104241</b> | 100                       | 100                       | 100                        | 1000                            |
| Aluminum/Silicone Septa with Pre-Assembled Aluminum Crimp Caps           | <b>B0104243</b> | 100                       | 100                       | 100                        |                                 |
| 20 mL Clear Glass Screw Top Vials                                        | <b>N9306075</b> | 500                       | 100                       | 100                        |                                 |
| PTFE/Butyl (red) Septa with Steel Magnetic Screw Caps                    | <b>N9306076</b> | 100                       | 100                       | 100                        |                                 |
| PTFE/Silicone (white) Septa with Steel Magnetic Screw Caps               | <b>N9306077</b> | 100                       | 100                       | 100                        |                                 |
| Needle Seal Assemblies                                                   | <b>B0500833</b> | 2                         | 2                         | 2                          |                                 |
| O-Rings                                                                  | <b>B0198110</b> | 10                        | 10                        | 10                         |                                 |
| Pressure Gauge with Needle for Vials                                     | <b>B0501377</b> | 1                         | 1                         | 1                          |                                 |
| *Static Headspace GC Theory and Practice' book by B. Kolb and L.S. Ettre | <b>N1011210</b> | 1                         | 1                         |                            |                                 |

\* This kit includes an Ergonomic Hand Crimper

# Crimpers: Electronic, Handheld and Benchtop

## Crimping Tools and Vial Accessories

Whatever your need may be, PerkinElmer offers a wide range of crimping tools for your convenience. Our universal voltage, precision control, power crimpers with adjustable settings are designed to deliver hundreds of crimps on a single battery charge. The tools are ergonomically designed to reduce strain associated with the repetitive actions of using a blocky metal manual crimping tool.



## Headspace Crimper and Decapper Tools

| Description                              | Qty. | Part No. |
|------------------------------------------|------|----------|
| Benchtop Crimper                         | 1    | N6621006 |
| Benchtop Crimper Jaws – 20 mm            | 1    | N6621009 |
| Electronic Hand Crimper – 20 mm          | 1    | N9304501 |
| Electronic Hand Decapper – 20 mm         | 1    | N9304503 |
| Manual Hand Crimper – 20 mm              | 1    | N9302785 |
| Manual Hand Crimper (Ergonomic) – 20 mm  | 1    | N6621037 |
| Manual Hand Decapper – 20 mm             | 1    | N9301270 |
| Manual Hand Decapper (Ergonomic) – 20 mm | 1    | N6621038 |



## Vial Racks

| Description                        | Qty. | Part No. |
|------------------------------------|------|----------|
| 11 mm Vial Rack – 50 Vial Capacity | 1    | N9301303 |
| 20 mm Vial Rack – 36 Vial Capacity | 1    | N9301304 |

## Autosampler Crimper and Decapper Tools

| Description                              | Qty. | Part No. |
|------------------------------------------|------|----------|
| Benchtop Crimper                         | 1    | N6621006 |
| Benchtop Crimper Jaws – 11 mm            | 1    | N6621008 |
| Electronic Hand Crimper – 11 mm          | 1    | N9304500 |
| Electronic Hand Decapper – 11 mm         | 1    | N9304502 |
| Manual Hand Crimper – 8 mm               | 1    | N9306127 |
| Manual Hand Crimper – 11 mm              | 1    | 00090699 |
| Manual Hand Crimper (Ergonomic) – 11 mm  | 1    | N6621035 |
| Manual Hand Decapper – 11 mm             | 1    | N9301390 |
| Manual Hand Decapper (Ergonomic) – 11 mm | 1    | N6621036 |

## High Powered Crimpers and Decappers

**NEW**

The high powered crimper and decapper is an essential laboratory accessory for any high through put environment. Realise the benefits of not only fast and accurate crimping or decapping, but also the ultimate tool in flexibility with interchangeable jaw sets. Now in a single unit you can crimp and decap standard analytical vials and headspace vials. Changing the jaws, either size or function, takes a matter of just seconds.



High Powered Crimper with Jaw Set

| Description                | Qty. | Part No. |
|----------------------------|------|----------|
| High powered crimping tool | 1    | N9304510 |
| 20 mm crimper jaw set      | 1    | N9304511 |
| 20 mm decapper jaw set     | 1    | N9304512 |
| 11 mm crimper jaw set      | 1    | N9304513 |
| 11 mm decapper jaw set     | 1    | N9304514 |
| Base and mounting kit      | 1    | N9304515 |

## LC Columns

PerkinElmer offers a wide selection of superior quality products designed to work with your PerkinElmer instruments. Our precision designed products deliver the peace of mind that comes from knowing that you'll get the results you need.

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## Brownlee SPP HPLC and UHPLC Columns

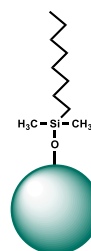
Brownlee SPP columns produce sharper peaks and faster separation results; made possible by their breakthrough particle design and size. Brownlee SPP columns use 2.7  $\mu\text{m}$  particles comprised of a thin outer shell of high-quality porous silica fused to a solid inner core.



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## Brownlee Spheri Columns

The Brownlee Spheri line of columns is based on a small-pore (80 Å) silica-based sorbent for optimized for separating small molecules. The Spheri-5 reverse phase C18 type sorbents are available in a monofunctional comb-type (RP-18) and a polyfunctional loop-type (ODS) which provide slight differences in selectivity.



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## Brownlee Aquapore Columns

Essential items to keep your pumps running at maximum efficiency; seals, pistons and check valves.



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# Selecting The Right Column

Having the right stationary phase for your separation is the first step in selecting the appropriate column. This should be based on sample solubility and on chemical differences among the sample compounds.

The majority of HPLC analyses are performed in reversed-phase mode, due to the fact that the analytes of interest can be dissolved in water, or mixtures of water and a polar organic solvent such as methanol or acetonitrile.

In normal phase separations, the mobile phase is less polar than the stationary phase. Cyano phases are commonly used in either reversed-phase or normal-phase mode. A stationary phase incorporating both polar and nonpolar functionality can be used in either reversed-phase or normal-phase mode.

## Modes of Separation

**Reversed-Phase Chromatography (RPC)** is the most popular HPLC mode and is used in 60% – 80% of all applications. In RPC, hydrophobic groups (C18, C8, or C4) bonded to a silica support are used together with a mobile phase of water and organic solvent (e.g. methanol, acetonitrile).

**Polar Phase (Normal Phase) Chromatography (NPC)** uses a polar stationary phase (unbonded silica, bonded amino or cyano group) together with a non-polar mobile phase (e.g., hexane). NPC is useful for functional group analysis, isomeric separations, purification of organics, and sample cleanup.

**Ion-Exchange Chromatography (IEC)** utilizes bonded ionic groups to separate ionic analytes. Retention is based on the affinity of various analyte ions for the stationary phase and various mobile phase parameters (e.g., pH, ionic strength).

## Column Hardware

The Brownlee columns provide numerous options for HPLC analysis, spanning a wide range of column dimensions. Two main formats are used: conventional columns and cartridge columns.

The conventional columns, employing standard compression end fittings, are compatible with all HPLC instrumentation. The cartridge column format requires an MPLC holder in addition to the cartridge column. There is an option to directly connect the NewGuard cartridges to cartridge column, reducing the overall dead volume. NewGuard cartridges can still be employed with conventional hardware by using a stand-alone holder.

Conventional columns do not require MPLC holders



Brownlee MPLC cartridges and holders



NewGuard cartridge coupled directly to 220 mm cartridge column



NewGuard cartridge connected externally to a conventional column



Column hardware formats

### Features and Benefits

- End fittings compatible with HPLC systems from any vendor
- Use with NewGuard system for even longer column life
- Each column is individually tested
- ISO-9001 certified process ensures the highest quality

# PerkinElmer LC Column Selection Overview

| Brand         | Phase                   | Particle size (µm) | Pore size (Å) | Carbon % | End Cap | Application                                                                                                                            | USP Code |
|---------------|-------------------------|--------------------|---------------|----------|---------|----------------------------------------------------------------------------------------------------------------------------------------|----------|
| Analytical    | C18                     | 3, 5               | 110           | 13       | Yes     | All-purpose reverse phase HPLC column, similar to Hypersil ODS                                                                         | L1       |
| Analytical    | Phenyl                  | 5                  | 110           | 6        | Yes     | All-purpose reverse phase HPLC column, similar to Hypersil phenyl                                                                      | L11      |
| Analytical    | Silica                  | 5                  | 110           | —        | —       | Normal phase separations of polar compounds similar to Hypersil silica                                                                 | L3       |
| Analytical DB | C18                     | 1.9, 3, 5          | 140           | 11       | Yes     | General purpose phase for acidic to slightly basic compounds                                                                           | L1       |
| Analytical DB | Aq C18                  | 1.9, 3, 5          | 140           | 6        | Yes     | A more well balanced retention profile for polar and non polar compounds                                                               | L1       |
| Analytical DB | PAH                     | 1.9                | 140           | —        | Yes     | Specifically designed for poly aromatic hydrocarbons (PAHs)                                                                            | —        |
| Aquapore      | AX-300 (anion exchange) | 7                  | 300           | —        | —       | Silica based support for larger anionic compounds                                                                                      | L14      |
| Aquapore      | RP-300 (C8)             | 7                  | 300           | 5        | Yes     | Suitable for the separation of large biomolecules such as peptides and proteins                                                        | L7       |
| Aquapore      | BU-300 (C4)             | 7                  | 300           | 3        | Yes     | Suitable for the separation of large biomolecules such as peptides and proteins                                                        | L26      |
| Aquapore      | Octyl (C8)              | 7, 20              | 300           | 5        | Yes     | Suitable for the separation of large biomolecules such as peptides and proteins                                                        | L7       |
| Aquapore      | ODS (C18)               | 7, 20              | 300           | 10       | Yes     | Suitable for the separation of large biomolecules such as peptides and proteins                                                        | L1       |
| Spheri-5      | ODS                     | 5                  | 80            | 14       | Yes     | Polyfunctional phase which provides slight differences in selectivity                                                                  | L1       |
| Spheri-5, -10 | RP-18                   | 5, 10              | 80            | 11       | Yes     | Monofunctional bonded phase for general purpose RP small molecule applications                                                         | L1       |
| Spheri-5, -10 | RP-8                    | 5, 10              | 80            | 6        | Yes     | Monofunctional bonded phase RP for more basic small molecule applications                                                              | L7       |
| Spheri-5      | Cyano                   | 5                  | 80            | 4        | No      | Offering alternative selectivity in RP to alkyl phases                                                                                 | L10      |
| SPP           | C18                     | 2.7                | 90            | 8        | Yes     | High purity general Purpose C18 phase for RP separations                                                                               | L1       |
| SPP           | C8                      | 2.7                | 90            | —        | Yes     | Less retentive high purity C8 phase for RP separations                                                                                 | L7       |
| SPP           | HILIC                   | 2.7                | 90            | —        | No      | High purity silica column for NP and HILIC applications                                                                                | L3       |
| SPP           | Peptide ES C18          | 2.7                | 160           | —        | No      | Sterically protected ligand provides greater stability at low pH where most peptide separations are performed                          | L1       |
| SPP           | PhenylHexyl 2.7         | 2.7                | 90            | —        | Yes     | Alternative selectivity to alkyl bonded phases, recommended for aromatic groups. Compatible with highly aqueous eluents                |          |
| SPP           | RP-Amide                | 2.7                | 90            |          | Yes     | Shows significant increased retention and selectivity for acids. Excellent peak shape for bases, zwitterions and other polar compounds |          |
| Pecosphere    | C18                     | 3,5                | 80            | 11       | Yes     | RP column for fast separation of small compounds                                                                                       | L1       |
| Pecosphere    | RA C18                  | 3,5                | 80            | 12       | Yes     | RP sorbent geared towards the fast separation of basic compounds/pharmaceuticals                                                       | L1       |
| Pecosphere    | RA C8                   | 3,5                | 80            | 5        | Yes     | RP sorbent geared towards the fast separation for increasingly basic compounds                                                         | L7       |
| Pecosphere    | C18 scavenger           | 10                 | 80            | 11       | Yes     |                                                                                                                                        | L1       |
| Polypore      | CA                      | 10                 | microporous   | —        | —       | For the analysis of sugars and organic acids                                                                                           | L19      |
| Polypore      | H                       | 10                 | microporous   | —        | —       | For the analysis of sugars and organic acids                                                                                           | L17      |
| Validated     | C18                     | 3,5                | 100           | 20       | Yes     | General purpose phase with moderate to high retention for hydrophobic compounds                                                        | L1       |
| Validated     | Aqueous C18             | 3,5                | 100           | 15       | Yes     | Compatible and reproducible with a variety of mobile phases, including 100% aqueous. Ideal for LCMS screening                          | L1       |
| Validated     | C8                      | 5                  | 100           | 20       | Yes     | General purpose phase for slightly acidic to slightly basic compounds                                                                  | L7       |
| Validated     | Phenyl                  | 5                  | 100           | 15       | Yes     | Offers alternate selectivity to straight chain hydrocarbon phases                                                                      | L11      |

\* Maximum pressure 9,000 psi for all columns. All particle sizes are 2.7 µm \*\*Not end-capped. All others end-capped

# Brownlee Analytical Columns

Brownlee Analytical columns are built on 110 Å pore size Type A silica in 3 µm and 5 µm particle sizes that is equivalent to the classic Hypersil® silica. These columns provide excellent peak shape for acidic and neutral analytes but are generally not recommended for basic analytes. They are available in column lengths from 5 – 250 mm in 2.1 and 4.6 mm ID.

## Features and Benefits

- Type A, 110 Å pore size silica equivalent to classic Hypersil® silica
- Good choice when analyzing neutral and acidic analytes

## Material Characteristics

| Phase*            | Particle Sizes (µm) | Pore Size (Å) | Carbon Load | End Capping | pH Stability | Temp. Limit (°C) | USP Code |
|-------------------|---------------------|---------------|-------------|-------------|--------------|------------------|----------|
| Analytical C18    | 3.0, 5.0            | 110           | 13%         | Yes         | 2.5 – 7.5    | 80               | L1       |
| Analytical Phenyl | 5                   | 110           | 6%          | Yes         | 2.5 – 7.5    | 80               | L11      |
| Analytical Silica | 5                   | 110           | –           | No          | 2.5 – 7.5    | 80               | L3       |

\* Proprietary

## Brownlee Analytical C18

Excellent choice for a general purpose C18 column with intermediate carbon loading and surface area. These columns provide reliable performance and excellent peak symmetry for a broad range of acidic and neutral hydrophobic compounds.

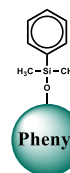
| Particle Size (µm) | Length (mm) | ID (mm) | Part No. |
|--------------------|-------------|---------|----------|
| 3.0                | 50          | 4.6     | N9303510 |
| 3.0                | 100         | 4.6     | N9303507 |
| 3.0                | 150         | 4.6     | N9303508 |
| 5.0                | 100         | 4.0     | N9303511 |
| 5.0                | 100         | 4.6     | N9303512 |
| 5.0                | 150         | 4.6     | N9303513 |
| 5.0                | 250         | 4.6     | N9303514 |



## Brownlee Analytical Phenyl

The Analytical Phenyl offer alternative selectivity to the traditional straight alkyl chain phases, especially for aromatic compounds due to *pi-pi* interactions with the phenyl phase.

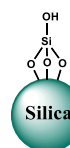
| Particle Size (µm) | Length (mm) | ID (mm) | Part No. |
|--------------------|-------------|---------|----------|
| 5.0                | 150         | 4.6     | N9303524 |



## Brownlee Analytical Silica

Analytical silica columns are simply bare silica particles for use in normal phase separations recommended for analysis of highly polar compounds.

| Particle Size (µm) | Length (mm) | ID (mm) | Part No. |
|--------------------|-------------|---------|----------|
| 5.0                | 150         | 4.6     | N9303525 |
| 5.0                | 200         | 4.6     | N9303526 |



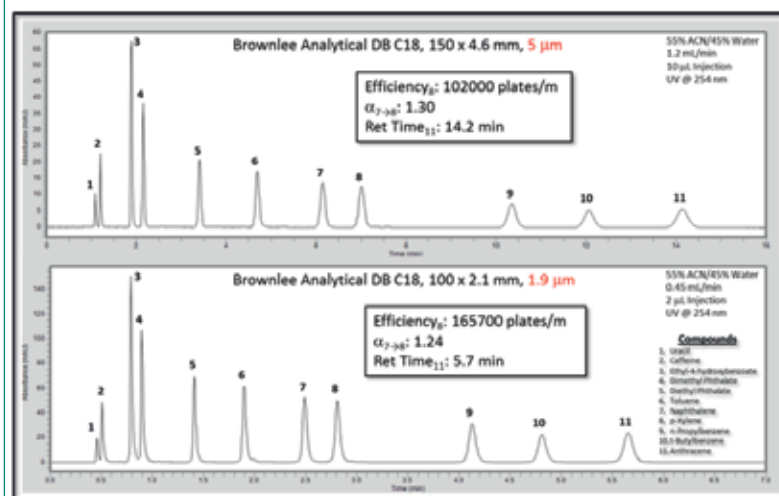
# Brownlee Analytical DB Columns for HPLC and UHPLC

Brownlee Analytical DB columns are moderately retentive HPLC and sub-2  $\mu\text{m}$  UHPLC columns built on a foundation of high purity, base-deactivated silica that is optimized for UHPLC performance. These columns are available in 3 and 5  $\mu\text{m}$  HPLC particle sizes, as well as a 1.9  $\mu\text{m}$  UHPLC particle size. The silica manufacturing and phase bonding processes are identical for all particle sizes in this series resulting in method scalability from HPLC (3 and 5  $\mu\text{m}$ ) to UHPLC (1.9  $\mu\text{m}$ ), or vice versa. In addition the larger 140 Å pore size allows analysis of a range of compounds from small molecules to short peptides while the base deactivation makes these columns appropriate for the analysis of acidic, neutral and basic compounds.

## Features and Benefits

- Conventional and sub-2  $\mu\text{m}$  particles sizes for HPLC and UHPLC
- All silica prepared by the same process for true HPLC to UHPLC scalability

Increase efficiency and shorten run times while maintaining selectivity with 1.9  $\mu\text{m}$  Brownlee Analytical DB UHPLC columns.



## Material Characteristics

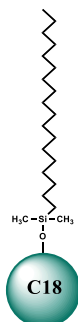
| Phase*               | Particle Sizes ( $\mu\text{m}$ ) | Pore Size (Å) | Carbon Load | End Capping | pH Stability | Temp. Limit ( $^{\circ}\text{C}$ ) | USP Code |
|----------------------|----------------------------------|---------------|-------------|-------------|--------------|------------------------------------|----------|
| Analytical DB C18    | 1.9, 3.0, 5.0                    | 140           | 11%         | Yes         | 2.5 – 8.0    | 80                                 | L1       |
| Analytical DB Aq C18 | 1.9, 3.0, 5.0                    | 140           | 6%          | *           | 2.5 – 8.0    | 80                                 | L1       |
| Analytical DB PAH    | 1.9                              | 140           | *           | Yes         | 2.5 – 8.0    | 80                                 |          |

\* Proprietary

### Brownlee Analytical DB C18

C18 is a good general purpose phase for the analysis of compounds ranging from acid to slightly basic.

| Particle Size (µm) | Length (mm) | ID (mm) | Part No.        |
|--------------------|-------------|---------|-----------------|
| 1.9                | 50          | 2.1     | <b>N9303853</b> |
| 1.9                | 100         | 2.1     | <b>N9303854</b> |
| 3.0                | 50          | 4.6     | <b>N9303862</b> |
| 3.0                | 100         | 4.6     | <b>N9303863</b> |
| 5.0                | 150         | 4.6     | <b>N9303865</b> |
| 5.0                | 250         | 4.6     | <b>N9303866</b> |

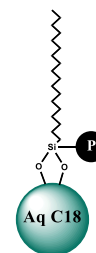


### Brownlee Analytical DB Aqueous C18

The Aqueous C18 contains a proprietary polar side chain functionally bonded C18 that provides a more well balanced retention profile for both polar and non-polar compounds than a traditional C18.

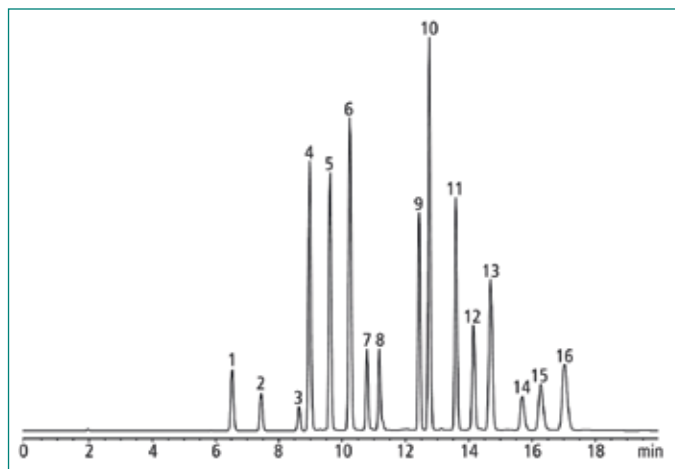
It provides both high reproducibility and compatibility with a wide variety of mobile phases including 100% aqueous mobile phases.

| Particle Size (µm) | Length (mm) | ID (mm) | Part No.        |
|--------------------|-------------|---------|-----------------|
| 1.9                | 50          | 2.1     | <b>N9303918</b> |
| 1.9                | 100         | 2.1     | <b>N9303919</b> |
| 3.0                | 50          | 4.6     | <b>N9303904</b> |
| 3.0                | 100         | 4.6     | <b>N9303905</b> |
| 5.0                | 150         | 4.6     | <b>N9303907</b> |
| 5.0                | 250         | 4.6     | <b>N9303908</b> |



### Brownlee Analytical DB PAH

The Analytical HRes PAH column was specifically developed for fast analysis of polycyclic aromatic hydrocarbons. The PAH stationary phase incorporates a proprietary specially bonded C18 that is shape selective that results in baseline resolution of all 16 priority PAHs in US EPA Method 610. The Analytical HRes PAH is capable of separating all 16 PAHs in under 18 minutes with a simple acetonitrile/water gradient.



#### Peak List Concentration (µg/mL)

|                   |     |                              |    |
|-------------------|-----|------------------------------|----|
| 1. naphthalene    | 100 | 9. benzo (a) anthracene      | 50 |
| 2. acenaphthylene | 100 | 10. chrysene                 | 50 |
| 3. acenaphthene   | 100 | 11. benzo (b) fluoranthene   | 50 |
| 4. fluorene       | 100 | 12. benzo (k) fluoranthene   | 50 |
| 5. phenanthrene   | 50  | 13. benzo (a) pyrene         | 50 |
| 6. anthracene     | 100 | 14. dibenzo (a,h) anthracene | 50 |
| 7. fluoranthene   | 50  | 15. benzo (ghi) perylene     | 50 |
| 8. pyrene         | 50  | 16. indeno (1,2,3-cd) pyrene | 50 |

| Particle Size (µm) | Length (mm) | ID (mm) | Part No.        |
|--------------------|-------------|---------|-----------------|
| 1.9                | 50          | 2.1     | <b>N9303995</b> |
| 1.9                | 100         | 2.1     | <b>N9303996</b> |

## Brownlee Aquapore Columns

Brownlee Aquapore columns are built on large pore (300 Å) silica for the analysis of large biomolecules such as peptides and proteins. Large pore stationary phases are required for the analysis of large molecules because the analytes need to penetrate the pores to improve retention and resolution. The RP-300 is a reverse-phase C8; AX-300 is a weak anion exchanger that is composed of a crosslinked polyethyleneimine phase bonded on the silica surface. The reverse-phase columns are also available in microbore (1.0 mm ID) for increased sensitivity and better compatibility with LC/MS interfaces.

### Features and Benefits

- Rugged, spherical silica particles with 300 Å pore size
- Excellent choice for separation of peptides, proteins and other large molecules

### Material Characteristics

| Phase*         | Particle Sizes (µm) | Pore Size (Å) | Carbon Load | End Capping | pH Stability | Temp. Limit (°C) | USP Code |
|----------------|---------------------|---------------|-------------|-------------|--------------|------------------|----------|
| AP RP-300 (C8) | 7                   | 300           | 5%          | Yes         | 2.5 – 8.0    | 60               | L7       |
| AP AX-300†     | 7                   | 300           | –           | –           | 2.0 – 8.0    | 60               | L14      |

\* AP = Aquapore; † AX = Weak Anion Exchange

| ID (mm) | Length (mm) | RP-300 (C8) Part No. | AX-300 Part No. |
|---------|-------------|----------------------|-----------------|
| 1.0     | 250         | <b>07120097</b>      |                 |
| 2.1     | 30          | <b>07110056</b>      | <b>07110074</b> |
| 2.1     | 100         | <b>07110058</b>      | <b>07110076</b> |
| 2.1     | 220         | <b>07110060</b>      |                 |
| 4.6     | 30          | <b>07110055</b>      | <b>07110073</b> |
| 4.6     | 100         | <b>07110057</b>      | <b>07110075</b> |
| 4.6     | 220         | <b>07110059</b>      | <b>07110077</b> |
| 4.6     | 250         | <b>07120033</b>      | <b>07120040</b> |

## Brownlee Aquapore Prep-10 Cartridge Columns

The Brownlee Prep-10 columns are 10 mm ID cartridges packed with 20 µm particle size, 300 Å pore size Aquapore® sorbents. These unique 250 mm cartridges incorporate a moveable inlet plug and filter which compensates for changes in bed volume with continued use. The typical capacity of the 250 mm cartridge is 50 mg to 1 g depending on the resolution and purity required. A separate column holder needs to be purchased in addition to the cartridge column.

### Material Characteristics

| Phase              | Particle Sizes (µm) | Pore Size (Å) | Carbon Load | End Capping | Surface Area (m <sup>2</sup> /g) | pH Stability | Temp. Limit (°C) | USP Code |
|--------------------|---------------------|---------------|-------------|-------------|----------------------------------|--------------|------------------|----------|
| Aquapore ODS (C18) | 20                  | 300           | 10%         | Yes         | 100                              | 2.5 – 8.0    | 60               | L1       |

| Phase               | Length (mm) | Particle Size (µm) | Qty. | 4.6 mm ID Part No. | Column Holder   |
|---------------------|-------------|--------------------|------|--------------------|-----------------|
| Aquapore Octyl (C8) | 250         | 20                 | Each | <b>07110166</b>    | <b>07150006</b> |
| Aquapore ODS (C18)  | 250         | 20                 | Each | <b>07110163</b>    | <b>07150006</b> |

# Brownlee Validated Columns

Brownlee Validated HPLC columns are built on high purity, Type B silica with inherently low silanol activity and very consistent performance from lot-to-lot. This series of columns represent the most choices of stationary phases of any of the column lines offered by PerkinElmer. These columns exhibit excellent peak shapes for a wide range of compounds and are the best choice for pharmaceutical applications that deal with many basic and multi-functional compounds.

## Features and Benefits

- Built on high purity, Type B silica for excellent peak shape for a wide range of compounds
- Recommended for pharmaceutical applications with basic and multi-functional compounds

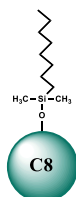
## Material Characteristics

| Phase            | Particle Sizes (µm) | Pore Size (Å) | Carbon Load | End Capping | pH Stability | Temp. Limit (°C) | USP Code |
|------------------|---------------------|---------------|-------------|-------------|--------------|------------------|----------|
| Validated C8     | 5.0                 | 100           | 12%         | Yes         | 2.5 – 8.0    | 80               | L7       |
| Validated C18    | 3.0, 5.0            | 100           | 20%         | Yes         | 2.5 – 8.0    | 80               | L1       |
| Validated Aq C18 | 3.0, 5.0            | 100           | 15%         | No          | 2.5 – 8.0    | 80               | L1       |
| Validated Phenyl | 3.0, 5.0            | 100           | 10%         | Yes         | 2.5 – 8.0    | 80               | L11      |

## Brownlee Validated C8

The Validated C8 is a reverse-phase alkyl that provide less hydrophobic retention but better peak shape for basic compounds than a traditional C18. Like C18, C8 is a good general purpose reverse phase that is suitable for a wide range of compounds from acidic to slightly basic.

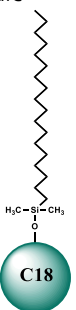
| Particle Size (µm) | Length (mm) | ID (mm) | Part No.        |
|--------------------|-------------|---------|-----------------|
| 5.0                | 100         | 4.6     | <b>N9303565</b> |
| 5.0                | 150         | 4.6     | <b>N9303567</b> |
| 5.0                | 250         | 4.6     | <b>N9303568</b> |



## Brownlee Validated C18

The Validated C18 is a good general purpose reverse-phase column with moderate to high retention for hydrophobic compounds. The high purity, Type B silica has low silanol activity resulting in excellent peak shapes even for basic analytes. This phase is more retentive than C8 and recommended for a wide range of analytes from acidic to slightly basic.

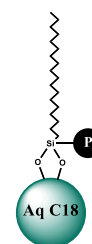
| Particle Size (µm) | Length (mm) | 2.1 mm ID Part No. | 4.6 mm ID Part No. |
|--------------------|-------------|--------------------|--------------------|
| 3.0                | 100         | <b>N9303551</b>    | <b>N9303552</b>    |
| 5.0                | 100         | <b>N9303553</b>    | <b>N9303554</b>    |
| 5.0                | 150         | <b>N9303556</b>    | <b>N9303558</b>    |
| 5.0                | 200         |                    | <b>N9303559</b>    |
| 5.0                | 250         | <b>N9303560</b>    | <b>N9303561</b>    |



## Brownlee Validated Aqueous C18

The Aqueous C18 contains a proprietary polar side chain functionally bonded C18 that provides a more well balanced retention profile for both polar and non-polar compounds than a traditional C18. This column can be used with a gradient to retain polar compounds that elute near the void time on a standard C18. The Aqueous C18 provides both high reproducibility and compatibility with a wide variety of mobile phases including 100% aqueous mobile phases. This is an excellent choice for the analysis of a wide variety of compounds by LC/MS screening.

| Particle Size (µm) | Length (mm) | 2.1 mm ID Part No. | 4.6 mm ID Part No. |
|--------------------|-------------|--------------------|--------------------|
| 3.0                | 50          | <b>N9303541</b>    | <b>N9303542</b>    |
| 3.0                | 100         | <b>N9303537</b>    | <b>N9303538</b>    |
| 3.0                | 150         | <b>N9303539</b>    |                    |
| 5.0                | 100         |                    | <b>N9303544</b>    |
| 5.0                | 150         | <b>N9303545</b>    | <b>N9303546</b>    |
| 5.0                | 250         |                    | <b>N9303549</b>    |



## Brownlee Validated Phenyl

The Validated Phenyl is a high purity, highly retentive, base-deactivated phase with alternate selectivity to straight chain hydrocarbon phases, especially for aromatic compounds.

| Particle Size (µm) | Length (mm) | 4.6 mm ID Part No. |
|--------------------|-------------|--------------------|
| 5.0                | 150         | <b>N9303606</b>    |
| 5.0                | 250         | <b>N9303607</b>    |



# Brownlee Spheri-5 and Spheri-10 Columns

The Brownlee Spheri line of columns is based on a small-pore (80 Å) silica-based sorbent for optimized for separating small molecules.

Spheri-5® columns are based on 5 µm particle size silica and Spheri-10® incorporates a 10 µm silica particle. The Spheri-5 reverse phase C18 type sorbents are available in a monofunctional comb-type (RP-18) and a polyfunctional loop-type (ODS) which provide slight differences in selectivity.

## Features and Benefits

- Small pore size (80 Å) designed for separating small molecules
- Reverse phase sorbents in 5 µm and 10 µm particles sizes and normal phase 5 µm particles

## Material Characteristics

| Phase*              | Particle Sizes (µm) | Pore Size (Å) | Carbon Load | End Capping | pH Stability | Temp. Limit (°C) | USP Code |
|---------------------|---------------------|---------------|-------------|-------------|--------------|------------------|----------|
| Spheri-5, -10 RP-8  | 5.0, 10.0           | 80            | 6%          | Yes         | 2.5 – 8.0    | 60               | L7       |
| Spheri-5, -10 RP-18 | 5.0, 10.0           | 80            | 11%         | Yes         | 2.5 – 8.0    | 60               | L1       |
| Spheri-5 ODS        | 5                   | 80            | 14%         | Yes         | 2.5 – 8.0    | 60               | L1       |
| Spheri-5 Cyano      | 5                   | 80            | 4%          | No          | 2.5 – 8.0    | 60               | L10      |

## Columns with Cartridge Column Hardware

| Phase*         | Length (mm) | Particle Size (µm) | Qty. | 2.1 mm ID Part No. | 4.6 mm ID Part No. | Column Holder Code* w/o Guard | Column Holder Code* w/ Guard |
|----------------|-------------|--------------------|------|--------------------|--------------------|-------------------------------|------------------------------|
| Spheri-5 RP-8  | 100         | 5                  | Each | 07110004           | 07110003           | 07150014                      | 07150016                     |
|                | 220         | 5                  | Each | 07110006           | 07110005           | 07150015                      | 07150017                     |
| Spheri-5 RP-18 | 100         | 5                  | Each | 07110016           | 07110015           | 07150014                      | 07150016                     |
|                | 220         | 5                  | Each | 07110018           | 07110017           | 07150015                      | 07150017                     |
| Spheri-5 ODS   | 100         | 5                  | Each | 07110022           | 07110021           | 07150014                      | 07150016                     |
|                | 220         | 5                  | Each | 07110024           | 07110023           | 07150015                      | 07150017                     |
| Spheri-5 Cyano | 100         | 5                  | Each | 07110046           | 07110045           | 07150014                      | 07150016                     |
|                | 220         | 5                  | Each | –                  | 07110047           | 07150015                      | 07150017                     |

## Columns with Conventional Column Hardware

All columns are 250 x 4.6 mm

| Phase                             | Particle Sizes (µm) | Carbon Load | End Capping | USP Code | Part No. |
|-----------------------------------|---------------------|-------------|-------------|----------|----------|
| Spheri-5 RP-8                     | 5                   | 6%          | Yes         | L7       | 07120012 |
| Spheri-5 RP-18 (monofunctional)   | 5                   | 11%         | Yes         | L1       | 07120016 |
| Spheri-10 RP-18                   | 10                  | 11%         | Yes         | L1       | 07120001 |
| Spheri-5 C18 ODS (Polyfunctional) | 5                   | 14%         | Yes         | L1       | 07120019 |
| Spheri-5 Silica                   | 5                   | –           | –           | L3       | 07120023 |



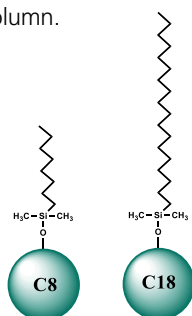
# Brownlee Pecosphere Cartridge Columns

PerkinElmer pioneered the development of Fast HPLC and introduced the popular 3  $\mu$ m particle size '3 x 3' Columns (33 mm x 4.6 mm) in the 1980s. The '3 x 3' columns are capable of very rapid analysis and still they are still very popular because of the economical price and reliable performance. The Pecosphere cartridges are also available 83 mm and 150 mm lengths for the separation of more complex mixtures.

They are packed with rugged, high purity silica in 3  $\mu$ m and 5  $\mu$ m, 80 Å pore size particles; with standard end-capping for the analysis of acidic and neutral analytes. A special end-capped Reduced Activity (RA) version that is especially suited for the analysis basic analytes. In addition the 10  $\mu$ m particles size C18 Scavenger cartridge designed to remove contaminants from the mobile phase when installed prior to the HPLC injector. These columns use cartridge style hardware – thus the associated column holder needs to be ordered with the column.

## Features and Benefits

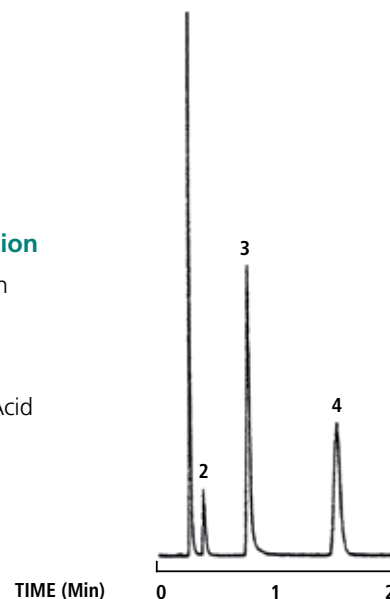
- The Pecosphere '3 x 3' column is the world's first fast HPLC column
- Reduced Activity C18 and C8 with low silanol activity for the analysis of basic compounds



## Analysis of an Analgesic Tablet Using Fast LC

### Peak Identification

1. Acetaminophen
2. Caffeine
3. Salicylamide
4. Acetylsalicylic Acid



### Chromatographic Conditions

| Column                                                                    | Detection    | Mobile Phase | Flow Rate  | Sample                          | Part No. |
|---------------------------------------------------------------------------|--------------|--------------|------------|---------------------------------|----------|
| Pecosphere 3 x 3 C18 (33 x 4.6 mm) CH <sub>3</sub> CN in H <sub>2</sub> O | UV at 240 nm | 0 – 15%      | 2.0 mL/min | 1 $\mu$ L of the tablet extract | 02580164 |

## Material Characteristics

| Phase*        | Particle Sizes ( $\mu$ m) | Pore Size (Å) | Carbon Load | Surface Area (M <sup>2</sup> /g) | End Capping | pH Stability | USP Code |
|---------------|---------------------------|---------------|-------------|----------------------------------|-------------|--------------|----------|
| C18           | 3.0, 5.0                  | 80            | 11%         | 170                              | Yes         | 2.0 – 8.0    | L1       |
| RA C8         | 3.0, 5.0                  | 80            | 5%          | 200                              | Yes         | 2.0 – 8.0    | L7       |
| RA C18        | 3.0, 5.0                  | 80            | 12%         | 200                              | Yes         | 2.0 – 8.0    | L1       |
| C18 Scavenger | 10                        | 80            | 11%         | 170                              | Yes         | 2.0 – 8.0    | L1       |

## Cartridge Columns and Hardware

| Phase                | Length (mm) | Particle Size | Qty. | 4.6 mm ID Part No. | Column Holder Part No. |
|----------------------|-------------|---------------|------|--------------------|------------------------|
| Aquapore Octyl (C18) | 33          | 3 $\mu$ m     | 5    | 02580164           | 07150028               |
|                      | 83          | 3 $\mu$ m     | 1    | 02580166           | 07150029               |
|                      | 150         | 5 $\mu$ m     | 1    | 02580169           | 07150030               |
| RA C18               | 33          | 3 $\mu$ m     | 5    | 02580195           | 07150028               |
|                      | 83          | 3 $\mu$ m     | 1    | 02580194           | 07150029               |
| RA C8                | 33          | 3 $\mu$ m     | 5    | 02580191           | 07150028               |
|                      | 83          | 3 $\mu$ m     | 1    | 02580192           | 07150029               |
| C18 Scavenger        | 33          | 10 $\mu$ m    | 5    | 02580202           | 07150028               |
| C18 Scavenger Kit*   | 33          | 10 $\mu$ m    | 1    | 02580204           | –                      |

\* Scavenger kit includes C18 cartridge (02580202) and holder (07150028)

# Brownlee Polypore Cartridge Columns

Brownlee Polypore® columns are 10 mm, microporous polymer based columns especially suited for the analysis of sugars and organic acids.

## Features and Benefits

- Available in calcium (CA) and hydrogen (H) counter ion forms
- For analysis of sugars and organic acids

## Material Characteristics

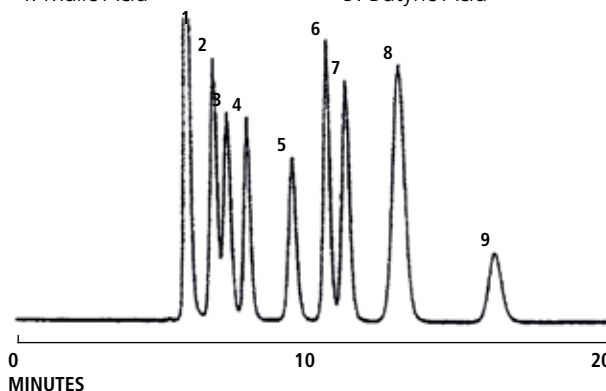
| Phase        | Particle Sizes (µm) | Pore Size   | pH Stability | Temp. Limit (°C) | USP Code |
|--------------|---------------------|-------------|--------------|------------------|----------|
| Polypore® CA | 10                  | Microporous | 1 – 14       | 90               | L19      |
| Polypore® H  | 10                  | Microporous | 1 – 14       | 90               | L17      |

| Phase        | Length (mm) | Particle Size (µm) | Qty. | 4.6 mm ID Part No. | Column Holder* |
|--------------|-------------|--------------------|------|--------------------|----------------|
| Polypore® H  | 30          | 10                 | 2    | 07110085           | 07150013       |
|              | 100         | 10                 | 1    | 07110087           | 07150014       |
|              | 220         | 10                 | 1    | 07110089           | 07150015       |
| Polypore® CA | 30          | 10                 | 2    | 07110091           | 07150013       |
|              | 100         | 10                 | 1    | 07110093           | 07150014       |
|              | 220         | 10                 | 1    | 07110095           | 07150015       |

## Organic Acids

### Peak Identification

- |                       |                  |
|-----------------------|------------------|
| 1. Oxalic Acid        | 5. Succinic Acid |
| 2. Citric Acid        | 6. Formic Acid   |
| 3. α-Ketogutaric Acid | 7. Acetic Acid   |
| 4. Malic Acid         | 8. Fumaric Acid  |
|                       | 9. Butyric Acid  |



### Chromatographic Conditions

| Column                       | Detection | Mobile Phase                          | Flow Rate   | Sample | Part No. |
|------------------------------|-----------|---------------------------------------|-------------|--------|----------|
| Polypore H (220 x 4.6 mm ID) | 210 nm    | 0.01 N H <sub>2</sub> SO <sub>4</sub> | 0.15 mL/min | 25 °C  | 07110089 |

# NewGuard Cartridges

NewGuard cartridges are small guard cartridges (15 mm x 3.2 mm ID) packed with 5 or 7  $\mu\text{m}$  sorbents. They help to prolong column life by eliminating particulates, contaminants, and strongly bound sample components; acting as replaceable disposable heads of your analytical column. There is negligible loss of efficiency and little effect on retention or resolution. NewGuards are available in a convenient 3-pack and can be coupled directly to any MPLC cartridge with a union (**07150018**), or any LC column using the stand alone holder (**07150001**).

## Features and Benefits

- Prolong column life by 2 to 5 times
- Protect your column from particulates and strongly bound sample components
- Optimized dimensions to prevent loss of resolution
- Easy coupling to MPLC cartridges or conventional columns
- Finger-tight seal to 7,000 psi using NewGuard holders
- Can be used for sample preconcentration (connected to sample injection loop)

| Description           | Size ( $\mu\text{m}$ ) | Shape     | Part No.        |
|-----------------------|------------------------|-----------|-----------------|
| Amino, Aquapore Amino | 7                      | Spherical | <b>07110098</b> |
| Anion, Aquapore Anion | 7                      | Spherical | <b>07110102</b> |
| RP-8, Aquapore Octyl  | 7                      | Spherical | <b>07110090</b> |
| RP-18, Aquapore ODS   | 7                      | Spherical | <b>07110092</b> |
| Validated C18         | 5                      | Spherical | <b>00402237</b> |

\* Requires holder (**07150001**). Note: Actual bed length of NewGuard is about 13 mm



Figure 5 a) NewGuard cartridges directly coupled to a 220 mm MPLC cartridge (with union **07150018**) b) connected externally to a 250 mm conventional column with a stand alone holder (**07150001**)

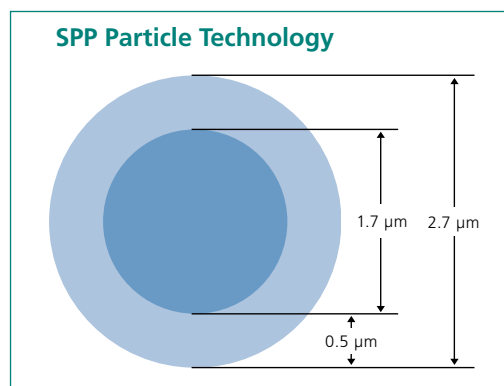
## Cartridge Holders

|  | Description                                                                                                          | Part No.        |
|--|----------------------------------------------------------------------------------------------------------------------|-----------------|
|  | Single 30 mm holder for MPLC cartridges                                                                              | <b>07150013</b> |
|  | Single 100 mm holder for MPLC cartridges                                                                             | <b>07150014</b> |
|  | MPLC holder for directly coupling a NewGuard and a 100 mm cartridge                                                  | <b>07150016</b> |
|  | Holder for directly coupling a 30 mm and 100 mm MPLC cartridge                                                       | <b>07150032</b> |
|  | Single 220 mm holder for MPLC cartridges                                                                             | <b>07150015</b> |
|  | MPLC holder for directly coupling a NewGuard and a 220 mm cartridge                                                  | <b>07150017</b> |
|  | Holder for a single, stand-alone NewGuard cartridge                                                                  | <b>07150001</b> |
|  | For direct coupling of two cartridge holders or a NewGuard to any cartridge holder. (NewGuard end assembly required) | <b>07150018</b> |
|  | Used with union to couple a NewGuard to any cartridge holder                                                         | <b>07150002</b> |
|  | End assembly for any MPLC holder body                                                                                | <b>07150019</b> |
|  | Holder body for 100 mm MPLC cartridge                                                                                | <b>07150021</b> |
|  | Holder body for 220 mm MPLC cartridge                                                                                | <b>07150022</b> |
|  | Includes 100 mm and 220 mm holder bodies, 2 end assemblies, 1 union and 1 NewGuard end assembly                      | <b>07150025</b> |
|  | Holder for a single 250 mm Prep-10 MPLC cartridge                                                                    | <b>07150006</b> |
|  | Holder for a 33 mm fast LC Pecosphere cartridge. (Not for use with MPLC cartridges)                                  | <b>07150028</b> |
|  | Holder for a 83 mm fast LC Pecosphere cartridge. (Not for use with MPLC cartridges)                                  | <b>07150029</b> |

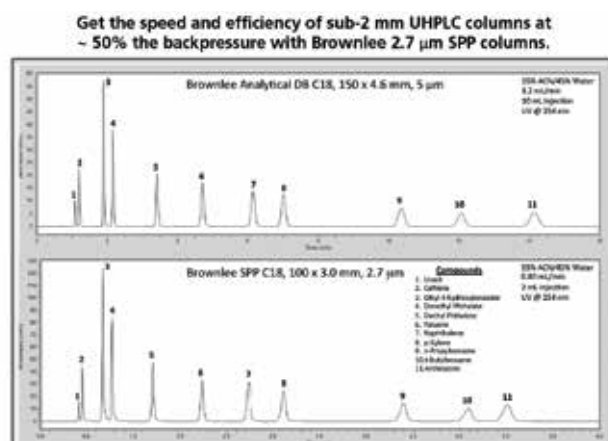
# Brownlee SPP HPLC and UHPLC Column Solutions

Say goodbye to the limitations of traditional columns and experience greater speed, lasting durability and better results from your liquid chromatography instrument.

Brownlee Superficially Porous Particle (SPP) columns produce sharper peaks and faster separation results. These results are possible due to their breakthrough particle design and size. Brownlee SPP columns use 2.7  $\mu\text{m}$  particles comprised of a thin outer shell of high-quality porous silica fused to a solid inner core. This advanced design allows for a shorter diffusion path, reducing the time solute molecules spend inside the particles while passing through the stationary phase.



Smaller in size and innovative in design, superficially porous particles are made by fusing a porous silica layer to a solid inner core.



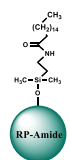
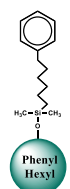
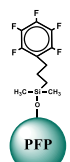
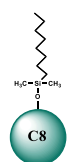
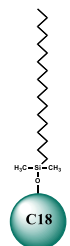
## Brownlee SPP Phases and Applications

| UHPLC Phases*                   | Pore Size (Å) | Coverage ( $\mu\text{mol}/\text{m}^2$ ) | pH Range | Temp Limit (°C) | Applications                                                                                                                                                                                | Chromatographic Properties                                                                                                                                                                                                                                            |
|---------------------------------|---------------|-----------------------------------------|----------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| C18                             | 90            | 3.5                                     | 2 – 9    | 60              | General purpose Octadecyl phase for reversed phase separations                                                                                                                              | A high purity column that exhibits excellent peak shape for a wide range of compounds                                                                                                                                                                                 |
| C8                              | 90            | 3.7                                     | 2 – 9    | 60              | General purpose Octyl phase for reversed phase separations when less retention than a C18 is desired                                                                                        | High purity reversed phase packing that exhibits excellent peak shape for a wide range of compounds                                                                                                                                                                   |
| HILIC**                         | 90            | —                                       | 2 – 8    | 60              | General purpose bare silica column for normal phase and HILIC applications                                                                                                                  | High purity silica substrate                                                                                                                                                                                                                                          |
| Peptide ES-C18**                | 160           | 2.0                                     | 1 – 8    | 90              | Sterically protected ligand (isobutyl – side chains), results in an extra stable bonded phase at low pH where most peptide separations are performed                                        | The 160 Å pore size was specially chosen for the molecular weight range of peptides. The ligand was chosen due to its sterically protected bonding technology that inhibits acid hydrolysis of the siloxane bonds, even under extremes of high temperature and low pH |
| PFP (pentafluoro-phenyl-propyl) | 90            | 3.6                                     | 2 – 8    | 60              | Highly retentive and selective for protonated basic analytes and molecules containing aromatic moieties                                                                                     | End-capped pentafluorophenyl with a propyl spacer                                                                                                                                                                                                                     |
| PhenylHexyl                     | 90            | 3.0                                     | 2 – 9    | 60              | Alternative selectivity to alkyl bonded phases, recommended for aromatic groups. Compatible with highly aqueous mobile phases to facilitate the retention and separation of polar compounds | Base-deactivated for good peak shapes when separating basic compounds. Hexyl spacer provides optimal flexibility for phenyl ring to facilitate $\pi$ - $\pi$ interactions with solutes                                                                                |
| RP-Amide                        | 90            | 3.0                                     | 2 – 9    | 60              | Excellent phase for significantly increasing the retention and selectivity of acids, for symmetrical peak shapes of bases, zwitterions and other polar compounds                            | Base-deactivated phase with a polar group within the alkyl bonded phase. Provides unique selectivity and a high level of base deactivation while reducing or eliminating the need for mobile phase additives.                                                         |

\* Maximum pressure 9,000 psi for all columns. All particle sizes are 2.7  $\mu\text{m}$

\*\*Not end-capped. All others end-capped

## Brownlee SPP Columns



| Phase          | Length (mm) | 2.1 mm ID Part No. | 3.0 mm ID Part No. | 4.6 mm ID Part No. |
|----------------|-------------|--------------------|--------------------|--------------------|
| C18            | 30          | N9308401           | N9308407           | N9308413           |
|                | 50          | N9308402           | N9308408           | N9308414           |
|                | 75          | N9308403           | N9308409           | N9308415           |
|                | 100         | N9308404           | N9308410           | N9308416           |
|                | 150         | N9308405           | N9308411           | N9308417           |
| Peptide ES-C18 | 50          | N9308451           | N9308456           | N9308461           |
|                | 75          | N9308452           | N9308457           | N9308462           |
|                | 100         | N9308453           | N9308458           | N9308463           |
|                | 150         | N9308454           | N9308459           | N9308464           |
| C8             | 30          | N9308419           | N9308424           | N9308430           |
|                | 50          | N9308420           | N9308425           | N9308431           |
|                | 75          | N9308421           | N9308426           | N9308432           |
|                | 100         | N9308422           | N9308427           | N9308433           |
|                | 150         | N9308423           | N9308428           | N9308434           |
| PFP            | 50          | N9308467           | N9308472           | N9308477           |
|                | 75          | N9308468           | N9308473           | N9308478           |
|                | 100         | N9308469           | N9308474           | N9308479           |
|                | 150         | N9308470           | N9308475           | N9308480           |
| Phenyl Hexyl   | 50          | N9308483           | N9308488           | N9308493           |
|                | 75          | N9308484           | N9308489           | N9308494           |
|                | 100         | N9308485           | N9308490           | N9308495           |
|                | 150         | N9308486           | N9308491           | N9308496           |
| RP-Amide       | 50          | N9308499           | N9308504           | N9308509           |
|                | 75          | N9308500           | N9308505           | N9308510           |
|                | 100         | N9308501           | N9308506           | N9308511           |
|                | 150         | N9308502           | N9308507           | N9308512           |
| HILIC          | 50          | N9308420           | N9308425           | N9308446           |
|                | 75          | N9308421           | N9308426           | N9308447           |
|                | 100         | N9308422           | N9308427           | N9308448           |
|                | 150         | N9308423           | N9308428           | N9308449           |

## SPP Guard Columns (Pkg. 3)\*

| Phase                   | Length (mm) | 2.1 mm ID Part No. | 3.0 mm ID Part No. | 4.6 mm ID Part No. |
|-------------------------|-------------|--------------------|--------------------|--------------------|
| C18                     | 5           | N9308513           | N9308514           | N9308515           |
| Peptide ES-C18          | 5           | N9308528           | N9308529           | N9308530           |
| C8                      | 5           | N9308522           | N9308523           | N9308524           |
| PFP                     | 5           | N9308531           | N9308532           | N9308533           |
| Phenyl Hexyl            | 5           | N9308519           | N9308520           | N9308521           |
| RP-Amide                | 5           | N9308516           | N9308517           | N9308518           |
| HILIC                   | 5           | N9308525           | N9308526           | N9308527           |
| SPP Guard Column Holder |             | N9308534           | N9308534           | N9308534           |

\* Maximum pressure 9,000 psi for all columns. All particle sizes are 2.7  $\mu$ m



# Brownlee Guard Column Holders and Pre-Filters

The Brownlee conventional column pre-filter and guard column holder systems allow you to select from three different levels of column protection that couple directly to the head of your column. The high pressure filter (**N9303711**) simply contains a filter frit selectable in two different diameters (2.0 mm or 4.0 mm) and two different frit porosities (2.0 µm or 0.5 µm) for basic protection against particulates in the sample or mobile phase. The 10 mm guard cartridge holder without a pre-filter (**N9303713**) provides protection against compounds that irreversibly absorb onto the stationary phase. The 10 mm guard cartridge holder with a pre-filter (**N9303712**) provides the ultimate in column protection with a selectable filter frit for elimination of particulates along with a guard cartridge packed with a selectable stationary phase to protection against compounds that irreversibly absorb onto the stationary phase.

## Guard Column Holders and Pre-Filters

| Description                                 | Part No.        |
|---------------------------------------------|-----------------|
| 10 mm guard cartridge holder with filter    | <b>N9303713</b> |
| 10 mm guard cartridge holder without filter | <b>N9303712</b> |
| High pressure filter                        | <b>N9303711</b> |
| Peek tip standard fittings                  | <b>N9303714</b> |
| Replacement cap frits 2.0 mm, 2.0 µm        | <b>N9303717</b> |
| Replacement cap frits 4.0 mm, 0.5 µm        | <b>N9303716</b> |
| Replacement cap frits 4.0 mm, 2.0 µm        | <b>N9303715</b> |

 High Pressure Pre-Filter **Part No. N9303711**

 Filter Frit Cap  
 Female Inlet Fitting  
 Guard Cartridge  
 PEEK Tip  
 Outlet Fitting

 Assembled Guard Holder with Filter **Part No. N9303713**  
 Installed on Column

## Brownlee Analytical Guard Cartridges\*

Length: 10 mm Particle Size: 5 µm Quantity: Pkg. 3

| Phase             | 2.1 mm ID<br>Part No. | 4.0 mm ID<br>Part No. |
|-------------------|-----------------------|-----------------------|
| Analytical C18    | <b>N9303676</b>       | <b>N9303677</b>       |
| Analytical Phenyl | <b>N9303684</b>       | <b>N9303685</b>       |
| Analytical Silica | <b>N9303686</b>       | <b>N9303687</b>       |

\* Guard cartridge holder required, to be ordered separately

## Brownlee Analytical DB Guard Cartridges\*

Length: 10 mm or 20 mm Particle Size: 5 µm Quantity: Pkg. 3

| Phase                | Length 10 mm<br>4.0 mm ID<br>Part No.<br>Analytical DB | Length 20 mm<br>4.0 mm ID<br>Part No. |
|----------------------|--------------------------------------------------------|---------------------------------------|
| Analytical DB C18    | <b>N9303867</b>                                        | <b>N9303868</b>                       |
| Analytical DB Aq C18 | <b>N9303909</b>                                        | <b>N9303910</b>                       |

\* Guard cartridge holder required, to be ordered separately

## Brownlee Validated Guard Cartridges\*

Length: 10 mm or 20 mm Particle Size: 5 µm Quantity: Pkg. 3

| ID (mm)          | Length 10 mm<br>2.1 mm ID<br>Part No. | Length 10 mm<br>4.0 mm ID<br>Part No. | Length 20 mm<br>4.0 mm ID<br>Part No. |
|------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| Validated Aq C18 | <b>N9303690</b>                       | <b>N9303691</b>                       | <b>N9303910</b>                       |
| Validated C8     | <b>N9303695</b>                       | <b>N9303696</b>                       |                                       |
| Validated C18    | <b>N9303693</b>                       | <b>N9303694**</b>                     | <b>N9303868</b>                       |

\* Guard cartridge holder required, to be ordered separately

\*\*This guard cartridge is also available in 10 µm under Part No. **N9303692**

# LC Accessories

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PerkinElmer offers a wide selection of superior quality products designed to work with your PerkinElmer instruments. Our precision designed products deliver the peace of mind that comes from knowing that you'll get the results you need.

## HPLC and UHPLC Detector Lamps

Choosing a PerkinElmer deuterium, tungsten or xenon source provides outstanding ultraviolet and true visible performance. With exceptional performance anywhere in the detector's 190-700 nm wavelength range. Lamp changes are quick and easy due to a unique self-aligning lamp mount.



➤ [VIEW PAGE](#)

## Rheodyne Valves and Spare Parts

A range of valves with associated spares for LC/MS (low dispersion), biological applications (PEEK valves) and high precision, high accuracy standard LC applications are available.



➤ [VIEW PAGE](#)

## Pump Spare Parts

Essential items to keep your pumps running at maximum efficiency; seals, pistons and check valves.



➤ [VIEW PAGE](#)



# Flow Cells and Pump Accessory Kits

## Pump Seal Kits

| Description                                                                                               | Part No.        |
|-----------------------------------------------------------------------------------------------------------|-----------------|
| Series 200 Standard Pressure Piston Seal Replacement Kit<br>Includes: Seals (4), Backup Rings and O-Rings | <b>N2910383</b> |
| Micropump Piston Seal Replacement Kit<br>Includes: Seals and O-Rings                                      | <b>N2910384</b> |
| Flexar Standard LC Pump Maintenance Kit<br>Includes: Fuses, Seals, O-Rings and Seal Tools                 | <b>N2910345</b> |



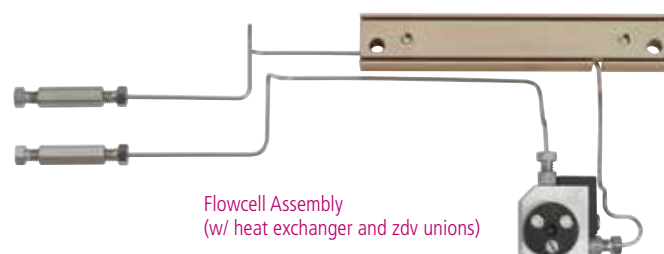
## Detector Backpressure Regulator

The detector backpressure regulator is a device that is attached to the outlet of the detector to prevent outgassing in the flowcell, eliminating variations to the detector baseline.

| Description                                           | Material        | Part No.        |
|-------------------------------------------------------|-----------------|-----------------|
| 40 psi in-line backpressure regulator                 |                 | <b>N2925090</b> |
| 2 – 5K psi variable backpressure regulator            |                 | <b>N2925091</b> |
| Backpressure Regulator<br>Adjustable from 15 – 59 psi | Stainless Steel | <b>09907126</b> |

# Flexar UV/Vis, Series 200/785A UV/Vis, Flexar PDA and Series 200 EP

These flowcells provide the highest detection limits possible for your sample. The 6 mm pathlength flowcell has been optimized for lower-dispersion LC analysis and is the perfect choice when using narrowbore, 2.1 mm or microbore, 1 mm columns (see Figure 1). The 3 mm pathlength is the choice for semiprep LC to avoid detector saturation at high-solute concentrations.



## UV/Vis and PDA Flowcells and Assemblies

| Description                                                           | Size          | Part No.        |
|-----------------------------------------------------------------------|---------------|-----------------|
| <b>Flowcells for Flexar FX-UV/Vis UHPLC Detectors</b>                 |               |                 |
| Flowcell                                                              | 6 mm x 2.4 µL | <b>N2920127</b> |
| Flowcell Kit (includes flowcell and detector head plate w/ gasket)    | 6 mm x 2.4 µL | <b>N2920070</b> |
| Flowcell Kit (includes flowcell w/ heat exchanger and zdv unions)     | 10 mm x 15 µL | <b>N2920125</b> |
| Flowcell                                                              | 10 mm x 15 µL | <b>N2920124</b> |
| Flowcell Assembly                                                     | 6 mm x 2.4 µL | <b>N2920128</b> |
| Prep Flowcell Assembly (w/ zdv unions)                                | 3 mm x 1.7 µL | <b>29000545</b> |
| <b>Flowcells for 785A and Series 200 UV/Vis Detectors</b>             |               |                 |
| Flowcell                                                              | 8 mm x 12 µL  | <b>29000542</b> |
| <b>Flowcells for Flexar FX-PDA UHPLC and Series 275 PDA Detectors</b> |               |                 |
| Flowcell Assembly (dual-lensed)                                       | 6 mm x 2.4 µL | <b>N2920166</b> |
| <b>Flowcells for Flexar and Series 200EP PDA Detectors</b>            |               |                 |
| Flowcell                                                              | 10 mm x 15 µL | <b>N2920126</b> |
| Flowcell Assembly                                                     | 10 mm x 15 µL | <b>N2920160</b> |
| <b>Flowcells for Series 200 PDA Detectors</b>                         |               |                 |
| Flowcell                                                              | 10 mm x 12 µL | <b>N2922107</b> |
| <b>Flexar PDA Plus</b>                                                |               |                 |
| Flowcell                                                              | 10 mm x 1 µL  | <b>N2950450</b> |
| Flowcell                                                              | 50 mm x 5 µL  | <b>N2950455</b> |
| Flowcell                                                              | Dry Cell      | <b>N2950429</b> |



# HPLC and UHPLC Detector Lamps



UV/VIS Deuterium  
Detector Lamp

Our extensive quality control and inspection process demands the very best quality sources. Choosing a PerkinElmer deuterium, tungsten or xenon source provides outstanding ultraviolet and true visible performance.

- Exceptional performance anywhere in the detector's 190 – 700 nm wavelength range
- Lamp changes are quick and easy due to a unique self-aligning lamp mount

## UV/VIS Detector Lamps

| Description                                                | Part No.        |
|------------------------------------------------------------|-----------------|
| <b>Flexar, Series 200/200a, 785A UV/VIS Detector Lamps</b> |                 |
| Deuterium Lamp                                             | <b>N2920149</b> |
| Tungsten Lamp                                              | <b>N2920146</b> |
| <b>LC-295 UV/VIS Detector Lamps</b>                        |                 |
| Deuterium Lamp                                             | <b>02712266</b> |

## Refractive Index Detector Lamps

The Flexar Series 200/200a Refractive Index lamps, with its deflection-type design, allows sensitive detection of these compounds with low noise and drift characteristics.

| Description                | Part No.        |
|----------------------------|-----------------|
| <b>Series 200/200a</b>     |                 |
| Refraction Index (RI) Lamp | <b>02712273</b> |
| <b>Flexar</b>              |                 |
| Refraction Index (RI) Lamp | <b>02712303</b> |



Series 200/200 EP  
Photo Diode Array Detector Lamp

## Photo Diode Array Detector Lamps

The Flexar Series 200/200a EP Photo Diode Array Detector provides true UV/VIS detection and high resolution spectral data. The excellent signal-to-noise characteristics make it ideally suited for low-volume or low concentration samples.

| Components                       | Part No.        |
|----------------------------------|-----------------|
| <b>Flexar/Series 200/200a EP</b> |                 |
| Deuterium Lamp (PDA)             | <b>N2925030</b> |
| Deuterium Lamp (PDA Plus)        | <b>09290900</b> |
| Tungsten Lamp                    | <b>N2922011</b> |
| <b>Series 200/200a</b>           |                 |
| Deuterium Lamp                   | <b>N2922046</b> |
| Tungsten Lamp                    | <b>N2922011</b> |
| <b>LC-135C/235</b>               |                 |
| Detector Lamp                    | <b>N2351285</b> |

## Fluorescence Detector Lamps

The major benefit afforded by fluorescence detection is the inherent high sensitivity of the technique coupled with outstanding specificity. The Series 200a Fluorescence Detector provides signal to noise ratio of >700:1 from trace analysis using a 150 W xenon source.

| Components                    | Part No.        |
|-------------------------------|-----------------|
| <b>Flexar/Series 200/200a</b> |                 |
| Xenon Lamp                    | <b>N2922082</b> |
| Festoon Lamp                  | <b>04969486</b> |

# Seals, Pistons and Check Valves

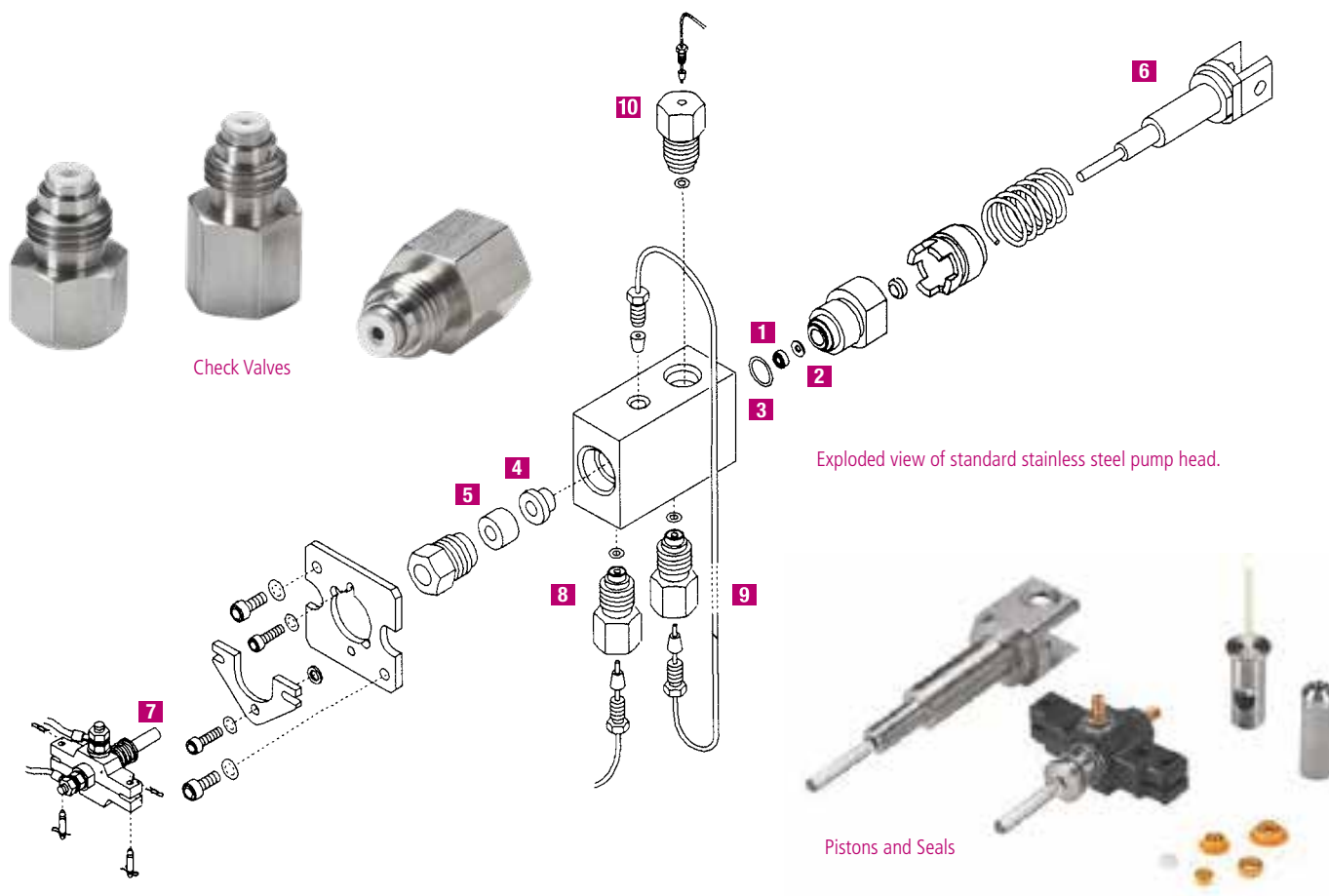
Check valves, which include a sealing washer, are easy to install using the optional Torque Wrench kit. For all PerkinElmer pumps an intermediate check valve is required. The input check valve, which is identical, should be ordered.

| Description                                               | Flexar LC or Series 200 (6000 psi) |                                    |                                 | FX-10                              |
|-----------------------------------------------------------|------------------------------------|------------------------------------|---------------------------------|------------------------------------|
|                                                           | Standard Stainless Steel Part No.  | Micropump Stainless Steel Part No. | Biocompatible Titanium Part No. | Micropump Stainless Steel Part No. |
| <b>1</b> Standard High Pressure Piston Seal               | 09907324                           | 09923367†                          | 09907338                        | 09923367†                          |
| <b>1</b> High Pressure Piston Seal – chemically resistant | 09907345                           |                                    |                                 |                                    |
| <b>2</b> High Pressure Piston with Seal Backup Ring       | 02542076                           | †                                  | 02540276                        | †                                  |
| <b>3</b> High Pressure Piston Seal PTFE O-Ring            | 09902128                           | 09902128                           | 09902018                        | 09902128                           |
| <b>4</b> Low Pressure Piston Seal                         | 09907330                           | 09923366                           | 09907339                        | 09923366                           |
| <b>5</b> Low Pressure Piston Seal Backup Guide Bushing    | 02542313                           | N2915006                           | N2061174                        | N2915006                           |
| <b>6</b> High Pressure Piston                             | N2600124                           | N2910511                           | N2600124                        | N2910511                           |
| <b>7</b> Low Pressure Piston                              | N2600117**                         | N2910512                           | N2600104                        | N2910512                           |
| <b>8</b> Inlet Check Valve                                | 02540177                           | 02540177                           | N2600226                        | 02540177                           |
| <b>9</b> Intermediate Check Valve                         | 02540177                           | 02540177                           | N2600226                        | N2916052                           |
| <b>10</b> Outlet check Valve                              | 02540197                           | 02540197                           | N2600192                        | 02540154                           |

\* Refer to Users Manual for complete illustrated parts list

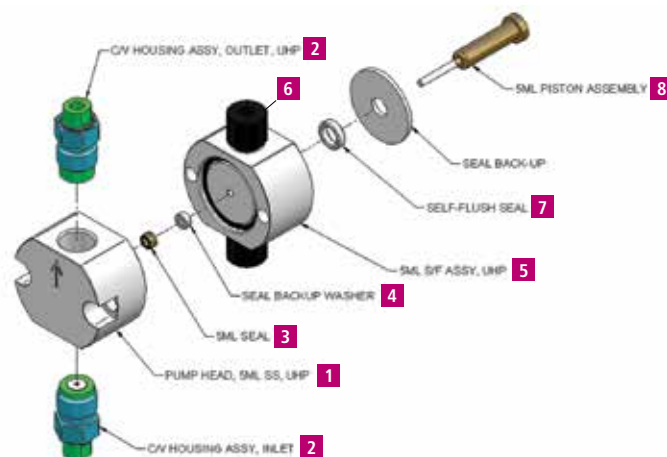
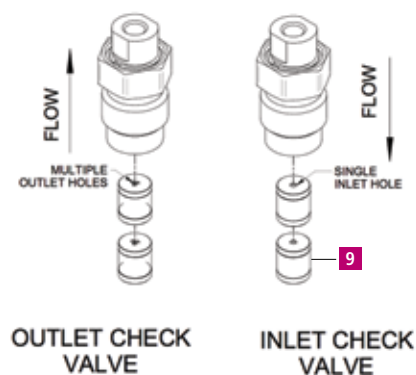
\*\* Part No. **N2600117** is for Flexar. For Series 200 Part No. is **N2600104**

† High Pressure Piston Seal Backup ring (2) is included with the Standard High Pressure Piston Seal (1)



# Flexar FX-15 and FX-20 Pump Head

## Check Valve Assemblies



| Description                                                       | FX-15                    | FX-20                             |                                 |
|-------------------------------------------------------------------|--------------------------|-----------------------------------|---------------------------------|
|                                                                   | Stainless Steel Part No. | Standard Stainless Steel Part No. | Biocompatible Titanium Part No. |
| 1 Pump Head (Stainless Steel – pkg. 2, Titanium – each)           | †                        | N2911251                          | N2911244                        |
| 2 Inlet/Outlet Check Valve Kit (1 inlet and 1 outlet)             | N2911220                 | N2911220                          | –                               |
| 3 High Pressure Piston Seal                                       | *                        | *                                 | *                               |
| 4 High Pressure Piston Seal Backup Washer                         | *                        | *                                 | *                               |
| 5 Self Flush Assembly w/ Seals                                    | N2911235                 | N2911235                          | N2911245                        |
| 6 Self-Flush Check Valve Kit (1 inlet and 1 outlet)               | N2911236                 | N2911236                          | N2911236                        |
| 7 Self-Flush Seal                                                 | *                        | *                                 | *                               |
| 8 Piston                                                          | N9308535                 | N9308535                          | N9308535                        |
| 9 Check Valve Capsule (Stainless Steel – Each, Titanium – pkg. 4) | N2911239                 | N2911239                          | N2911240                        |
| 10 0.5 mm Tee Assembly Frit                                       | N2911224                 | N2911224                          | N2911241                        |
| 11 Check Valve Capsule                                            | N2911239                 | N2911239                          | N2911240                        |

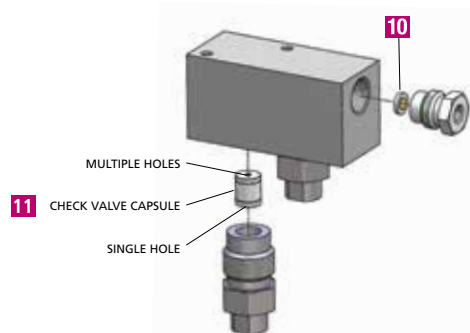
\* Seals sold in Kits only. See Preventive Maintenance and Seal Kits

† Replacement with FX-20 pump heads (N2911251) is recommended

## Preventive Maintenance (PM) and Seal Kits

| Description                         | Part No. |
|-------------------------------------|----------|
| FX-15 PM Kit Complete (4 Heads)     | N2911249 |
| FX-15 Single Head Seal Kit (1 Head) | N2911221 |
| FX-15 Heavy Duty HP Seals (1 Head)  | N9308536 |
| FX-20 PM Seal Kit (4 Heads)         | N2911250 |

## Tee Valve Assembly



## FX-15, FX-20 UHPLC Pump Accessories

| Description                                            | Part No. |
|--------------------------------------------------------|----------|
| Replacement 0.5 µm Filter Frits for FX-15 (pkg. 4)     | N2911224 |
| High Pressure FX-15 Piston Seal Kit (Need 4 per FX-15) | N2911221 |
| Piston Wash Bottle Kit                                 | N2601616 |
| 2,500 µL Sample Syringe Starting Kit                   | N2930313 |

## FX-10, FX-15 and FX-20 UHPLC System Accessories

| Description                                      | Color | Size (cm) | Part No. |
|--------------------------------------------------|-------|-----------|----------|
| <b>ID PEEK Tubing</b>                            |       |           |          |
| 0.004 in.                                        | Black | 50        | N2916200 |
| 0.005 in.                                        | Red   | 50        | N2916056 |
| 0.004 in.                                        | Black | 76        | N2916260 |
| 0.005 in.                                        | Red   | 66        | N2916262 |
| <b>Connector Tubing, Stainless Steel</b>         |       |           |          |
| Flexar ISO/Binary/Quaternary Pump to Autosampler |       |           | N2916210 |
| Dual Mixer Connection (≤ 250 µL)                 |       |           | N2916216 |
| Dual Mixer Connection (≤ 350 µL)                 |       |           | N2916217 |
| FX-10 Pump A (Upper) to T-mixer                  |       |           | N2916213 |
| FX-10 Pump B (Lower) to T-mixer                  |       |           | N2916214 |
| FX-10 Purge Valve to Filter/Scavenger            |       |           | N2916212 |
| FX-10 Injector to Column                         |       |           | N2916215 |
| FX-10 Pump A (Upper) to Dual Mixers              |       |           | N2916218 |
| FX-10 Pump B (Lower) to Dual Mixers              |       |           | N2916219 |
| FX-15 Pump to In-line Mixer                      |       |           | N2916222 |
| FX-15 Pump to Dual Mixers                        |       |           | N2916224 |
| FX-15 Injector to Column, Standard               |       |           | N2916223 |
| FX-15 Injector to Column, 33 cm                  |       |           | N2916201 |
| 3 cm Scavenger Cartridge Holder                  |       |           | 02580178 |
| Spheri5 Scavenger Columns (pkg. 5)               |       |           | 02580202 |
| 30 mL Priming Syringe                            |       |           | 09904849 |
| FX-15 C18 Scavenger Column Kit                   |       |           | N2910765 |
| FX-15 C18 Scavenger Columns (pkg. 2)             |       |           | 02580223 |

## Maintenance Kits and Tools

| Description                                                                                  | Part No. |
|----------------------------------------------------------------------------------------------|----------|
| Biocompatible Piston Seal Replacement Kit<br>Includes: four seals, backup rings, and O-Rings | N2910385 |
| Piston Seal Replacement Kit<br>Includes: four seals, backup rings, and O-Rings               | N2910383 |
| Pulse Compensator Repair Kit<br>Includes: diaphragm, elastomer plug, and seal                | N2600313 |
| Series 200 Bio LC Pump Maintenance Kit<br>Includes: fuses, seals, O-Rings, and seal tools    | N2910346 |
| Series 200 Pump Maintenance Kit<br>Includes: fuses, seals, O-Rings, and seal tools           | N2910345 |
| Micropump Piston Seal Replacement Kit                                                        | N2910384 |
| Check Valve Torque Wrench                                                                    | 02540871 |
| Seal Removal Tool                                                                            | N2601295 |
| Insertion Tool                                                                               | N2601503 |

## Manuals and Accessories

| Description                                                                             | Part No. |
|-----------------------------------------------------------------------------------------|----------|
| Backpressure Regulator<br>(to generate backpressure for applications less than 250 psi) | 02540272 |
| Pump Priming Syringe (30 mL, plastic)                                                   | 09904849 |
| Series 200 Operator's Manual                                                            | 09938910 |
| Series 200 Pump Injector Bracket                                                        | N2910349 |

## Solvent Sparger and Solvent Filters

Solvent filters remove unwanted particulate matter from the LC instrument. Spargers connect directly to the solvent delivery line and are easily removed for cleaning. The scavenger column is ideal for eliminating particulate material from solvents.



Solvent Filters

### Solvent Spargers, Filters and Scavengers

| Description                                  | Size  | Part No.        |
|----------------------------------------------|-------|-----------------|
| <b>Solvent Reservoir Sparger</b>             |       |                 |
| Stainless Steel                              | 10 µm | <b>09903610</b> |
| Titanium                                     | 10 µm | <b>N2600070</b> |
| Stainless Steel                              | 40 µm | <b>09903615</b> |
| Titanium                                     | 40 µm | <b>N2600089</b> |
| <b>Solvent Filters/Scavengers</b>            |       |                 |
| In-Line Solvent Filter System                |       | <b>09903606</b> |
| In-Line Solvent Filter Replacement Kit       |       | <b>02540311</b> |
| In-Line Solvent Filter System, Titanium      |       | <b>N2600259</b> |
| Replacement 2 µm Titanium Filter Element     |       | <b>N2601477</b> |
| Replacement Seal for In-Line Solvent Filter  |       | <b>N2601262</b> |
| 3 cm Scavenger Cartridge Holder              |       | <b>02580178</b> |
| Spheri-5 C18 10 µm Scavenger Column (pkg. 5) |       | <b>02580202</b> |
| <b>LC System Accessories</b>                 |       |                 |
| Solvent waste cup                            |       | <b>N2916019</b> |
| Drain Cup                                    |       | <b>N2916085</b> |
| 90° Elbow Adapter, 1/4 in. ID HDPP           |       | <b>09220102</b> |
| Tubing Clip (U-shaped, Polypropylene)        |       | <b>NX598006</b> |
| Polypro Elbow Barbs                          |       | <b>09220102</b> |
| Large ID (11 mm) Silicone Tubing (5 ft)      |       | <b>N2916016</b> |
| Manual Injector Bracket (Magnetic Clip-on)   |       | <b>N2931275</b> |

## Pulse Compensators

The pulse compensator combines high-efficiency pulse smoothing with a low void volume. A Teflon diaphragm separates a reservoir filled by an RTV elastomer plug. Normal use will necessitate the eventual replacement of the diaphragm.

| Description                                                                   | Part No.        |
|-------------------------------------------------------------------------------|-----------------|
| Diaphragm for Pulse Compensator                                               | <b>N2601316</b> |
| Pulse Compensator Repair Kit<br>Includes: diaphragm, elastomer plug, and seal | <b>N2601313</b> |

## Flexar/Series 200 Pump Solvent Upgrade Kits

The unique design of the PerkinElmer Flexar/Series 200 Pump allows it to easily be upgraded for additional solvent capability right in your laboratory as your needs change. Installation of the kit by a PerkinElmer Service and Support is recommended, but not included. Contact your local PerkinElmer representative for more information.

| Description                         | Part No.        |
|-------------------------------------|-----------------|
| Binary to Quaternary Upgrade Kit    | <b>N2910344</b> |
| Isocratic to Binary Upgrade Kit     | <b>N2910342</b> |
| Isocratic to Quaternary Upgrade Kit | <b>N2910343</b> |

## Stainless Steel Sample Loops

**For Flexar FX UHPLC Autosampler  
(up to 18,000 psi operation)**

Stainless Steel loops required for use with FX-10 or FX-20/FX-15 systems operating above 6,200 psi.



Sample Loops

| Description                  | Size   | Part No.        |
|------------------------------|--------|-----------------|
| Sample Loop, Stainless Steel | 2 µL   | <b>N2936071</b> |
| Sample Loop, Stainless Steel | 5 µL   | <b>N2936056</b> |
| Sample Loop, Stainless Steel | 10 µL  | <b>N2936057</b> |
| Sample Loop, Stainless Steel | 20 µL  | <b>N2936058</b> |
| Sample Loop, Stainless Steel | 50 µL  | <b>N2936059</b> |
| Sample Loop, Stainless Steel | 100 µL | <b>N2936060</b> |
| Sample Loop, Stainless Steel | 200 µL | <b>N2936061</b> |
| Sample Loop, Stainless Steel | 500 µL | <b>N2936062</b> |
| Sample Loop, Stainless Steel | 1 mL   | <b>N2936063</b> |
| Sample Loop, Stainless Steel | 2 mL   | <b>N2936064</b> |
| Sample Loop, Stainless Steel | 5 mL   | <b>N2936065</b> |

## PEEK Sample Loops

**For Series 200/225 and Flexar LC Autosamplers  
(up to 6,200 psi operation)**

These loops are compatible with all standard Flexar autosamplers as well as Series 225 autosamplers. PEEK loops cannot be used above 6,200 psi operation therefore are NOT compatible with standard Flexar autosamplers. Stainless steel loops required for use with FX-10 or FX-20/FX-15 UHPLC systems operating above 6,200 psi.

| Description      | Size   | Part No.        |
|------------------|--------|-----------------|
| PEEK Sample Loop | 2 µL   | <b>N2936072</b> |
| PEEK Sample Loop | 5 µL   | <b>N2936073</b> |
| PEEK Sample Loop | 10 µL  | <b>N2936074</b> |
| PEEK Sample Loop | 20 µL  | <b>N2936075</b> |
| PEEK Sample Loop | 50 µL  | <b>N2936076</b> |
| PEEK Sample Loop | 100 µL | <b>N2936077</b> |
| PEEK Sample Loop | 250 µL | <b>N2936078</b> |
| PEEK Sample Loop | 500 µL | <b>N2936079</b> |
| PEEK Sample Loop | 1 mL   | <b>N2936080</b> |
| PEEK Sample Loop | 2 mL   | <b>N2936081</b> |
| PEEK Sample Loop | 5 mL   | <b>N2936082</b> |

## Tubing Accessories

Clean-Cut™ tubing tool is designed to cut PTFE, Tefzel® and polymers in general but, in particular, PEEK tubing. A unique safety locking mechanism secures the blade when not in use.



| Description                              | Part No.        |
|------------------------------------------|-----------------|
| Clean-Cut Tubing Cutter                  | <b>ED020015</b> |
| Clean-Cut Tubing Replacement Blade       | <b>ED020016</b> |
| Cable/Tubing clip (U-Shaped)             | <b>NX598006</b> |
| Stick-on Tubing Organizer (Gray Plastic) | <b>NX598006</b> |

## PEEK Tubing

PEEK tubing has the strength required to withstand continuous use at HPLC pressure without swelling or bursting. Use PEEK with virtually any organic or inorganic liquid. PEEK tubing is not affected by halide salts, high-strength buffers or other aggressive mobile phases that degrade stainless steel.

| Description                                                                         | Size  | Part No.        |
|-------------------------------------------------------------------------------------|-------|-----------------|
| 1/16 in. OD x 0.007 in. ID                                                          | 5 ft  | <b>N9302678</b> |
| 1/16 in. OD x 0.010 in. ID                                                          | 5 ft  | <b>N9302650</b> |
| 1/16 in. OD x 0.004 in. ID (Black)                                                  | 50 cm | <b>N2916200</b> |
| 1/16 in. OD x 0.005 in. ID (Red)                                                    | 50 cm | <b>N2916059</b> |
| Connector Tubing, Flexar/FX Mixer to Injector, Stainless Steel                      |       | <b>N2916211</b> |
| Connector Tubing, Flexar ISO/Binary/Quaternary Pump to Autosampler, Stainless Steel |       | <b>N2916210</b> |

## Stainless Steel Tubing

Tubing is pre-cut and mirror-polished in 316 stainless steel.

### SS-316 Tubing

| Description                | Size  | Part No.        |
|----------------------------|-------|-----------------|
| 1/16 in. OD x 0.043 in. ID | 6 ft  | <b>00873035</b> |
| 1/16 in. OD x 0.015 in. ID | 6 ft  | <b>00873036</b> |
| 1/16 in. OD x 0.007 in. ID | 3 ft  | <b>02540838</b> |
| 1/16 in. OD x 0.007 in. ID | 20 cm | <b>02711441</b> |
| 1/16 in. OD x 0.007 in. ID | 50 cm | <b>00891480</b> |

### Tefzel Tubing

| Description                | Size  | Part No.        |
|----------------------------|-------|-----------------|
| 1/16 in. OD x 0.030 in. ID | 10 ft | <b>N9301029</b> |

## High-Performance Fingertight Fittings

This PEEK Fingertight® fitting is the toughest with regard to chemical resistance and pressure. This high-performance Fingertight® fitting is recommended for the most demanding applications and will resist pressures up to 6,000 psi (400 bar). Made from a single piece of PEEK, the size permits tightening without tools.



| Description                         | Part No. |
|-------------------------------------|----------|
| PEEK One-Piece Fingertight® Fitting | ED020005 |

## Fittings, Nuts and Ferrules

Stainless steel nuts are available in both Parker-Hannifin and Rheodyne™ formats. The nuts are used to connect 1/16 in. OD stainless steel tubing and feature a 10 – 32 thread size. PerkinElmer also offers select SSI fittings for 1/16 in. OD tubing in 1/4 – 28 thread size.

### Stainless Steel Fittings

| Description                                                                                   | Part No. |
|-----------------------------------------------------------------------------------------------|----------|
| Kel-F Reverse Ferrule, 1/8 in.*                                                               | 09903771 |
| Kel-F Ferrule, 1/16 in.*                                                                      | 09920382 |
| Tefzel Nut, 1/16 in.*                                                                         | 09920381 |
| Parker-Hannifin Ferrule, 1/16 in.                                                             | 00873032 |
| Parker-Hannifin Nut, 1/16 in.                                                                 | 09903980 |
| Parker-Hannifin Nut and Ferrule Kit, 1/16 in.<br>Includes: 6 nuts and 6 ferrules              | 00890945 |
| Parker-Hannifin Zero-Dead-Volume Union with nuts and ferrules                                 | 09903289 |
| Parker-Hannifin Medium-Stem Stainless Steel Nut                                               | N2916202 |
| Rheodyne™ Ferrule, 1/16 in.                                                                   | 09904947 |
| Rheodyne™ Nut, 1/16 in. long body                                                             | 09904974 |
| Rheodyne™ Nut, 1/16 in. short body                                                            | 09904956 |
| Rheodyne™ Nut and Ferrule Kit, 1/16 in.<br>Includes: 6 ferrules, 3 short nuts and 3 long nuts | 02540274 |
| Tefzel Nut (for Reverse Ferrule), 1/8 in.*                                                    | N2601189 |
| Tefzel Nut, 1/16 in.*                                                                         | 09920381 |
| Valco Ferrule                                                                                 | 09903891 |
| OptiTech Reusable Nut/Ferrule for UHPLC<br>(fingertight to 15K psi)                           | N9306301 |
| OptiTech Ferrule replacements for UHPLC (pkg. 10)                                             | N9306300 |
| UHPLC 1/16 in. Reusable Fitting                                                               | N9307800 |

\* The Tefzel and Kel-F fittings above are only for low pressure use (under 400 psi)



### Fittings Kits

Recommended for users of a PerkinElmer Biocompatible LC system. Contains nuts, ferrules and unions.

| Description                          | Part No. |
|--------------------------------------|----------|
| Biocompatible Column Fittings for LC | N9301001 |

### Fittings Kit for LC

The kit contains Rheodyne™ and SSI nuts and ferrules as well as Fingertight® II nuts and ferrules for tool-less installation. Zero-dead-volume unions are also included. In addition, you receive varying lengths of stainless steel tubing in 0.007 and 0.010 in. ID, as well as 0.30 in. ID Tefzel® tubing.

| Description             | Part No. |
|-------------------------|----------|
| All-in-one Fittings Kit | N9301002 |

### Operation Kit

Recommended for purchasers of their first LC. Includes tubing, union, fittings, syringe, basic LC book and test mix.

| Description   | Part No. |
|---------------|----------|
| Operation Kit | 00890873 |



## Rheodyne Valves

### Bio Injection Valve

Model 9725 is inert and well-suited to the chromatography of biological molecules, including applications with aggressive mobile phases. This valve is useful in all applications in which metal contact with the mobile phase and or sample should be avoided. This valve uses PEEK vent lines and a PTFE rotor seal and can be operated in a pH range from 0 – 14.

| Description                                     | Part No.        |
|-------------------------------------------------|-----------------|
| 9725 Injection Valve for Series 200 Autosampler | <b>N9306020</b> |

### Rheodyne™ 8125 Low-Dispersion Stainless Steel Injection Valve

Ideal for use in an LC/MS system, the model 8125 is designed for 1 and 2 mm microbore columns and can also be used with conventional analytical (3 to 5 mm) columns. Small flow passages produce low dispersion, maintaining the high mass sensitivity inherent in micro columns.

| Description                                         | Part No.        |
|-----------------------------------------------------|-----------------|
| 8125 Low-Dispersion Stainless Steel Injection Valve | <b>N9306021</b> |

### Rheodyne™ 7725 Analytical Injection Valve

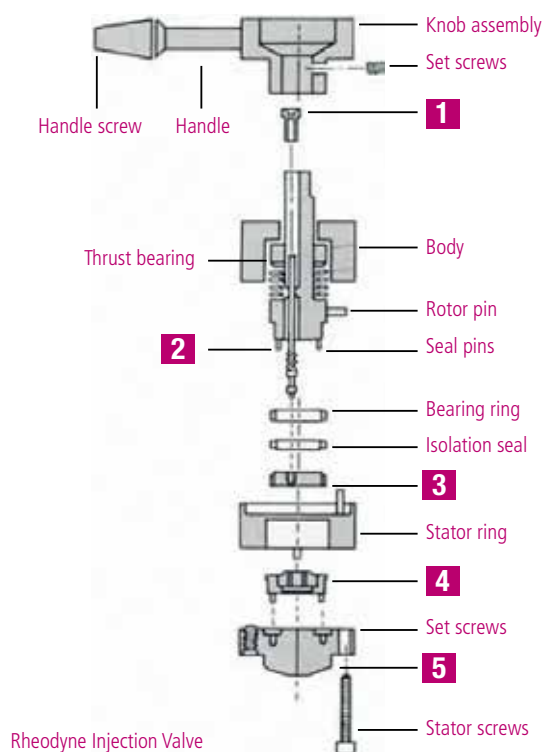
Inject from 1 µL to 5 mL with high accuracy and precision, with the Rheodyne™ 7725 and 7725i valves.

Rheodyne™ 7725 and 7725i valves are versatile injectors and can use both partial-filling and complete-filling methods for loading the sample loop. Wide port angles of the 7725/7725i valve provide improved access to fittings. Sample loop with a 2 µL internal capacity is also available. In a clean system, the 7725/7725i typically can make more than 30,000 injections before requiring replacement of the rotor seal.

| Description                                     | Part No.        |
|-------------------------------------------------|-----------------|
| 7725 Injection Valve for Series 200 Autosampler | <b>N9306019</b> |
| 7725i Injection Valve with Internal Switch      | <b>N9306017</b> |

## Rheodyne Valves Spare Parts

|          | Description                                           | Model 9725<br>Part No.                                | Model 7725<br>Part No.                                |
|----------|-------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|
| <b>1</b> | Needle Guide S200 Autosampler<br>Manual Valve ISS-100 | <b>N2931054</b><br><b>09904800</b>                    | <b>N2931054</b><br><b>09904800</b>                    |
| <b>2</b> | Needle Port Tube                                      | <b>09904805</b>                                       | <b>09904805</b>                                       |
| <b>3</b> | Rotor Seal Vespel<br>Tefzel<br>PEEK                   | <b>09904802</b><br><b>N9302677</b><br><b>N9306044</b> | <b>09904802</b><br><b>N9302677</b><br><b>N9306044</b> |
| <b>4</b> | Stator Face Assembly<br>PEEK and Ceramic              | <b>N9306047</b>                                       | <b>N9306047</b>                                       |
| <b>5</b> | Stator PEEK<br>Stainless Steel Titanium               | <b>N9306046</b>                                       | <b>N9306045</b>                                       |





## PEEK Sample Loops for Rheodyne Valves

PEEK Sample Loops avoid many of the problems associated with stainless steel sample loops. Metal loops will often absorb sample components resulting in inaccurate quantitative results. In addition, metal loops may be corroded by high-salt buffers and chloride salts. Sample Loops are made from PEEK tubing and fittings. PEEK (Poly-Ether-Ether-Ketone) is a mechanically strong, chemically inert polymer ideal for HPLC applications where metal surfaces may interact with mobile phase or sample components. Each Sample Loop is supplied with two PEEK hex-head nuts and ferrules. These fittings grip the tubing in two locations for a more reliable connection.

| Description                  | Model 9725<br>Part No. |
|------------------------------|------------------------|
| 5 $\mu$ L PEEK Sample Loop   | <b>N9306033</b>        |
| 10 $\mu$ L PEEK Sample Loop  | <b>N9306034</b>        |
| 20 $\mu$ L PEEK Sample Loop  | <b>N9306035</b>        |
| 50 $\mu$ L PEEK Sample Loop  | <b>N9306036</b>        |
| 100 $\mu$ L PEEK Sample Loop | <b>N9306037</b>        |
| 200 $\mu$ L PEEK Sample Loop | <b>N9306038</b>        |
| 500 $\mu$ L PEEK Sample Loop | <b>N9306039</b>        |
| 1 mL PEEK Sample Loop        | <b>N9306040</b>        |
| 2 mL PEEK Sample Loop        | <b>N9306041</b>        |
| 5 mL PEEK Sample Loop        | <b>N9306042</b>        |



## Injector Valve Rotor Seals for both Series 200 Autosampler and Manual Injectors

For both the Rheodyne and Flom valves, rotor seals should be periodically replaced every 6 months to a year and are available in PEEK. For the Rheodyne valve, they are also available in Vespel. PEEK is more inert towards amines and other basic biomolecules/pharmaceuticals, exhibiting less sample carryover. However, Vespel is somewhat more resilient than PEEK, providing somewhat better wear life.

| Description                          | Part No.        |
|--------------------------------------|-----------------|
| Flom Rotor Seal PEEK <b>N9306068</b> | <b>00890873</b> |
| Rheodyne 7725 Vespel Rotor Seal      | <b>09904802</b> |
| Rheodyne 8125 Vespel Rotor Seal      | <b>10070900</b> |
| Rheodyne 7725/9725 PEEK Rotor Seal   | <b>N9306044</b> |

## Stainless Steel Sample Loops for 7725 Valve

| Description                             | Model 7725<br>Part No. |
|-----------------------------------------|------------------------|
| 5 $\mu$ L Stainless Steel Sample Loop   | <b>N9306023</b>        |
| 10 $\mu$ L Stainless Steel Sample Loop  | <b>N9306024</b>        |
| 20 $\mu$ L Stainless Steel Sample Loop  | <b>N9306025</b>        |
| 50 $\mu$ L Stainless Steel Sample Loop  | <b>N9306026</b>        |
| 100 $\mu$ L Stainless Steel Sample Loop | <b>N9306027</b>        |
| 200 $\mu$ L Stainless Steel Sample Loop | <b>N9306028</b>        |
| 500 $\mu$ L Stainless Steel Sample Loop | <b>N9306029</b>        |
| 1 mL Stainless Steel Sample Loop        | <b>N9306030</b>        |
| 2 mL Stainless Steel Sample Loop        | <b>N9306031</b>        |
| 5 mL Stainless Steel Sample Loop        | <b>N9306032</b>        |

Note: Loops are compatible with both manual valves and Series 200 Autosampler valves

## Internal Loop for 7725/9725 Valves

| Description                  | Part No.        |
|------------------------------|-----------------|
| 2 $\mu$ L (PEEK and Ceramic) | <b>N9306022</b> |

# Flexar Autosamplers

## Features and Benefits

- Injects sample volumes as little as 1 µL at pressures up to 18,000 psi with the FX UHPLC Autosampler
- Loads sample in only 8 seconds (in partial fill mode)
- Three injection modes: full loop, partial fill and µL-pickup with no sample waste and excellent reproducibility
- Peltier cooling/heating mode option for operation at 4 °C to 40 °C. Will reach 4 °C ± 2 °C, achievable even at ambient temperatures up to 25 °C



All Flexar autosamplers can be upgraded in the field for Peltier cooling and heating and they all include:

- 100-sample tray
- 100 2 mL vials
- 100 2 mL screw top cap with cross slit vial septum
- Tubing to connect to waste reservoir
- I/O cable (Pump Start/Ready-In)
- Service Manager SW CD
- User's Manual
- Nuts and ferrules
- All fuses for 120–240 V
- All cables required for connection to a TotalChrom or Chromera Operating Environment

## Flexar or Series 225/275 Autosampler Trays and Accessories

| Description                                                                  | Part No. |
|------------------------------------------------------------------------------|----------|
| 25-Position 6 mL Vial Sample Tray                                            | N2936045 |
| 80-Position 2 mL Vial plus (5) 6 mL Vial Tray (for derivatization)           | N2936046 |
| 80-Position 2 mL Vial Tray with Dilution Tray                                | N2930676 |
| 96-Well Microtiter Adapter                                                   | N9302562 |
| 96-Well 'Deep-well' Microtiter Adapter                                       | N9302560 |
| 96-Well 7 mm Pre-slit Silicone Plate Mat/Seal                                | N9302555 |
| 96-Well 'Deep' Microtiter Plate Adaptor (Supports Dual Microtiter Plates)    | N2936048 |
| 96-Well 'Shallow' Microtiter Plate Adaptor (Supports Dual Microtiter Plates) | N2936049 |
| 384-Well Microtiter Adapter                                                  | N2936050 |
| 100-Position 2 mL Vial Sample Tray                                           | N2936042 |
| (200) 0.2 mL Microvial plus (5) 2 mL Vial Tray                               | N2936043 |
| 250 µL Syringe Tip Replacements (pkg. 10)                                    | N2936003 |
| Flexar/225 Biocompatible Upgrade Kit (w/ valve)                              | N2930675 |
| 1/16 in. OD x 0.038 in. ID PTFE Tubing (AS Transfer Line)                    | 02506495 |

## Flexar Autosampler Valve Maintenance Parts

| Description | Flexar LC (6000 psi) Part No. | Flexar UHPLC (18000 psi) Part No. |
|-------------|-------------------------------|-----------------------------------|
| Rotor Seal  | N2936021                      | N2932001                          |
| Stator      | N2936022                      | N2932002                          |

| Description                                            | Part No. |
|--------------------------------------------------------|----------|
| Flexar UHPLC (18000 psi) Autosampler Valve Upgrade Kit | N2936023 |
| Flexar Analytical LC (6000 psi) Autosampler Valve      | N2936020 |

## Flexar Autosamplers and Upgrade Kits

| Description                                                                                                                                                                                                                                                                                                                                                       | Part No. |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| <b>Flexar LC Autosampler</b>                                                                                                                                                                                                                                                                                                                                      |          |
| High throughput autosampler with exceptionally low carryover. Operates up to 6,100 psi (420 bar). Provides flexible injection modes: full-loop, partial-fill and µL-Pickup (no sample waste). Peltier cooling and heating options available as field upgrades. Comes standard with 100 µL loop and 250 µL sample flush syringe                                    | N2930660 |
| <b>Flexar Peltier LC Autosampler</b>                                                                                                                                                                                                                                                                                                                              |          |
| High throughput autosampler with exceptionally low carryover. Operates up to 6,100 psi (420 bar). Provides flexible injection modes: full-loop, partial-fill and µL-Pickup (no sample waste). Built-in Peltier cooling comes standard. Peltier heating option available as field upgrade. Comes standard with 100 µL loop and 250 µL sample flush syringe         | N2930661 |
| <b>Flexar FX UHPLC Autosampler</b>                                                                                                                                                                                                                                                                                                                                |          |
| High throughput UHPLC autosampler with exceptionally low carryover. Operates up to 18,000 psi (1,241 bar). Provides flexible injection modes: full-loop, partial-fill and µL-Pickup (no sample waste). Built-in Peltier cooling comes standard. Peltier heating option available as field upgrade. Comes standard with 10 µL loop and 250 µL sample flush syringe | N2930664 |
| <b>Field Upgrade Peltier Kits</b>                                                                                                                                                                                                                                                                                                                                 |          |
| Flexar and Series 225 Upgrade Kit (from standard to Peltier Cooling option)                                                                                                                                                                                                                                                                                       | N2930672 |
| Flexar and Series 225 Upgrade Kit (from standard to Peltier Cooling and Heating option)                                                                                                                                                                                                                                                                           | N2930673 |
| Flexar and Series 225 Upgrade Kit (from Peltier Cooling to Peltier Cooling and Heating option)                                                                                                                                                                                                                                                                    | N2930669 |

## High Pressure Analytical Static Mixers

Static Mixers are important in facilitating complete mobile phase blending, resulting in improved retention performance. These mixers should be used as part of FX10, or FX15 LC systems, where high pressure blending is required. Mixers incorporate a highly efficient cross-flow shearing mechanism which produces vortex shear mixing over a wide range of volumes. They are now offered in 18,000 psi pressure max flavor.

A good first choice selection is a volume of about half the flow rate volume. For example, when pumping at a 0.5 mL/min flow rate, a 350 µL mixer provides good mixing with very good baseline stability.

| Description                                                         | Part No.        |
|---------------------------------------------------------------------|-----------------|
| 50 µL In-Line High Pressure Mixer Assembly, Stainless Steel         | <b>N2911200</b> |
| 150 µL In-Line High Pressure Mixer Assembly, Stainless Steel        | <b>N2911201</b> |
| 250 µL In-Line High Pressure Mixer Assembly, Stainless Steel        | <b>N2911202</b> |
| 350 µL In-Line High Pressure Mixer Assembly, Stainless Steel        | <b>N2911205</b> |
| 500 µL In-Line High Pressure Mixer Assembly, Stainless Steel        | <b>N2911203</b> |
| 150 µL High Pressure Binary High Pressure Mixing-T, Stainless Steel | <b>N2911206</b> |
| 10 µL Binary Mixing-T, Stainless Steel                              | <b>N2911170</b> |
| Binary High Pressure T-Mixer, Stainless Steel, 50 µL                | <b>N2911212</b> |
| Binary High Pressure T-Mixer, Stainless Steel, 350 µL               | <b>N2911210</b> |
| Binary High Pressure T-Mixer, Stainless Steel, 500 µL               | <b>N2911211</b> |
| T-connector, Stainless Steel                                        | <b>N2911127</b> |

## Syringes and Kits

PerkinElmer syringe kits for high pressure applications are manufactured for precise liquid delivery. All of these glass syringes come with precision stainless steel plungers. They are used for sampling and flushing and are available in a large variety of sizes.

### Syringes

| Description                                      | Part No.        |
|--------------------------------------------------|-----------------|
| Sample Needle w/ Fittings                        | <b>N2936009</b> |
| Air Guide Needle (62 mm)                         | <b>N2936000</b> |
| Bio Compatible Sample Needle w/ Tubing Connector | <b>N2936010</b> |
| Needle (80 mm)                                   | <b>N2936342</b> |
| Blunt Tip/Low Volume Needle                      | <b>N2931199</b> |

### Syringe Kits

| Dimension | Buffer Tubing | Part No.        |
|-----------|---------------|-----------------|
| 100 µL    | 200 µL        | <b>N2936051</b> |
| 250 µL    | 500 µL        | <b>N2936052</b> |
| 500 µL    | 1,000 µL      | <b>N2936053</b> |
| 1,000 µL  | 2,000 µL      | <b>N2936054</b> |
| 2,500 µL  | 2,000 µL      | <b>N2936055</b> |

## Microsyringes (For Manual Injection)

Syringes are used for accurate and precise liquid delivery. Each syringe is hand-fitted to assure maximum accuracy. Our syringes are composed of glass barrels and precision stainless steel needles. The needle features a blunt tip, required for use with a Rheodyne injector.

| Description                                  | Part No.        |
|----------------------------------------------|-----------------|
| 10 µL Syringe                                | <b>09904937</b> |
| 25 µL Syringe                                | <b>09904823</b> |
| 50 µL Syringe                                | <b>09904941</b> |
| 100 µL Syringe                               | <b>09904822</b> |
| Rheodyne 22-gauge Blunt Needle with Luer Hub | <b>09904943</b> |



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**PerkinElmer**  
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## Peltier Tray Accessories

### 100-Position Peltier Temperature-Controlled Tray Accessory

100 standard 2 mL vials. Temperature controlled from 4 – 60 °C within  $\pm 1$  °C directly from Autosampler keypad – or from TotalChrom Workstation – Client/Server.

| Description                                                | Part No.        |
|------------------------------------------------------------|-----------------|
| 100-Position Peltier Temperature-Controlled Tray Accessory | <b>N2930035</b> |

### Double Microtiter Peltier Temperature-Controlled Tray Accessory



Two shallow or medium depth microtiter plates. Temperature controlled from 4 – 60 °C within  $\pm 1$  °C directly from Autosampler keypad – or from TotalChrom Workstation – Client/Server. (Also requires **N2930036**).

| Description                                                     | Part No.        |
|-----------------------------------------------------------------|-----------------|
| Double Microtiter Peltier Temperature-Controlled Tray Accessory | <b>N2930037</b> |

### Peltier Temperature Controller



Controller Unit required for operation of either 100-position or Double Microtiter Peltier trays.

| Description                                                | Part No.        |
|------------------------------------------------------------|-----------------|
| Peltier Temperature Controller                             | <b>N2930036</b> |
| 100-Position Peltier Temperature-Controlled Tray Accessory | <b>N2930035</b> |

## Sample Trays

PerkinElmer has researched, engineered, and developed the Series 200 Autosampler to ensure precision, flexibility, reliability, and ease-of-use.

Our unique XYZ design allows you to take advantage of the built-in 'extra' capabilities including dilution, derivatization, and standard addition – all without additional hardware or cost.

| Description                                            | Part No.        |
|--------------------------------------------------------|-----------------|
| 25-Position Sample Tray                                | <b>N2930040</b> |
| 80-Position Sample Tray, Dilution (with tank)          | <b>N2930314</b> |
| Includes: 80-Position Tray Only                        | <b>N2930044</b> |
| Glass Diluent Tank Only                                | <b>B0505677</b> |
| 85-Position Sample Tray, Derivatization                | <b>N2930041</b> |
| 100-Position Sample Tray                               | <b>N2931097</b> |
| 205-Position Sample Tray, Microvials/10 standard vials | <b>N2930042</b> |
| 225-Position Sample Tray, Microvials/high throughput   | <b>N2930043</b> |

## Series 200 Autosampler Microtiter Trays and Plates

If you need high throughput and high speed, the Series 200 is designed for injecting up to 225 samples at rates as fast as two to three injections per minute from any sample position – ideal for LC/MS work. The Series 200 even supports direct injections from microtiter plates – shallow or deepwell format.

| Tray Description                                                                                                                                     | Part No.        |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Double Deep Microtiter Tray (Holds two 96-Well Plates)                                                                                               | <b>N2930147</b> |
| Double Microtiter Peltier Tray<br>Requires Peltier Controller ( <b>N2930036</b> ) (Holds two 96-Well Plates)                                         | <b>N2930037</b> |
| Double Shallow Microtiter Plate Tray (Holds two 96-Well Plates)                                                                                      | <b>N2930146</b> |
| Peltier Tray for 384-Well Microtiter Plates<br>Requires Peltier Controller ( <b>N2930036</b> )<br>and Series 200 Autosampler Firmware 1.08 or higher | <b>N2930038</b> |
| Microtiter Plates Description                                                                                                                        | Part No.        |
| 96-Well Deep (1 mL)                                                                                                                                  | <b>N9302560</b> |
| 96-Well Plate Cover/Mat                                                                                                                              | <b>N9302563</b> |
| 96-Well Shallow (200 $\mu$ L)                                                                                                                        | <b>N9302562</b> |
| 96-Well Mid (500 $\mu$ L)                                                                                                                            | <b>N9302561</b> |
| 384-Well Plate (100 $\mu$ L)                                                                                                                         | <b>N9302564</b> |
| 384-Well Plate Cover/Mat                                                                                                                             | <b>N9302565</b> |



## Starter Kits

### UHPLC – General Starter Kit

| Description                 | Part No.        |
|-----------------------------|-----------------|
| UHPLC – General Starter Kit | <b>N2930801</b> |

| Contents                                                                           | Qty./Pkg. | Part No.        |
|------------------------------------------------------------------------------------|-----------|-----------------|
| Open-End Wrench                                                                    | 2         | <b>09907233</b> |
| Adjustable Wrench                                                                  | 1         | <b>N9301326</b> |
| Reversible Screw Driver                                                            | 1         | <b>N9301480</b> |
| Parker-Hannifin ZDV Stainless Steel Union                                          | 1         | <b>09903289</b> |
| Parker-Hannifin Medium-Stem Stainless Steel Nuts                                   | 10        | <b>09903980</b> |
| 1/16 in. Parker-Hannifin Stainless Steel Ferrules                                  | 10        | <b>00873032</b> |
| 1/16 in. Valco Stainless Steel Ferrules                                            | 6         | <b>09903891</b> |
| Finger-Tight Fittings, PEEK, 5.5K psi Max (pkg. 5)                                 | 1         | <b>N9307822</b> |
| Optimize Technologies EZP (Hand-Tight Fitting to 13K psi, Wrench-tight to 20K psi) | 1         | <b>N9306301</b> |
| 1/16 in. Tefzel Nuts                                                               | 2         | <b>09920381</b> |
| 1/16 in. Tefzel Reverse Ferrules                                                   | 2         | <b>09920382</b> |
| 1/8 in. Tefzel Nuts                                                                | 4         | <b>N2601189</b> |
| 1/8 in. Tefzel Reverse Ferrules                                                    | 4         | <b>09903771</b> |
| PEEK Tubing Cutter (Includes 5 Extra Blades)                                       | 1         | <b>N9307820</b> |
| 50 cm x 0.005 in. ID 1/16 in. Stainless Steel Tubing                               | 3         | <b>02507060</b> |
| 5 ft. x 0.004 in. ID 1/16 in. PEEK Tubing, Black                                   | 1         | <b>N2916261</b> |
| 5 ft. x 0.005 in. ID 1/16 in. PEEK Tubing, Red                                     | 1         | <b>N2916262</b> |
| 30 mL Priming Syringe                                                              | 1         | <b>09904849</b> |
| 2 mL Clear Write-On Vials w/ 10 mm Pre-Slit PTFE/Silicone Caps (pkg. 100)          | 1         | <b>N9300695</b> |
| Cable/Tubing Organizer Clip                                                        | 3         | <b>NX598006</b> |

### HPLC – General Starter Kit

| Description                | Part No.        |
|----------------------------|-----------------|
| HPLC – General Starter Kit | <b>N2930802</b> |

| Contents                                                                  | Qty./Pkg. | Part No.        |
|---------------------------------------------------------------------------|-----------|-----------------|
| Open-End Wrench                                                           | 2         | <b>09907233</b> |
| Adjustable Wrench                                                         | 1         | <b>N9301326</b> |
| Reversible Screw Driver                                                   | 1         | <b>N9301480</b> |
| Parker-Hannifin ZDV Stainless Steel Union                                 | 1         | <b>09903289</b> |
| Parker-Hannifin Medium-Stem Stainless Steel Nut                           | 10        | <b>09903980</b> |
| 1/16 in. Parker-Hannifin Stainless Steel Ferrule                          | 10        | <b>00873032</b> |
| 1/16 in. Valco Stainless Steel Ferrules                                   | 6         | <b>09903891</b> |
| Rheodyne Stainless Steel Nut, Short Stem                                  | 2         | <b>09904956</b> |
| Rheodyne Stainless Steel Nut, Long Stem                                   | 2         | <b>09904974</b> |
| 1/16 in. Rheodyne Stainless Steel Ferrule                                 | 4         | <b>09904947</b> |
| 1/16 in. Tefzel Nuts                                                      | 2         | <b>09920381</b> |
| 1/16 in. Tefzel Reverse Ferrules                                          | 2         | <b>09920382</b> |
| 1/8 in. Tefzel Nuts                                                       | 4         | <b>N2601189</b> |
| 1/8 in. Tefzel Reverse Ferrules                                           | 4         | <b>09903771</b> |
| Finger-Tight Fittings, PEEK, 4K psi Max                                   | 6         | <b>09920513</b> |
| PEEK Tubing Cutter (Includes 5 Extra Blades)                              | 1         | <b>N9307820</b> |
| 50 cm x 0.005 in. ID 1/16 in. Stainless Steel Tubing                      | 1         | <b>02507060</b> |
| 50 cm x 0.007 in. ID 1/16 in. Stainless Steel Tubing                      | 2         | <b>00891480</b> |
| 5 ft. x 0.007 in. ID 1/16 in. PEEK Tubing, Yellowish-Tan                  | 1         | <b>N9302650</b> |
| 5 ft. x 0.005 in. ID 1/16 in. PEEK Tubing, Red                            | 1         | <b>N2916262</b> |
| 30 mL Priming Syringe                                                     | 1         | <b>09904849</b> |
| 2 mL clear write-on vials w/ 10 mm Pre-Slit PTFE/Silicone Caps (pkg. 100) | 1         | <b>N9300695</b> |
| Cable/Tubing Organizer Clip                                               | 3         | <b>NX598006</b> |

## Autosampler Syringes

| Contents                                                                      | Size    | Part No.         |
|-------------------------------------------------------------------------------|---------|------------------|
| Sampling Syringe                                                              | 50 µL   | <b>09923304</b>  |
| Sampling Syringe                                                              | 100 µL  | <b>09923305</b>  |
| Sampling Syringe                                                              | 250 µL  | <b>09923270</b>  |
| Sampling Syringe                                                              | 500 µL  | <b>09923306</b>  |
| Sampling Syringe                                                              | 1000 µL | <b>09923307</b>  |
| Sampling Syringe                                                              | 2500 µL | <b>09923219*</b> |
| Sampling Syringe Kit 2500 µL (includes 2500 µL syringe, union and tubing kit) | 2500 µL | <b>N2930313</b>  |
| Flush Syringe                                                                 | 2500 µL | <b>09923219</b>  |

\*Requires one-time purchase of **N2930313**

# Vacuum Degassing Kits

Using a solvent degassing system will extend the performance of your pump. PerkinElmer offers both vacuum degassing systems that can handle all your degassing requirements.

## On-Line Vacuum Degasser Kit

This is a low-volume, high efficiency on-line module for the removal of dissolved gasses from HPLC solvents. The vacuum degasser is available in 3 and 5 channel models to support isocratic, binary and quaternary pumps as well as degassing of autosampler flush solvent.



| Description                                                                                                                                               | Part No.        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| 3-channel Vacuum Degassing Package.<br>Includes: a Vacuum Degasser, one 1 L Bottle with Cap,<br>one 2 L Bottle with Cap, one Organizer Tray and Accessory | <b>N2600571</b> |
| 5-channel Vacuum Degassing Package.<br>Includes: a Vacuum Degasser, two 1 L Bottle with Caps,<br>two 2 L Bottles with Caps, Solvent Tray and Organizer    | <b>N2600570</b> |
| Binary Bottle Cap Kit.<br>Includes: two Caps, Tubing, Fittings and Labels<br>required for two Solvent Bottles                                             | <b>N2600522</b> |
| Quaternary Bottle Cap Kit.<br>Includes: four Caps, Tubing, Fittings and Labels<br>required for four Solvent Bottles                                       | <b>N2600523</b> |

## Liquid Chromatography Laboratory Bottle Kits

| Description                                                                                                                           | Part No.        |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| 1 x 5 Liter Bottle with Cap and PTFE Insert,<br>2 Meters PTFE 1/8 in. Tubing and 1x10 µm Stainless Steel Solvent Frit                 | <b>N2601610</b> |
| 1 x 2 Liter Bottle with Cap and PTFE Insert<br>1 Meter PTFE 1/8 in. Tubing and 1 x 10 µm Stainless Steel Solvent Frit                 | <b>N2601611</b> |
| 1 x 1 Liter Bottle with Cap and PTFE Insert<br>1 Meter PTFE 1/8 in. Tubing and 1 x 10 µm Stainless Steel Solvent Frit                 | <b>N2601612</b> |
| 1 x 0.5 Liter Bottle with Cap and PTFE Insert<br>1 Meter PTFE 1/16 in. Tubing and 1 x 40 µm Stainless Steel Solvent Frit              | <b>N2601613</b> |
| 1 Cap with PTFE Insert 1 Meter PTFE 1/8 in. Tubing<br>and 1 x 10 µm Stainless Steel Solvent Frit                                      | <b>N2601614</b> |
| 1 Cap with PTFE Insert 1 Meter PTFE 1/16 in. Tubing<br>and 1 x 40 µm Stainless Steel Solvent Frit                                     | <b>N2601615</b> |
| 1 x 0.5 Liter Bottle with Cap and Dual PTFE Insert<br>2 pcs of 2 Meter PTFE 1/8 in. Tubing (Piston Wash Function)                     | <b>N2601616</b> |
| 1 Cap with Dual PTFE Insert 2 pcs of 2 Meter PTFE 1/8 in.<br>Tubing and 1 x 10 µm Stainless Steel Solvent Frit (Piston Wash Function) | <b>N2601617</b> |

## Replacement Vacuum Degasser Bottles

| Description      | Part No.        |
|------------------|-----------------|
| 1 L Glass Bottle | <b>N2600497</b> |
| 2 L Glass Bottle | <b>N2600498</b> |

## QSight LC/MS/MS Consumables and Spares

PerkinElmer's QSight™ LC/MS/MS provides a high sensitivity triple quadrupole solution that enables high levels of efficiency and productivity to meet both standard and regulatory requirements.

### Features and Benefits

- Self-cleaning StayClean™ technology
- Dual-source ion probes for flexible method development
- Easy-to-use and learn Simplicity software to streamline workflow

### Ion Source Accessories

| Description           | Part No.  |
|-----------------------|-----------|
| Additional ESI probe  | BC001283F |
| Additional APCI probe | BC002312F |
| ESI source needle     | BC004866F |
| APCI source needle    | BC004868F |

### Tuning Solutions

| Description                    | Part No. |
|--------------------------------|----------|
| 100-200 series tuning solution | BC004850 |
| LC infusion kit                | BC002931 |

### Uninterruptable Power Supply Systems

With the Security Plus Series, you get much more protection and a higher comfort level than you get with most other UPS systems. The Security Plus Series also provides complete power conditioning and, because the Security Plus Series features on-line inverter design, added peace of mind. And regardless of input fluctuations, the Security Plus Series ensures that the output remains continuous and regulated.

| Description       | Part No. |
|-------------------|----------|
| QSight UPS System | N9306749 |

### Noise Enclosure and Reduction Cover

Laboratories can be loud and noise in labs is distracting, stressful and potentially harmful to your hearing. While noise in labs may not be frequently talked about, it is something you should be concerned with.

Noise enclosure for SC40 and reduces perceived operator noise level by approximately 4 to 5 dB (A) Fits on **MZ321147**.



### Nitrogen Generators

PerkinElmer offers customers a new line of nitrogen generators to meet the growing need for cost effective and pure nitrogen. Membrane Nitrogen Generators are designed to supply single or multiple LC/MS instruments with dry nitrogen at purities of 98% to 99.5%. The generator can also be used for solvent evaporation as well as supplying dry nitrogen to analytical instruments.

| Description                                                                               | Part No. |
|-------------------------------------------------------------------------------------------|----------|
| Nitroflow TG2NA<br>Multi-Gas Generator for US<br>For Single/Dual Source, 208-230 V/60 Hz  | BC004852 |
| Nitroflow TG2WD<br>Multi-Gas Generator for World<br>For Single/Dual Source, 230 VAC/50 Hz | BC004874 |
| Nitroflow TG2JA200<br>Multi-Gas Generator for Japan                                       | BC004875 |



| Description                     | Part No. | Depth (ins/cm) | Width (ins/cm) | Height (ins/cm) | Height with Oil Tray (ins/cm) | Enclosure Weight (lbs/kg) | Oil Tray Weight (lbs/kg) |
|---------------------------------|----------|----------------|----------------|-----------------|-------------------------------|---------------------------|--------------------------|
| Noise Enclosure including dolly | MZ321146 | 29.15/74       | 16.75/42.5     | 23.25/59        | 26.97/68.5                    | 30.8/14                   | 16.75/8                  |



# GC Columns

PerkinElmer offers a wide selection of superior quality products designed to work with your PerkinElmer instruments. Our precision designed products deliver the peace of mind that comes from knowing that you'll get the results you need.

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## NEW Elite-Carbon Columns

Elite-Carbon columns offer rapid separation of permanent gas/light hydrocarbon mixtures; including carbon monoxide and carbon dioxide without cryogenic cooling. They are preconditioned and thus take less than 30 minutes to stabilize.

VIEW PAGE

## NEW GC Column Cutter

PerkinElmer's capillary column cutting tool ensures you make a perfect cut of your GC column, first time, every time. The rotating diamond blade with a built in magnifier to verify a square cut, affords a precise clean cut of fused silica columns.

VIEW PAGE



## GC Columns with Integrated Guard Column

These innovative columns incorporate both guard column and analytical column in a continuous length of tubing, eliminating the connection and all connection-associated problems! The guard

column section is marked separately from the analytical column, using high-temperature string.



VIEW PAGE

# Finest Quality High-Strength Fused Silica

## Why Choose Fused Silica?

Many factors influence the quality of a column. Fused silica is considered to be the purest form of glass, with fewer metal oxides (Lewis acid sites) and hydrogen bonding (surface silanol) groups. The stationary phase is cross linked (polymerized) and also bonded to the surface of the column to provide a high degree of stability, resulting in lower bleeding of the stationary phase at elevated temperatures. The superior inertness of the column means that acidic and basic compounds can be analyzed on the same column.

## Selecting the Right Stationary Phase

The inherent efficiency (large number of theoretical plates) of capillary columns allows you to choose from relatively few types of phases, compared to the many varieties of packed columns previously required. Perhaps more importantly, because capillary columns are more efficient, you will see superior resolution resulting in narrower, taller peaks that allow easier integration from your data system. Identification of small peaks are facilitated by a reduced baseline bleed and lower baseline noise. Non-polar Elite-1 columns from PerkinElmer will preferentially retain non-polar compounds, whereas the PerkinElmer Elite-200 column phase provides high selectivity for analytes containing lone pair electrons, such as nitro and carbonyl groups. Elite-WAX polyethylene glycol columns are highly selective toward polar compounds such as alcohols.



## What Length Do I Need?

Typically capillary columns are available in lengths from 15 to 105 meters. The longer the column the more resolving power, but this also increases the analysis time. Doubling a column length only increases resolution by approximately 40%. Under isothermal conditions, the analysis time will double if using temperature programmed analysis retention times are more dependent on the temperature than on the column length. PerkinElmer provides columns in the most popular lengths of 5, 10, 12, 15, 25, 30, 50, 60, 75, 100 and 105 meters depending upon the column ID.

# GC Capillary Column Cutter

Use PerkinElmer's capillary column cutting tool to ensure a perfect cut of your GC column, first time, every time. The rotating diamond blade with a built in magnifier to verify a square cut, affords a precise clean cut of fused silica columns. Suitable for use with 0.25 mm ID to 0.53 mm ID tubing, (0.78 mm OD maximum).

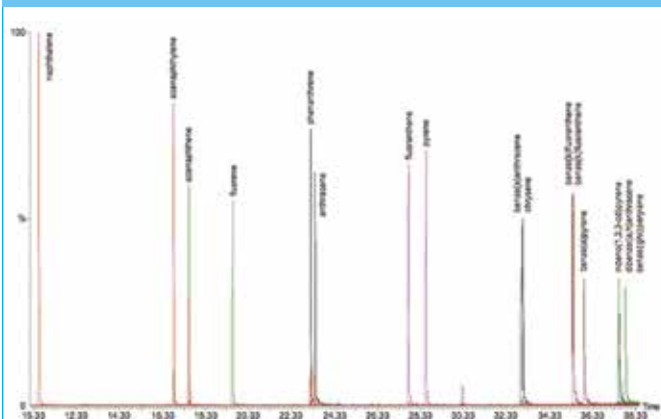
| Description                                                                                   | Part No.        |
|-----------------------------------------------------------------------------------------------|-----------------|
| GC capillary cutting tool                                                                     | <b>N6107245</b> |
| Maintenance kit<br>Contains replacement cutting wheel,<br>O-Rings and tool to open the cutter | <b>N6107246</b> |



# Application Highlights

## Environmental

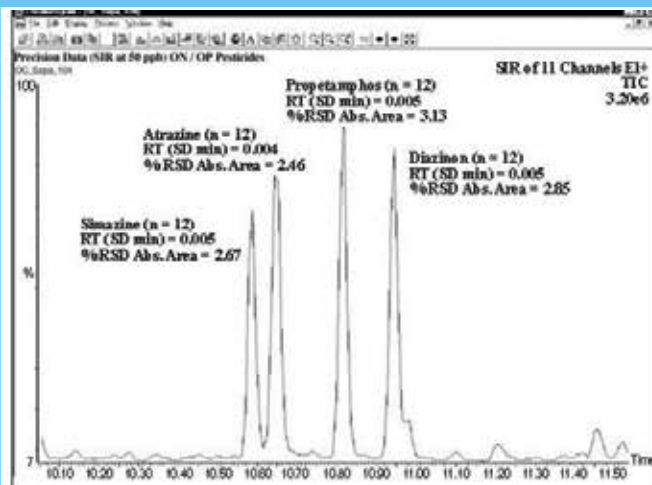
Thermal Desorption-GC/MS Analysis of Polycyclic Aromatic Hydrocarbons on Fine Particulates in Air.



Recommended Column: Elite-5ms, 30 m x 0.25 mm x 0.25  $\mu$ m, Part No. **N9316282**

## Environmental

Analysis of Organophosphorus and Organonitrogen Herbicides in Water using GC/MS with Selected Ion Recording.

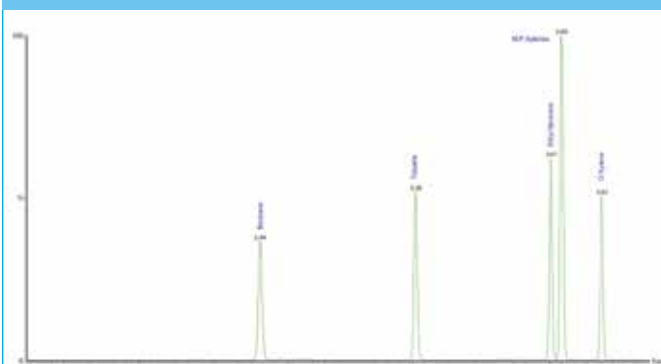


Recommended Column: Elite-5ms, 30 m x 0.25 mm x 0.25  $\mu$ m, Part No. **N9316282**

Liner: a quartz injector liner packed with quartz or silanized glass wool.

## Environmental

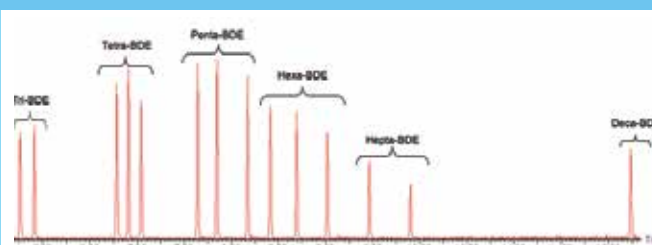
An example mass at 4.0 ppb acquiring in full scan.



Recommended Column: Elite-624, 20 m x 0.18 mm x 1.0  $\mu$ m, Part No. **N9316200**

## Environmental

Analysis of Polybrominated Diphenyl Ether Flame Retardants by Gas Chromatography/Mass Spectrometry.

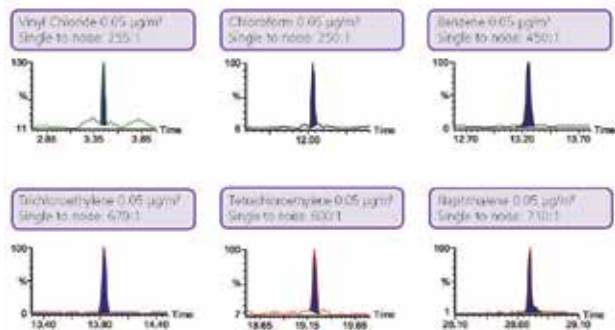


Recommended Column: Elite-1, 15 m x 0.25 mm x 0.1  $\mu$ m, Part No. **N9316006**

Liner: deactivated glass liner with wool, Part No. **N6502001**

## Environmental

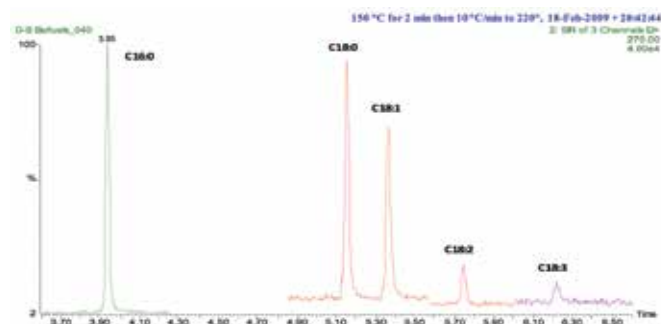
Analysis of Volatile Organic Compounds (VOCs) in Air Using US EPA Method TO-17.



Recommended Column: Elite-624, 60 m x 0.25 mm x 1.4 µm, Part No. **N9316006**

## Industrial

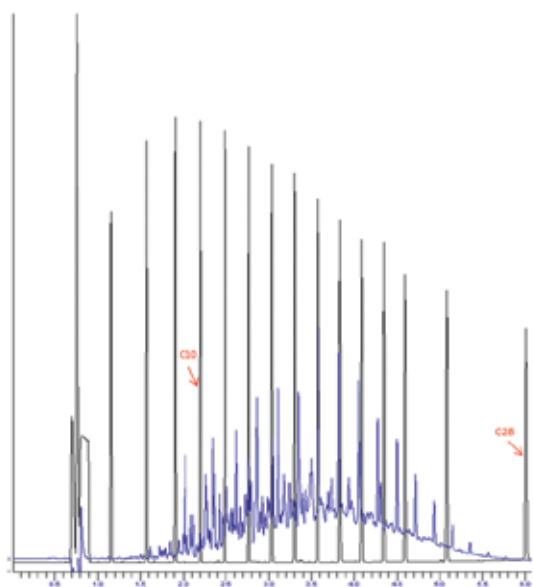
Fatty Acid Methyl Ester Contamination of Aviation Fuel by GC/MS.



Recommended Column: Elite-23, 50 m x 0.25 mm x 0.25 µm, Part No. **N9316506**

## Industrial

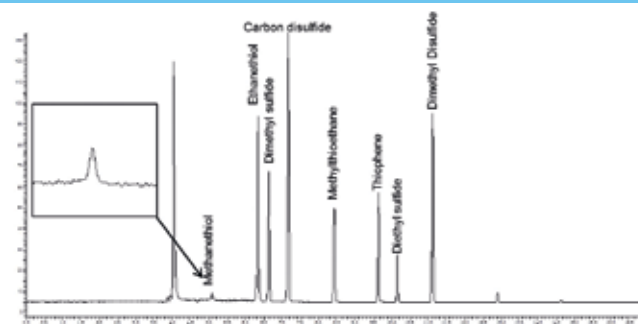
EPA Method 8015C for Diesel Range Organics.



Recommended Column: Elite-1, 15 m x 0.25 mm x 1.0 µm, Part No. **N9316006**

## Industrial

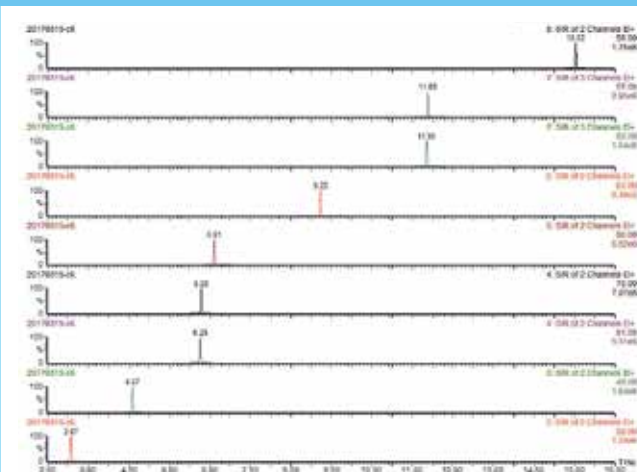
Determination of sulfur compounds in air by online TD-GC/FPD.



Recommended Column: Elite-5, 60 m x 0.32 mm x 0.25 mm, Part No. **N9316090**

## Industrial

Determination of nine carbonates in lithium ion battery electrolyte by GC/MS.

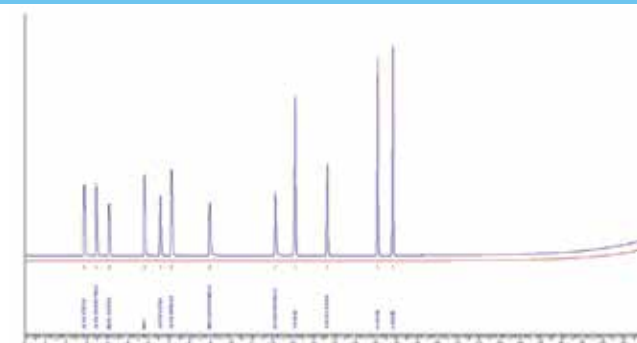


Recommended Column: Elite-35ms, 30 m x 0.25 mm x 0.25  $\mu$ m (Part No. **N9316438**)

Liner: Capillary splitless deactivated glass liners with deactivated wool (**N9306235**)

## Food and Flavor

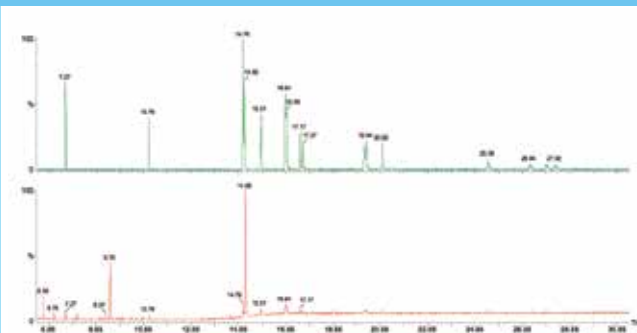
Determination of Residual Solvents in Flexible Packaging According to EN 13628-2:2004.



Recommended Column: Elite-1, 30 m, 0.32 mm, 3.0  $\mu$ m, Part No. **N9316025**

## Food

The Preparation and Analysis of Polycyclic Aromatic Hydrocarbons in Meat by GC/MS.

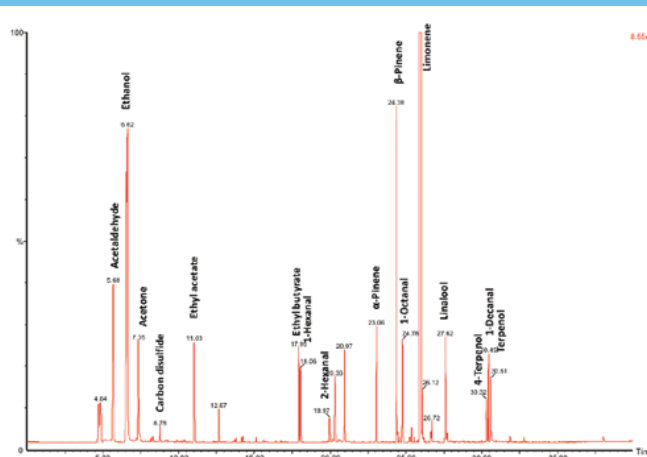


Column: Elite-5ms column, 30 m x 0.25 mm x 0.25  $\mu$ m, Part No. **N9316282**

Liner Deactivated Liner, Part No. **N6502002**

## Food and Flavor

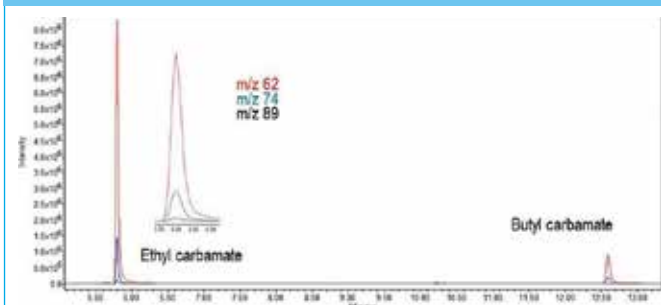
The Qualitative Characterization of Fruit Juice Flavor using a TurboMatrix Hs Trap and a Clarus SQ 8 GC/MS.



Recommended Column: Elite-5ms, 60 m x 0.25 mm x 1.0  $\mu$ m, Part No. **N9316287**

## Food and Flavor

### Analysis of Ethyl Carbamate Using GC/MS

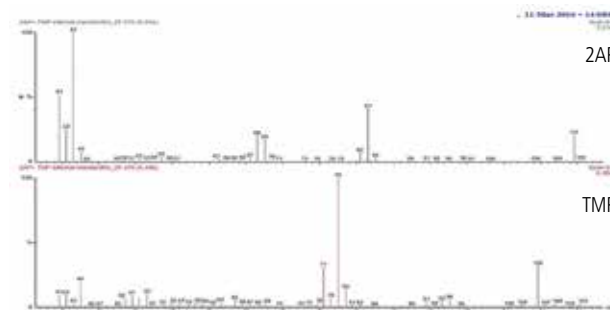


Recommended Column: Elite-35, 30 m x 0.25 mm x 0.25  $\mu$ m  
(Part No. **N9316145**)

Liner: 2 mm ID glass (no glass wool)

## Food and Flavor

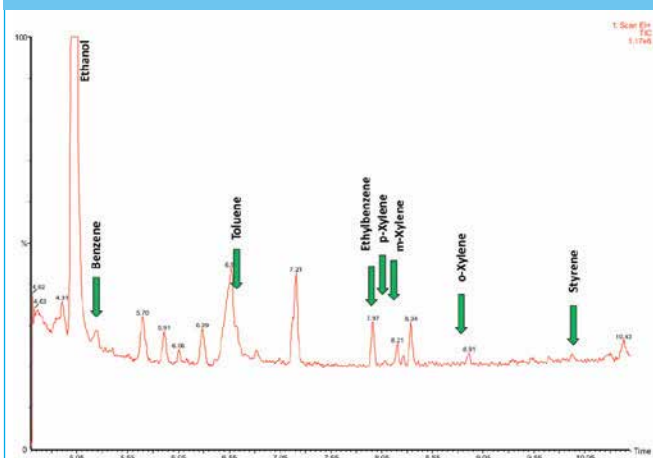
### Quantification of Rice Aroma, 2-Acetyl-1-Pyrroline (2-AP), Using TurboMatrix Headspace Trap Coupled with GC/NPD and GC/MS



Recommended Column: Elite-5ms, 30 m x 0.32 mm x 0.25  $\mu$ m  
(Part No. **N9316293**)

## Food and Flavor

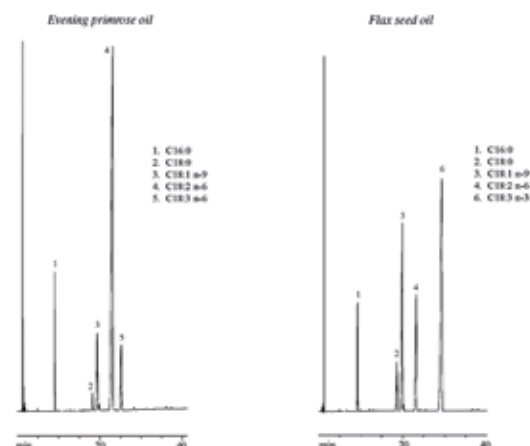
### The Determination of Low Levels of Benzene, Toluene, Ethylbenzene, Xylenes and Styrene in Olive Oil Using a Turbomatrix HS and a Clarus SQ 8 GC/MS



Recommended Column: Elite-WAX, 30 m x 0.25 mm x 1.0  $\mu$ m  
(Part No. **N9316485**)

## Food and Flavor

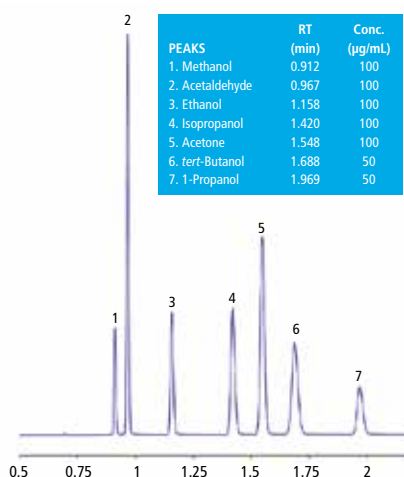
### Determination of Omega-3 (n-3) and Omega-6 (n-6) Fatty Acid Composition in Evening Primrose Oil and Flax Seed Oil



Recommended Column: Elite-WAX, 30 m x 0.25 mm x 0.25  $\mu$ m  
(Part No. **N9316403**)

## Clinical

## Blood Alcohol Analysis.

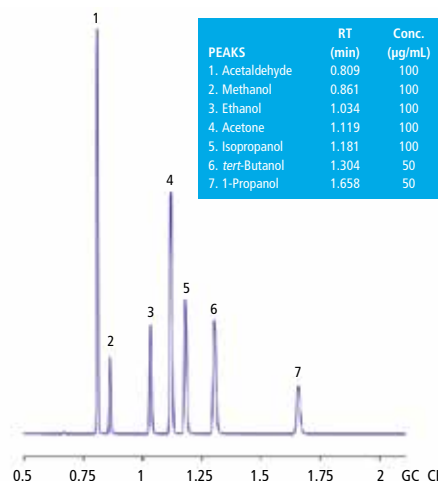


Elite-BAC 1 Advantage, 10 m x 0.18 mm x 1.0 µm, Part No. **N9315075**

- Baseline resolution
- Symmetrical peaks
- Run time under 2 min

## Clinical

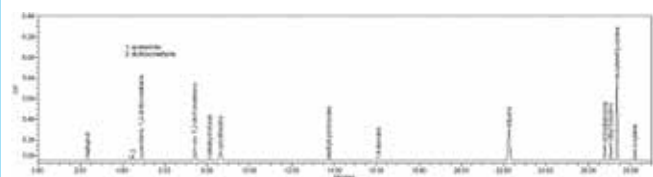
## Blood Alcohol Analysis.



Elite-BAC 2 Advantage, 10 m x 0.18 mm x 1.0 µm, Part No. **N9315076**

## Pharma

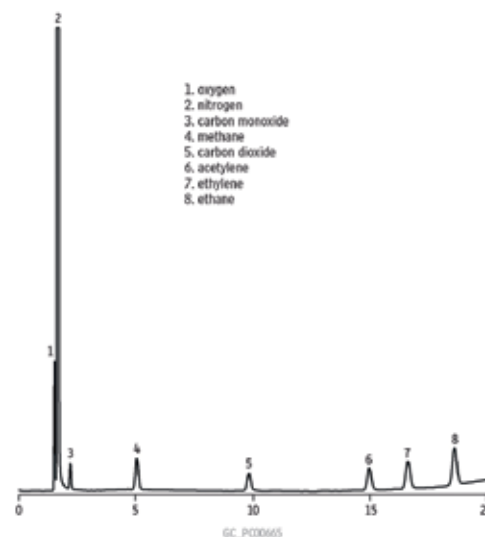
## Residual solvents in pharmaceuticals by USP 467.



Elite-624, 30 m x 0.32 mm x 1.8 µm, Part No. **N9316203**

## Petrochemical

## Analysis of Permanent Gases and C1+C2 Hydrocarbons with the Elite-Carbon Column.



Column: Elite-Carbon, 2 m x 1.0 mm, 100/120 mesh, Part No: **N9303926**

Column requires an installation kit: for valve applications, Part No: **N9303450**; for direct injections Part No: **N9303451**

## Cross Reference Chart by Phase

| PerkinElmer       | Phase Composition                                      | USP                     | Agilent®                                                                     | Alltech®         |
|-------------------|--------------------------------------------------------|-------------------------|------------------------------------------------------------------------------|------------------|
| Elite-1, Elite-ms | Dimethyl polysiloxane                                  | G1, G2, G38             | HP-1, DB-1, CP-Sil 5 CB                                                      | 007-1AT-1, EC-1  |
| Elite-1ht         | Dimethyl polysiloxane                                  | G1, G2, G38             | DB-1ht                                                                       | AT-1ht           |
| Elite-1ms         | Dimethyl polysiloxane (low bleed)                      | G1, G2, G38             | HP-1, HP-1ms, HP-1msUI, DB-1, DB-1MS, DB-1msUI, Ultra-1, VF-1ms, CP-Sil 5 CB | AT-1ms           |
| Elite-5           | Diphenyl dimethyl polysiloxane                         | G27, G36                | HP-5, DB-5, CP-Sil 8 CB                                                      | EC-5, AT-5       |
| Elite-5ht         | Diphenyl dimethyl polysiloxane                         | G27, G36                | DB-5ht, VF-5ht                                                               |                  |
| Elite-5ms         | 1,4-bis(dimethylsiloxy)phenylene dimethyl polysiloxane | G27, G36                | DB-5ms, DB-5msUI, VF-5ms, CP Sil 8 CB MS                                     |                  |
| Elite-5ms II      | Diphenyl dimethyl polysiloxane                         | G27, G36                | HP-5, HP-5ms, DB-5, Ultra-2                                                  |                  |
| Elite-17          | Phenyl methyl polysiloxane                             | G3                      | DB-17, CP Sil 24 CB                                                          | AT-50            |
| Elite-17ht        | Phenyl methyl polysiloxane                             | G3                      | DB-17ht                                                                      |                  |
| Elite-17ms        | Phenyl methyl polysiloxane                             | G3                      | HP-50+, DB-17, DB-17ht, DB-608, CP Sil 24 CB                                 |                  |
| Elite-17ms+       | Diphenyl dimethyl polysiloxane                         | G3                      | DB-17ms, VF-17ms, CP-Sil 24 CB                                               |                  |
| Elite-35          | Unique Phase                                           | G42                     | HP-35, DB-35, VF-35                                                          | AT-35, AT-35ms   |
| Elite-35ms        | Diphenyl dimethyl polysiloxane                         | G42                     | DB-35ms, DB35msUI                                                            |                  |
| Elite-200         | Unique Phase                                           | G6                      | DB-210, DB-200, VF-200ms                                                     | AT-210           |
| Elite-225         | Trifluoropropylmethyl polysiloxane                     | G7, G19                 | DB-225ms, CP Sil 43 CB                                                       | AT-225           |
| Elite-624         | Cyanopropylmethyl phenylmethyl polysiloxane            | G43                     | DB-1301, DB-624, VF-624ms, CP-1301                                           | AT-624, AT-1301  |
| Elite-624ms       | Cyanopropylphenyl dimethyl polysiloxane                | G43                     | DB-624, VF-624ms, CP-Select 624 CB                                           |                  |
| Elite-1301        | Unique phase                                           | G43                     | DB-1301, DB-624, VF-1301ms, VF-624ms, CP-1301                                | AT-624, AT-1301  |
| Elite-1701        | Cyanopropylphenyl dimethyl polysiloxane                | G46                     | DB-1701R, DB-1701, CP Sil 19 CB, VF-1701ms, VF-1701 Pesticides               | AT-1701          |
| Elite-WAX         | Cyanopropylphenyl dimethyl polysiloxane                | G14, G15, G16, G20, G39 | DB-Wax, CP Wax 52 CB, VF WAX                                                 | AT-WAXms, EC-WAX |
| Elite-WAX ETR     | Polyethylene glycol                                    | G14, G15, G16, G20, G39 | HP-INNOWax, CP Wax 52 CB, VF-WAX MS                                          | AT-WAX           |

## Cross Reference Chart by Application

| PerkinElmer           | Applications                                                               | Agilent®                                  | Alltech®               | Machery-Nagel®                                |
|-----------------------|----------------------------------------------------------------------------|-------------------------------------------|------------------------|-----------------------------------------------|
| Elite-23              | cis/trans FAMES and Dioxins                                                | VF-23ms                                   | AT-Silar90             |                                               |
| Elite-502             | Volatile analytes by EPA Method 502.2                                      | DB-502.2                                  |                        |                                               |
| Elite-608             | Semivolatile pesticides by EPA Method 608                                  | DB-608, HP-608                            |                        |                                               |
| Elite-2560            | cis/transFAMES                                                             | HP-88, CP Sil 88                          |                        |                                               |
| Elite-Alumina PLOT    | Light hydrocarbons                                                         | Alumina PLOT                              |                        |                                               |
| Elite-BAC 1 Advantage | Blood alcohol testing                                                      | DB-ALC1                                   |                        |                                               |
| Elite-BAC 2 Advantage | Blood alcohol testing                                                      | DB-ALC2                                   |                        |                                               |
| Elite-CLPesticides    | Organochlorine pesticides by EPA Methods 504, 608, 8081, 8082, and CLP     | DB-CLP1                                   |                        |                                               |
| Elite-CLPesticides2   | Organochlorine pesticides by EPA Methods 504, 608, 8081, 8082, and CLP     | DB-CLP2                                   |                        |                                               |
| Elite-Cyclosil B      | Chiral separations                                                         |                                           |                        |                                               |
| Elite-FFAP            | Free fatty acids                                                           | HP-FFAP, DB-FFAP, CP WAX58 CB, CP-FFAP CB | AT-AquaWax DA, AT-1000 | PERMABOND FFAP, OPTIMA FFAP, OPTIMA FFAP Plus |
| Elite-Molesieve PLOT  | Permanent gases                                                            |                                           |                        |                                               |
| Elite-PONA            | Detailed analysis of petroleum naphtha                                     | HP-PONA, DB-Petro, CP Sil PONA CB         |                        |                                               |
| Elite-Carbon          | Permanent gases and light hydrocarbons                                     |                                           |                        |                                               |
| Elite-SimDist         | Simulated Distillation and Hydrocarbons – ASTM 2887                        | DB-2887, CP SimDist                       | AT-2887                |                                               |
| Elite-THP             | Total petroleum hydrocarbons                                               |                                           |                        |                                               |
| Elite-VMS             | Volatiles Organic Pollutants by GC-MS for EPA Methods 8260,624,524         | Unique Phase                              |                        |                                               |
| Elite-VRX             | Volatile analytes by EPA Methods 502.2, 601, 602, 8010, 8020               | DB-VRX                                    |                        |                                               |
| Elite-XLB             | Polychlorinated biphenyl analytes by EPA Methods 8082, 6008, PCB congeners | DB-XLB, VF-XMS                            |                        |                                               |



| Machery-Nagel®                  | Ohio Valley® | Phenomenex®       | Quadrex®          | Restek®       | SGE®          | Supelco®        |
|---------------------------------|--------------|-------------------|-------------------|---------------|---------------|-----------------|
| OPTIMA 1                        | OV-1         | ZB-1              | 007-1             | Rtx-1, Mtx-1  | BP1           | SPB-1           |
|                                 |              | ZB-1HTInferno     |                   | Rxi-1HT       |               |                 |
| OPTIMA 1 MS, OPTIMA 1 MS Accent |              | ZB-1, ZB-1ms      | 007-1             | Rxi-1ms       | BP-1          | SPB-1, Equity-1 |
| OPTIMA 5                        | OV-5         | ZB-5              | 007-5             | Rtx-5         | BP5           | SPB-5           |
| OPTIMA 5HT                      |              | ZB-5HTInferno     |                   | Rxi-5HT       | HT5           |                 |
| OPTIMA 5 MS Accent              | OV-5MS       | ZB-5msi           | 007-5MS           | Rxi-5Sil MS   | BPX5          | SLB-5ms         |
| OPTIMA 5, OPTIMA 5 MS           |              | ZB-5, ZB-5ms      |                   | Rxi-5ms       | BP5ms         |                 |
|                                 | OV-17        |                   | 007-17            | Rtx-50        |               | SPB-50          |
| OPTIMA 17                       |              | ZB-50             |                   | Rxi-17        |               | SPB-17          |
| OPTIMA 17 MS                    |              | ZB-50             |                   | Rxi-17Sil MS  | BPX50         |                 |
|                                 | OV-35        | ZB-35             | 007-35            | Rtx-35        | BPX35, BPX608 | SPB-35, SPB-608 |
| OPTIMA 35 MS                    |              | MR2               |                   | Rxi-35Sil MS  | BPX35         |                 |
| OPTIMA 210                      |              |                   |                   | Rtx-200       |               |                 |
| OPTIMA 225                      | OV-225       |                   | 007-225           | Rtx-225       | BP225         | SPB-225         |
| OPTIMA 1301, OPTIMA 624         | OV-624       | ZB-624            | 007-1301, 007-624 | Rtx-624       | BP624         | SPB-624         |
| OPTIMA 624 LB                   |              | ZB-624            |                   | Rxi-624Sil MS | BP624         |                 |
| OPTIMA 1301, OPTIMA 624         | OV-1301      | ZB-624            | 007-1301, 007-624 | Rtx-624       | BP624         | SPB-624         |
| OPTIMA 1701                     | OV-1701      | ZB-1701, ZB-1701P | 007-1701          | Rtx-1701      | BP10          | Equity-1701     |
| OPTIMA WAX                      | Carbowax 20M | ZB-Wax            | 007-CW            | Rtx-Wax       | BP20          |                 |
| OPTIMA WAX plus                 |              | ZB-WaxPLUS        |                   | Stabilwax     |               | Supelcowax-10   |

| Ohio Valley® | Phenomenex® | Quadrex® | Restek®            | SGE®    | Supelco®                       |
|--------------|-------------|----------|--------------------|---------|--------------------------------|
|              |             | 007-23   |                    | BPX70   | SP-2330, SP-2331, SP-2380      |
|              |             |          | Rtx-502.2          |         | VOCOL                          |
|              |             | 007-608  |                    |         | SPB-608                        |
|              |             |          | Rt-2560            |         | SPB-2560                       |
|              | ZB-BAC1     |          | Rtx-BAC Plus 1     |         |                                |
|              | ZB-BAC2     |          | Rtx-BAC Plus 2     |         |                                |
|              |             |          | Rtx-CLPesticides   |         |                                |
|              |             |          | Rtx-CLPesticides 2 | Rtx-200 |                                |
| OV-351       | ZB-FFAP     |          | Stabilwax-DA       | BP-21   | Nukol                          |
|              |             |          | Rtx-DHA            | BP1PONA | Petrocol DH                    |
|              |             |          | Rtx-2887           |         | Petrocol 2887, Petrocol EX2887 |
|              |             |          |                    |         |                                |
|              | MR1, ZB-XLB |          | Rxi-XLB            |         |                                |

# GC Columns with Integrated Guard Columns

Integrated Guard columns: guard columns WITHOUT connections – protecting your analytical GC column has never been this easy!

For analysts who find it inconvenient to make a leak-free connection between the guard column and the analytical column, we offer Integrated Guard columns. These innovative columns incorporate both guard column and analytical column in a continuous length of tubing, eliminating the connection and all connection-associated problems! The guard column section is marked separately from the analytical column, using high-temperature string. A GC column with an integrated Guard column is so economical that we challenge you to compare our price against that of a GC column and guard with a conventional connection, even if you assemble it yourself.

## Features and Benefits

- No leaks for a more robust method
- No column connections for easier, faster maintenance
- No peak distortions due to connector dead volume and thermal capacity

## Elite-1

| ID (mm) | df (µm) | Temp Limits (°C) | Integra-Guard | 30 m Part No.   |
|---------|---------|------------------|---------------|-----------------|
| 0.25    | 0.25    | -60 to 330/350   | 5 m           | <b>N9305600</b> |
| 0.53    | 1.00    | -60 to 330/350   | 5 m           | <b>N9305601</b> |
|         | 5.00    | -60 to 340/360   | 5 m           | <b>N9305602</b> |

## Elite-5

| ID (mm) | df (µm) | Temp Limits (°C) | Integra-Guard | 30 m Part No.   | 60 m Part No.   |
|---------|---------|------------------|---------------|-----------------|-----------------|
| 0.25    | 0.25    | -60 to 330/350   | 5 m           | <b>N9305603</b> |                 |
|         | 0.25    | -60 to 330/350   | 10 m          | <b>N9305604</b> |                 |
|         | 1.00    | -60 to 330/350   | 5 m           | <b>N9305605</b> |                 |
| 0.32    | 0.25    | -60 to 330/350   | 5 m           | <b>N9305606</b> | <b>N9305607</b> |
|         | 1.00    | -60 to 330/350   | 5 m           | <b>N9305608</b> |                 |
| 0.53    | 5.00    | -60 to 340/360   | 5 m           | <b>N9305609</b> |                 |

## Elite-5ms II

| ID (mm) | df (µm) | Temp Limits (°C) | Integra-Guard | 15 m Part No.   | 30 m Part No.   |
|---------|---------|------------------|---------------|-----------------|-----------------|
| 0.25    | 0.10    | -60 to 330/350   | 5 m           |                 | <b>N9305610</b> |
|         | 0.25    | -60 to 330/350   | 5 m           | <b>N9305611</b> | <b>N9305612</b> |
|         | 0.25    | -60 to 330/350   | 10 m          |                 | <b>N9305613</b> |
|         | 0.50    | -60 to 330/350   | 5 m           |                 | <b>N9305614</b> |
|         | 0.50    | -60 to 330/350   | 10 m          | <b>N9305615</b> | <b>N9305616</b> |
| 0.32    | 0.25    | -60 to 330/350   | 5 m           |                 | <b>N9305617</b> |
|         | 1.00    | -60 to 330/350   | 5 m           |                 | <b>N9305618</b> |

## Elite-5ms

| ID (mm) | df (µm) | Temp Limits (°C) | Integra-Guard | 30 m Part No.   | 60 m Part No.   |
|---------|---------|------------------|---------------|-----------------|-----------------|
| 0.25    | 0.10    | -60 to 330/350   | 5 m           |                 |                 |
|         | 0.25    | -60 to 330/350   | 5 m           |                 | <b>N9305619</b> |
|         | 0.25    | -60 to 330/350   | 10 m          | <b>N9305620</b> | <b>N9305621</b> |
|         | 0.50    | -60 to 330/350   | 5 m           | <b>N9305622</b> | <b>N9305623</b> |
|         | 0.50    | -60 to 330/350   | 10 m          |                 | <b>N9305624</b> |
| 0.32    | 0.50    | -60 to 330/350   | 5 m           |                 | <b>N9305625</b> |
|         | 1.00    | -60 to 330/350   | 5 m           |                 | <b>N9305626</b> |

## Elite-624

| ID (mm) | df (µm) | Temp Limits (°C) | Integra-Guard | 30 m Part No.   |
|---------|---------|------------------|---------------|-----------------|
| 0.25    | 1.40    | -60 to 330/350   | 5 m           | <b>N9305627</b> |
| 0.32    | 1.80    | -60 to 330/350   | 5 m           | <b>N9305628</b> |
| 0.53    | 3.00    | -60 to 340/360   | 5 m           | <b>N9305629</b> |

## Elite-1301

| ID (mm) | df (µm) | Temp Limits (°C) | Integra-Guard | 30 m Part No.   |
|---------|---------|------------------|---------------|-----------------|
| 0.53    | 3.00    | -60 to 330/350   | 5 m           | <b>N9305630</b> |

## Elite-1701

| ID (mm) | df (µm) | Temp Limits (°C) | Integra-Guard | 30 m Part No.   |
|---------|---------|------------------|---------------|-----------------|
| 0.25    | 0.25    | -60 to 330/350   | 5 m           | <b>N9305631</b> |

## Elite-WAX ETR

| ID (mm) | df (µm) | Temp Limits (°C) | Integra-Guard | 30 m Part No.   |
|---------|---------|------------------|---------------|-----------------|
| 0.25    | 0.25    | -60 to 330/350   | 5 m           | <b>N9305632</b> |
| 0.32    | 1.00    | -60 to 330/350   | 5 m           | <b>N9305633</b> |
| 0.53    | 1.00    | -60 to 340/360   | 5 m           | <b>N9305634</b> |

# Elite-1

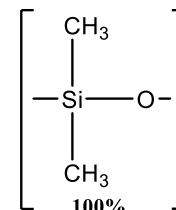
The Elite-1 100% dimethyl polysiloxane columns is a highly versatile, non-polar, cross-linked general purpose phase that is rugged, exhibiting long column lifetime, low bleed, and high maximum operating temperatures. The Elite-1ht (high-temperature) is designed for reduced bleed when operating at higher temperature (up to 400 °C).

Primary Applications: Elite-1 columns are ideal for the analysis of non-polar petrochemical samples, such as detailed hydrocarbon analysis, hydrocarbon gases, petroleum oxygenates, petroleum aromatics, fuels, waxes, oils, sulfur compounds, mercaptans, and carbon disulfide. It also is an excellent phase for solvents, chemicals, flavors, fragrances, essential oils, air toxins, chlorofluorocarbons, arson analysis, pesticides, hydrocarbons and high-temperature applications.

## Features and Benefits

- Temperature Range: -60 °C to 350 °C
- Equivalent to USP G1, G2, and G38 phases

Elite-1 Structure



| ID (mm) | df (µm) | Temp Limits (°C) | 5 m Part No. | 15 m Part No. | 30 m Part No.         | 60 m Part No. | 105 m Part No. |
|---------|---------|------------------|--------------|---------------|-----------------------|---------------|----------------|
| 0.25    | 0.10    | -60 to 330/350   |              | N9316006      | N9316009              | N9316012      |                |
|         | 0.25    | -60 to 330/350   |              | N9316007      | N9316010              | N9316013      |                |
|         | 0.50    | -60 to 330/350   |              | N9316686      | N9316685              |               |                |
|         | 1.00    | -60 to 320/340   |              | N9316008      | N9316011              | N9316014      |                |
| 0.32    | 0.10    | -60 to 330/350   |              | N9316016      | N9316022              | N9316027      |                |
|         | 0.25    | -60 to 330/350   | N9316596     | N9316017      | N9316023              | N9316028      |                |
|         | 0.50    | -60 to 330/350   |              |               | N9316021 <sup>1</sup> | N9316691      |                |
|         | 1.00    | -60 to 320/340   |              | N9316018      | N9316024              | N9316029      |                |
|         | 1.50    | -60 to 310/330   |              |               | N9316050              | N9316580      |                |
|         | 3.00    | -60 to 280/300   |              | N9316019      | N9316025              | N9316030      |                |
|         | 5.00    | -60 to 260/280   |              | N9316020      | N9316026              | N9316031      |                |
| 0.45    | 0.13    | -60 to 330/350   |              | N9316032      |                       |               |                |
|         | 0.42    | -60 to 310/330   |              | N9316037      | N9316041              |               |                |
|         | 1.27    | -60 to 310/330   |              | N9316034      | N9316038              | N9316042      |                |
|         | 2.55    | -60 to 270/290   |              | N9316035      | N9316039              |               | N9316043       |
|         | 4.25    | -60 to 260/280   | N9316032     | N9316036      | N9316040              |               |                |
| 0.53    | 0.15    | -60 to 320/340   |              | N9316045      |                       |               |                |
|         | 0.50    | -60 to 310/330   |              | N9316049      | N9316053              |               |                |
|         | 1.50    | -60 to 310/330   |              | N9316046      | N9316050              | N9316054      |                |
|         | 3.00    | -60 to 270/290   |              | N9316047      | N9316051              | N9315499      | N9316692       |
|         | 5.00    | -60 to 270/290   | N9316044     | N9316048      | N9316052              |               |                |

| ID (mm) | df (µm) | Temp Limits (°C) | 10 m Part No. | 12 m Part No. | 20 m Part No. | 25 m Part No. | 50 m Part No.         |
|---------|---------|------------------|---------------|---------------|---------------|---------------|-----------------------|
| 0.05    | 0.05    | -60 to 330/350   | N9316056      |               |               |               |                       |
|         | 0.20    | -60 to 330/350   | N9316057      |               |               |               |                       |
| 0.10    | 0.10    | -60 to 330/350   | N9316058      |               |               |               |                       |
|         | 0.40    | -60 to 320/340   |               |               | N9316061      |               |                       |
| 0.18    | 0.18    | -60 to 330/350   | N9316001      |               | N9316003      |               |                       |
|         | 0.40    | -60 to 320/340   | N9316002      |               | N9316004      |               | N9316005 <sup>2</sup> |
| 0.20    | 0.33    | -60 to 330/350   |               | N9316062      |               | N9316063      | N9316064              |

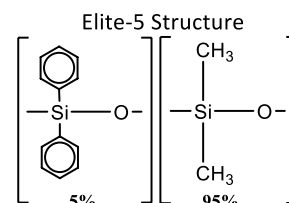
<sup>1</sup> N9316021: Elite-1, 25M x 0.32 mm x 0.52 µm    <sup>2</sup> The length of N9316005 is 40 m

## Elite-5

A 5% diphenyl/95% dimethyl polysiloxane stationary phase is a general purpose, low polarity phase that is the most popular GC stationary phase used for a wide variety of applications. These columns are commonly used for analysis of drugs, pesticides, hydrocarbons, PCBs, essential oils, semivolatiles and solvent impurities. The Elite-5 is a crosslinked phase in which all residual catalysts and low molecular weight fragments have been removed providing a tight mono-modal distribution and extremely low bleed.

### Features and Benefits

- Temperature Range: -60 °C to 350 °C
- Equivalent to USP G27 and G36 phases



| ID (mm) | df (μm) | Temp Limits (°C) | 10 m Part No.               | 15 m Part No.   | 20 m Part No.               | 30 m Part No.   | 40 m Part No.               | 60 m Part No.   |
|---------|---------|------------------|-----------------------------|-----------------|-----------------------------|-----------------|-----------------------------|-----------------|
| 0.05    | 0.05    | -60 to 325/350   | <b>N9316104</b>             |                 |                             |                 |                             |                 |
|         | 0.20    | -60 to 325/350   | <b>N9316105</b>             |                 |                             |                 |                             |                 |
| 0.10    | 0.10    | -60 to 330/350   |                             |                 | <b>N9316108</b>             |                 |                             |                 |
|         | 0.40    | -60 to 320/340   |                             |                 | <b>N9316109</b>             |                 |                             |                 |
| 0.18    | 0.18    | -60 to 330/350   | <b>N9316066</b>             |                 | <b>N9316068</b>             |                 |                             |                 |
|         | 0.4     | -60 to 320/340   | <b>N9316067</b>             |                 | <b>N9316069</b>             |                 | <b>N9316071</b>             |                 |
| 0.20    | 0.33    | -60 to 330/350   | <b>N9316110<sup>1</sup></b> |                 | <b>N9316111<sup>1</sup></b> |                 | <b>N9316112<sup>1</sup></b> |                 |
| 0.25    | 0.10    | -60 to 330/350   |                             | <b>N9316072</b> |                             | <b>N9316075</b> |                             | <b>N9316078</b> |
|         | 0.25    | -60 to 330/350   |                             | <b>N9316073</b> |                             | <b>N9316076</b> |                             | <b>N9316079</b> |
|         | 1.00    | -60 to 320/340   |                             | <b>N9316074</b> |                             | <b>N9316077</b> |                             | <b>N9316080</b> |
| 0.32    | 0.10    | -60 to 330/350   |                             | <b>N9316081</b> |                             | <b>N9316085</b> |                             | <b>N9316089</b> |
|         | 0.25    | -60 to 330/350   |                             | <b>N9316082</b> |                             | <b>N9316086</b> |                             | <b>N9316090</b> |
|         | 1.00    | -60 to 320/340   |                             | <b>N9316083</b> |                             | <b>N9316087</b> |                             | <b>N9316091</b> |
| 0.45    | 0.13    | -60 to 340/350   |                             |                 |                             |                 |                             | <b>N9316097</b> |
|         | 0.42    | -60 to 310/330   |                             | <b>N9316093</b> |                             | <b>N9316096</b> |                             |                 |
|         | 1.27    | -60 to 310/330   |                             | <b>N9316092</b> |                             | <b>N9316094</b> |                             |                 |
|         | 4.25    | -60 to 260/280   |                             |                 |                             | <b>N9316095</b> |                             |                 |
| 0.53    | 0.50    | -60 to 310/330   |                             | <b>N9316099</b> |                             | <b>N9316102</b> |                             |                 |
|         | 1.50    | -60 to 310/330   |                             | <b>N9316098</b> |                             | <b>N9316100</b> |                             | <b>N9316103</b> |
|         | 5.00    | -60 to 270/290   |                             |                 |                             | <b>N9316101</b> |                             |                 |

<sup>1</sup> The lengths of **N9316110**, **N9316111** and **N9316112** are 12 m, 25 m and 50 m, respectively

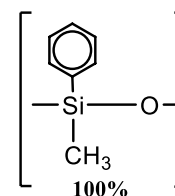
## Elite-17

The Elite-17 columns are general purpose, mid-polarity, (50%-phenyl)-methylpolysiloxane phases for the analysis of pesticides, herbicides, phthalate esters, sterols, and rosin acids. All Elite-17 phases incorporate a crosslinking technology for very low bleed and long column lifetimes.

### Features and Benefits

- Temperature Range: 40 °C to 330 °C
- Equivalent to USP G3 phase

Elite-17 Structure



| ID (mm) | df (μm) | Temp Limits (°C) | 5 m Part No.    | 10 m Part No.   | 15 m Part No.   | 20 m Part No.   | 30 m Part No.   | 60 m Part No.   |
|---------|---------|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.05    | 0.05    | 40 to 280/300    |                 | <b>N9316138</b> |                 |                 |                 |                 |
|         | 0.10    | 40 to 280/300    |                 | <b>N9316139</b> |                 |                 |                 |                 |
| 0.10    | 0.02    | 40 to 280/300    |                 | <b>N9316141</b> |                 |                 |                 |                 |
|         | 0.10    | 40 to 280/300    |                 | <b>N9316140</b> |                 | <b>N9316142</b> |                 |                 |
|         | 0.20    | 40 to 280/300    |                 |                 |                 | <b>N9316143</b> |                 |                 |
| 0.18    | 0.18    | 40 to 310/330    |                 | <b>N9316113</b> |                 | <b>N9316115</b> |                 |                 |
|         | 0.3     | 40 to 300/320    |                 | <b>N9316114</b> |                 | <b>N9316116</b> |                 |                 |
| 0.25    | 0.15    | 40 to 300/320    |                 |                 | <b>N9316117</b> |                 | <b>N9316120</b> |                 |
|         | 0.25    | 40 to 300/320    |                 |                 | <b>N9316118</b> |                 | <b>N9316121</b> | <b>N9316123</b> |
|         | 0.50    | 40 to 290/310    |                 |                 | <b>N9316119</b> |                 | <b>N9316122</b> |                 |
| 0.32    | 0.15    | 40 to 300/320    |                 |                 | <b>N9316124</b> |                 | <b>N9316127</b> |                 |
|         | 0.25    | 40 to 300/320    |                 |                 | <b>N9316125</b> |                 | <b>N9316128</b> |                 |
|         | 0.50    | 40 to 290/310    |                 |                 | <b>N9316126</b> |                 | <b>N9316129</b> |                 |
| 0.45    | 0.85    | 40 to 270/290    |                 |                 | <b>N9316131</b> |                 | <b>N9316132</b> | <b>N9316133</b> |
| 0.53    | 1.00    | 40 to 260/280    |                 |                 | <b>N9316135</b> |                 | <b>N9316136</b> | <b>N9316137</b> |
|         | 2.00    | 40 to 250/270    | <b>N9316134</b> |                 |                 |                 |                 |                 |

## Elite-35

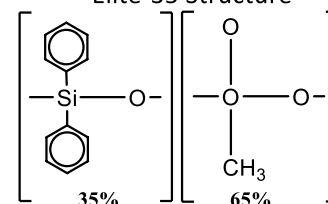
The Elite-35 columns are general purpose, mid-polarity columns that are coated with a crosslinked, (35%-diphenyl)-dimethylpolysiloxane commonly used for organochlorine pesticides, PDB congeners (e.g. Alaclor mixes), herbicides, pharmaceuticals, sterols, phthalate esters and rosin acids. The Elite-35 column is a popular confirmation column for pesticides and herbicides, in conjunction with an Elite-5 or Elite-1701. The higher phenyl content results in useful elution order and retention time changes.

| ID (mm) | df (μm) | Temp Limits (°C) | 15 m Part No.   | 30 m Part No.   |
|---------|---------|------------------|-----------------|-----------------|
| 0.25    | 0.15    | 40 to 300/320    |                 | <b>N9316144</b> |
|         | 0.25    | 40 to 300/320    |                 | <b>N9316145</b> |
| 0.32    | 0.25    | 40 to 300/320    |                 | <b>N9316146</b> |
|         | 0.50    | 40 to 290/310    |                 | <b>N9316147</b> |
| 0.45    | 0.42    | 40 to 290/310    |                 | <b>N9316150</b> |
|         | 0.85    | 40 to 280/300    | <b>N9316148</b> | <b>N9316149</b> |
| 0.53    | 0.50    | 40 to 260/280    |                 | <b>N9316153</b> |
|         | 1.00    | 40 to 260/280    | <b>N9316151</b> | <b>N9316152</b> |

### Features and Benefits

- Temperature Range: 40 °C to 300/320 °C
- Equivalent to USP G42 phase

Elite-35 Structure



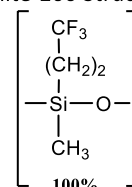
## Elite-200

Elite-200 columns are comprised of a (trifluoropropyl)-methylpolysiloxane stationary phase that has a unique selectivity which changes elution orders and resolves compounds that phenyl, cyano, or Carbowax® phases cannot. These columns have accomplished many difficult separations not possible on any other bonded stationary phase. Many analysts consider these the best, most inert mid-polarity columns available. The Elite-200 column offers exceptional thermal stability, low bleed, and superior inertness – even for active compounds such as phenols, and with sensitive detectors such as ECDs, NPDs, and MSDs. It is a good general purpose column for solvents, Freon® fluorocarbons, alcohols, ketones, silanes, glycols, and drugs of abuse. An excellent column for confirmation of phenols, nitrosamines, organochlorine pesticides, chlorinated hydrocarbons, and chlorophenoxy herbicides when paired with an Elite-5 column.

### Features and Benefits

- Temperature Range: 40 °C to 320/340 °C
- Equivalent to USP G6 phase

Elite-200 Structure



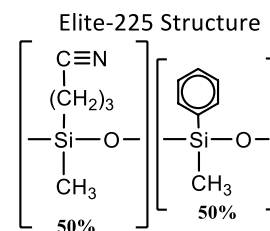
| ID (mm) | df (µm) | Temp Limits (°C) | 15 m Part No.   | 30 m Part No.   | 60 m Part No.   |
|---------|---------|------------------|-----------------|-----------------|-----------------|
| 0.25    | 0.10    | -20 to 320/340   | <b>N9316616</b> | <b>N9316617</b> |                 |
|         | 0.25    | -20 to 320/340   | <b>N9316618</b> | <b>N9316619</b> |                 |
|         | 0.50    | -20 to 310/330   | <b>N9316620</b> | <b>N9316621</b> |                 |
|         | 1.00    | -20 to 290/310   | <b>N9316622</b> | <b>N9316623</b> | <b>N9316624</b> |
| 0.32    | 0.25    | -20 to 320/340   | <b>N9316625</b> | <b>N9316626</b> |                 |
|         | 0.50    | -20 to 310/330   | <b>N9316627</b> | <b>N9316628</b> |                 |
|         | 1.00    | -20 to 290/310   | <b>N9316629</b> | <b>N9316630</b> | <b>N9316631</b> |
|         | 1.50    | -20 to 280/300   | <b>N9316632</b> | <b>N9316633</b> | <b>N9316634</b> |
| 0.53    | 0.25    | -20 to 310/330   | <b>N9316635</b> | <b>N9316636</b> | <b>N9316637</b> |
|         | 0.50    | -20 to 300/320   | <b>N9316638</b> | <b>N9316639</b> | <b>N9316640</b> |
|         | 1.00    | -20 to 290/310   | <b>N9316641</b> | <b>N9316642</b> | <b>N9316643</b> |
|         | 1.50    | -20 to 280/300   | <b>N9316644</b> | <b>N9316645</b> | <b>N9316646</b> |
|         | 3.00    | -20 to 260/280   | <b>N9316647</b> | <b>N9316648</b> | <b>N9316649</b> |

## Elite-225

The Elite-225 is a general purpose column for the analysis of FAMES, carbohydrates, sterols and flavor compounds. The cyanopropyl-containing Elite-225 phase is slightly less polar than bonded polyethylene glycol (PEG) phases, but it can be used for many of the same applications. Improvements to the Elite-225 polymer have increased thermal stability, reduced bleed, and improved inertness. The Elite-225 column provides a 20 °C thermal stability advantage over other '225' columns because of our unique polymer synthesis technology and proprietary siloxane deactivation. In most similar columns, the Carbowax® deactivation layer is not fully compatible with the cyanopropyl siloxane polymer, which can cause adsorption, tailing of active compounds, and lower efficiency.

### Features and Benefits

- Temperature Range: 40 °C to 220/240 °C
- Equivalent to USP G7, G19 phases



| ID<br>(mm) | df<br>(μm) | Temp Limits<br>(°C) | 10 m<br>Part No. | 15 m<br>Part No. | 20 m<br>Part No. | 30 m<br>Part No. | 60 m<br>Part No. |
|------------|------------|---------------------|------------------|------------------|------------------|------------------|------------------|
| 0.05       | 0.05       | 45 to 220/240       | <b>N9316186</b>  |                  |                  |                  |                  |
| 0.10       | 0.10       | 45 to 220/240       | <b>N9316187</b>  |                  |                  |                  |                  |
| 0.18       | 0.2        | 45 to 220/240       | <b>N9316172</b>  |                  | <b>N9316173</b>  |                  |                  |
| 0.25       | 0.15       | 45 to 220/240       | <b>N9316174</b>  |                  | <b>N9316176</b>  |                  | <b>N9305631</b>  |
|            | 0.25       | 45 to 220/240       | <b>N9316175</b>  |                  | <b>N9316177</b>  |                  |                  |
| 0.32       | 0.15       | 45 to 220/240       | <b>N9316178</b>  |                  | <b>N9316180</b>  |                  |                  |
|            | 0.25       | 45 to 220/240       | <b>N9316179</b>  |                  | <b>N9316181</b>  |                  |                  |
| 0.45       | 0.85       | 40 to 200/220       | <b>N9316182</b>  |                  | <b>N9316183</b>  |                  |                  |
| 0.53       | 1.00       | 40 to 200/220       | <b>N9316184</b>  |                  | <b>N9316185</b>  |                  |                  |

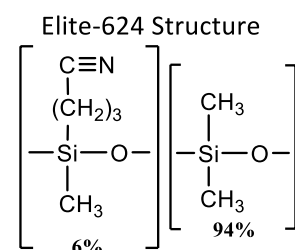
## Elite-624

The Elite-624 column is a specially engineered, low to mid-polarity (6%-cyanopropylphenyl)-dimethylpolysiloxane phase. The unique polarity of the Elite-624 column makes it ideal for analyzing volatile organic pollutants and it is recommended in U.S. EPA methods. Although the Elite-502.2 column is recommended in many methods, the Elite-624 column offers better resolution of early eluting compounds.

The Elite-624 phase produces greater than 90% resolution of the first six gases in EPA Methods 8260 and 524.2. This stationary phase is especially well-suited for EPA Method 524.2 since it resolves 2-nitropropane from 1,1-dichloropropanone, which share quantification ion  $m/z$  43 and must be separated chromatographically.

### Features and Benefits

- Temperature Range: -20 °C to 240 °C
- Equivalent to USP G43 phase
- Well suited for EPA methods 524.2 and 8260



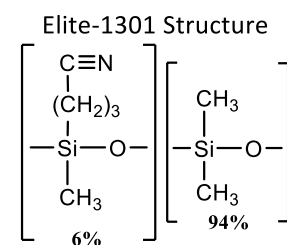
| ID (mm) | df (μm) | Temp Limits (°C) | 20 m Part No.   | 25 m Part No.   | 30 m Part No.   | 60 m Part No.   | 75 m Part No.   |
|---------|---------|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.18    | 1.00    | -20 to 240       | <b>N9316200</b> |                 |                 |                 |                 |
| 0.20    | 1.12    | -20 to 240       |                 | <b>N9316209</b> |                 |                 |                 |
| 0.25    | 1.40    | -20 to 240       |                 |                 | <b>N9316201</b> | <b>N9316202</b> |                 |
| 0.32    | 1.80    | -20 to 240       |                 |                 | <b>N9316203</b> | <b>N9316204</b> |                 |
| 0.45    | 2.55    | -20 to 240       |                 |                 | <b>N9316205</b> |                 | <b>N9316206</b> |
| 0.53    | 3.00    | -20 to 240       |                 |                 | <b>N9316207</b> |                 | <b>N9316208</b> |

## Elite-1301

The Elite-1301 column is a general purpose low to mid-polarity phase commonly used for the analysis of residual solvents, alcohols, oxygenates and volatile organic compounds. The stationary phase is (6%-cyanopropylphenyl)-methylpolysiloxane. Many analysts feel the Elite-1301 column is the best cyanosiloxane bonded stationary phase available, with no other column supplier providing lower bleed, longer lifetime, or better inertness. Our polymer is fully characterized to ensure long-term reproducibility, column-to-column consistency, and low bleed – even with sensitive detectors such as ECD and MS.

### Features and Benefits

- Temperature Range: -20 °C to 280 °C
- Equivalent to USP G43 phase



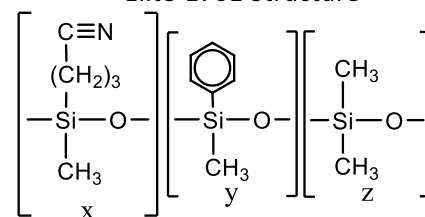
| ID (mm) | df (μm) | Temp Limits (°C) | 10 m Part No.   | 15 m Part No.   | 20 m Part No.   | 30 m Part No.   | 60 m Part No.   |
|---------|---------|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.18    | 0.40    | -20 to 280       | <b>N9316210</b> |                 | <b>N9316211</b> |                 |                 |
| 0.25    | 0.25    | -20 to 280       |                 | <b>N9316212</b> |                 | <b>N9316214</b> | <b>N9316216</b> |
|         | 1.00    | -20 to 260/280   |                 |                 |                 | <b>N9316215</b> | <b>N9316217</b> |
| 0.32    | 0.25    | -20 to 280       |                 | <b>N9316218</b> |                 | <b>N9316220</b> | <b>N9316222</b> |
|         | 1.00    | -20 to 260/280   |                 | <b>N9316219</b> |                 | <b>N9316221</b> | <b>N9316223</b> |
| 0.45    | 0.85    | -20 to 260/280   |                 | <b>N9316224</b> |                 | <b>N9316225</b> |                 |
| 0.53    | 1.00    | -20 to 260/280   |                 | <b>N9316226</b> |                 | <b>N9316227</b> |                 |



## Elite-1701

The Elite-1701 is a good mid-polarity general purpose column for the analysis of alcohols, oxygenates, PCB congeners (e.g. Aroclor mixes), and pesticides. With a stationary phase of (14%-cyanopropylphenyl)-methylpolysiloxane it is one of the more popular stationary phases used in capillary GC. The mix of cyano and phenyl functional groups increases the polarity and offers a different elution order relative to less polar Elite-1 or Elite-5 columns. An Elite-1701 column is ideal for confirmation analysis in combination with an Elite-35 or Elite-5 column. The polymer is fully characterized to ensure long-term reproducibility, column-to-column consistency, and low bleed – even with sensitive detectors such as ECD and MS.

Elite-1701 Structure



### Features and Benefits

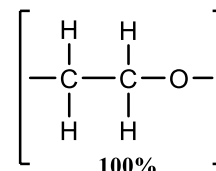
- Temperature Range: -20 °C to 280 °C
- Equivalent to USP G46 phase

| ID (mm) | df (μm) | Temp Limits (°C) | 10 m Part No.   | 15 m Part No. | 20 m Part No.   | 30 m Part No.   | 50 m Part No.   | 60 m Part No.   |
|---------|---------|------------------|-----------------|---------------|-----------------|-----------------|-----------------|-----------------|
| 0.05    | 0.05    | -20 to 280       | <b>N9316257</b> |               |                 |                 |                 |                 |
|         | 0.20    | -20 to 280       | <b>N9316258</b> |               |                 |                 |                 |                 |
| 0.10    | 0.10    | -20 to 280       | <b>N9316259</b> |               |                 |                 |                 |                 |
| 0.18    | 0.4     | -20 to 270/280   | <b>N9316228</b> |               | <b>N9316229</b> |                 |                 |                 |
| 0.25    | 0.15    | -20 to 280       | <b>N9316230</b> |               |                 | <b>N9316236</b> |                 |                 |
|         | 0.25    | -20 to 280       | <b>N9316231</b> |               |                 | <b>N9316234</b> | <b>N9316237</b> |                 |
|         | 1.00    | -20 to 260/280   | <b>N9316232</b> |               |                 | <b>N9316235</b> | <b>N9316238</b> |                 |
| 0.32    | 0.15    | -20 to 280       | <b>N9316239</b> |               |                 | <b>N9316242</b> | <b>N9316246</b> |                 |
|         | 0.25    | -20 to 280       | <b>N9316240</b> |               |                 | <b>N9316243</b> | <b>N9316247</b> |                 |
|         | 1.00    | -20 to 260/280   | <b>N9326141</b> |               |                 | <b>N9316244</b> | <b>N9316245</b> | <b>N9316248</b> |
| 0.45    | 0.42    | -20 to 260/270   | <b>N9316250</b> |               |                 | <b>N9316252</b> |                 |                 |
|         | 0.85    | -20 to 250/270   | <b>N9316249</b> |               |                 | <b>N9316251</b> |                 |                 |
| 0.53    | 0.50    | -20 to 260/270   | <b>N9316254</b> |               |                 | <b>N9316256</b> |                 |                 |
|         | 1.00    | -20 to 250/270   | <b>N9316253</b> |               |                 | <b>N9316255</b> |                 |                 |

## Elite-WAX

The Elite-WAX column, a Polar Polyethylene glycol (PEG) stationary phase column, is a general purpose polar PEG phase commonly used for the analysis of polar compounds like alkenols, glycols and aldehydes. The extended operating temperature range up to 250 °C allowing analysis of compounds that have a wide volatility range. Selectivity of the Elite-WAX is comparable to other Carbowax® columns for compounds of intermediate to high polarity.

Elite-WAX Structure



### Features and Benefits

- Temperature Range: 20 °C to 250 °C
- Equivalent to USP G14, G15, G16, G20 and G39 phases

| ID (mm) | df (μm) | Temp Limits (°C) | 15 m Part No.   | 30 m Part No.   | 60 m Part No.   |
|---------|---------|------------------|-----------------|-----------------|-----------------|
| 0.25    | 0.15    | 20 to 250        | <b>N9316399</b> | <b>N9316402</b> | <b>N9316405</b> |
|         | 0.25    | 20 to 250        | <b>N9316400</b> | <b>N9316403</b> | <b>N9316406</b> |
|         | 0.50    | 20 to 250        | <b>N9316401</b> | <b>N9316404</b> | <b>N9316407</b> |
| 0.32    | 0.15    | 20 to 250        | <b>N9316408</b> | <b>N9316411</b> |                 |
|         | 0.25    | 20 to 250        | <b>N9316409</b> | <b>N9316412</b> | <b>N9316416</b> |
|         | 0.50    | 20 to 250        | <b>N9316410</b> | <b>N9316413</b> | <b>N9316417</b> |
| 0.45    | 0.42    | 20 to 250        | <b>N9316420</b> | <b>N9316422</b> |                 |
|         | 0.85    | 20 to 240/250    | <b>N9316419</b> | <b>N9316421</b> | <b>N9316423</b> |
|         | 1.70    | 50 to 230        | <b>N9316418</b> |                 |                 |
| 0.53    | 0.50    | 20 to 250        | <b>N9316426</b> | <b>N9316428</b> |                 |
|         | 1.00    | 20 to 240/250    | <b>N9316425</b> | <b>N9316427</b> | <b>N9316429</b> |

### Elite-MWAX: Metal Column

| ID (mm) | df (μm) | Temp Limits (°C) | 30 m Part No.   |
|---------|---------|------------------|-----------------|
| 0.53    | 1.00    | 20 to 240/250    | <b>N9316478</b> |

## Elite-WAX ETR

The Elite-WAX ETR (Extended Temperature Range) columns are manufactured with a special bonding process that binds the Carbowax® polymer to the polar deactivated silica. This results in a low bleed WAX column that exhibits extended lifetimes even when repeatedly heated to 260 °C. The bonding mechanism of this column produces very stable polar retention that does not shift as often as observed with other WAX-type columns. Additionally, the bonding mechanism makes this column rugged enough to stand up to repeated water injections and allows solvent washing to rejuvenate the column. The Elite-WAX ETR can be used for a wide range of compounds and matrices such as: FAMES, flavor compounds, essential oils, solvents, aromatics, acrolein/acrylonitrile (EPA 603), oxygenated compounds, impurities in water matrices and alcoholic beverages.

### Features and Benefits

- Temperature Range: 40 °C to 260 °C
- Equivalent to USP G14, G15, G16, G20 and G39 phases
- Suitable for EPA method 603

| ID (mm) | df (µm) | Temp Limits (°C) | 5 m Part No. | 15 m Part No. | 30 m Part No. | 50 m Part No. | 60 m Part No. |
|---------|---------|------------------|--------------|---------------|---------------|---------------|---------------|
| 0.25    | 0.25    | 40 to 250        |              | N9316547      | N9316549      |               | N9316551      |
|         | 0.50    | 40 to 250        |              | N9316548      | N9316550      |               |               |
| 0.32    | 0.25    | 40 to 250        |              | N9316552      | N9316555      |               | N9316559      |
|         | 0.50    | 40 to 250        |              | N9316553      | N9316556      |               | N9316560      |
|         | 1.00    | 40 to 240/250    |              | N9316554      | N9316557      | N9316558      | N9316561      |
| 0.45    | 0.85    | 40 to 240        |              | N9316563      | N9316564      |               | N9316565      |
|         | 1.70    | 40 to 230/250    | N9316562     |               |               |               |               |
| 0.53    | 1.00    | 40 to 240/250    |              | N9316567      | N9316569      |               | N9316571      |
|         | 2.00    | 40 to 220/230    | N9316566     | N9316568      | N9316570      |               |               |

# GC Columns for GC/MS

The Elite range of MS columns are engineered for extremely low bleed for MS detectors. Covering a range of polarities and applications.

## Elite-1ms

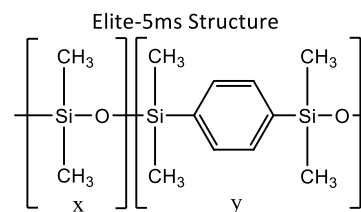
| ID (mm) | df (μm) | Temp Limits (°C) | 15 m Part No.   | 20 m Part No.   | 30 m Part No.   | 60 m Part No.   |
|---------|---------|------------------|-----------------|-----------------|-----------------|-----------------|
| 0.18    | 0.18    | -60 to 330/350   |                 | <b>N9305635</b> |                 |                 |
|         | 2.00    | -60 to 330/350   |                 | <b>N9305636</b> |                 |                 |
| 0.25    | 0.25    | -60 to 330/350   | <b>N9305637</b> |                 | <b>N9305638</b> | <b>N9305639</b> |
|         | 0.50    | -60 to 330/350   | <b>N9305640</b> |                 | <b>N9305641</b> | <b>N9305642</b> |
|         | 1.00    | -60 to 330/350   | <b>N9305643</b> |                 | <b>N9305644</b> | <b>N9305645</b> |
| 0.32    | 0.25    | -60 to 330/350   | <b>N9305646</b> |                 | <b>N9305647</b> | <b>N9305648</b> |
|         | 0.50    | -60 to 330/350   | <b>N9305649</b> |                 | <b>N9305650</b> | <b>N9305651</b> |
|         | 1.00    | -60 to 330/350   |                 |                 | <b>N9305652</b> | <b>N9305653</b> |
|         | 4.00    | -60 to 330/350   |                 |                 | <b>N9305654</b> |                 |

## Elite-5ms

The Elite-5ms phase incorporates a phenyl group in the polymer backbone to improve thermal stability, reduce bleed and make the phase less prone to oxidation. This results in a phase that is inert to active compounds with extremely low bleed to meet the requirements of sensitive MS detectors. It is a general purpose column ideal for GC/MS analysis of semivolatiles, PAHs, chlorinated hydrocarbons, phthalates, phenols, amines, organochlorine and organophosphorus pesticides, drugs and solvent impurities.

### Features and Benefits

- Temperature Range: -60 °C to 350 °C
- Similar to USP G27 and G36 phases



| ID (mm) | df (μm) | Temp Limits (°C) | 15 m Part No.                | 30 m Part No.                | 60 m Part No.                |
|---------|---------|------------------|------------------------------|------------------------------|------------------------------|
| 0.18    | 0.18    | -60 to 325/340   |                              | <b>N9316276</b> <sup>1</sup> | <b>N9316277</b> <sup>1</sup> |
| 0.20    | 0.33    | -60 to 330/350   | <b>N9316301</b> <sup>2</sup> | <b>N9316302</b> <sup>2</sup> | <b>N9316303</b> <sup>2</sup> |
| 0.25    | 0.25    | -60 to 330/350   | <b>N9316279</b>              | <b>N9316282</b>              | <b>N9316286</b>              |
|         | 0.50    | -60 to 330/350   |                              | <b>N9316284</b>              |                              |
|         | 1.00    | -60 to 325/350   | <b>N9316280</b>              | <b>N9316283</b>              | <b>N9316287</b>              |
| 0.32    | 0.25    | -60 to 330/350   | <b>N9316289</b>              | <b>N9316293</b>              | <b>N9316297</b>              |
|         | 0.50    | -60 to 330/350   |                              | <b>N9316295</b>              |                              |
|         | 0.52    | -60 to 330/350   |                              | <b>N9316291</b> <sup>3</sup> |                              |
|         | 1.00    | -60 to 325/350   | <b>N9316290</b>              | <b>N9316294</b>              | <b>N9316298</b>              |
| 0.53    | 1.50    | -60 to 310/330   | <b>N9316299</b>              | <b>N9316300</b>              |                              |

<sup>1</sup> The lengths of **N9316276** and **N9316277** are 20 m and 40 m, respectively

<sup>2</sup> The lengths of **N9316301**, **N9316302** and **N9316303** are 12 m, 25 m and 50 m, respectively

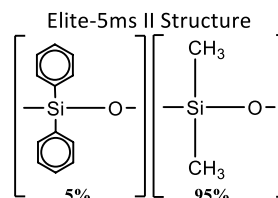
<sup>3</sup> The length of **N9316291** is 25 m

## Elite-5ms II

The Elite-5ms II columns incorporate the same phase as the Elite-5 columns but are specifically tested for low bleed performance.

### Features and Benefits

- Temperature Range: -60 °C to 350 °C
- Equivalent to USP G27 and G36 phases



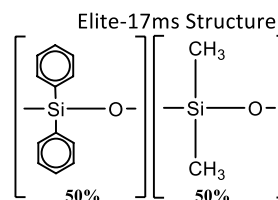
| ID (mm) | df (μm) | Temp Limits (°C) | 15 m Part No.   | 30 m Part No.   | 60 m Part No.   |
|---------|---------|------------------|-----------------|-----------------|-----------------|
| 0.25    | 0.10    | -60 to 330/350   | <b>N9305655</b> | <b>N9305656</b> | <b>N9305657</b> |
|         | 0.25    | -60 to 330/350   | <b>N9305658</b> | <b>N9305659</b> | <b>N9305660</b> |
|         | 0.50    | -60 to 330/350   | <b>N9305661</b> | <b>N9305662</b> | <b>N9305663</b> |
|         | 1.00    | -60 to 325/350   | <b>N9305664</b> | <b>N9305665</b> |                 |
| 0.32    | 0.10    | -60 to 330/350   | <b>N9305666</b> | <b>N9305667</b> | <b>N9305668</b> |
|         | 0.25    | -60 to 330/350   | <b>N9305669</b> | <b>N9305670</b> | <b>N9305671</b> |
|         | 0.50    | -60 to 330/350   |                 | <b>N9305672</b> | <b>N9305673</b> |
|         | 1.00    | -60 to 325/350   | <b>N9305674</b> | <b>N9305675</b> | <b>N9305698</b> |

## Elite-17ms

The Elite-17ms columns are general purpose, mid-polarity columns that are coated with a crosslinked, (50%-diphenyl)-dimethylpolysiloxane engineered for very low bleed to meet the requirements of sensitive MS detectors.

### Features and Benefits

- Temperature Range: 40 °C to 320/340 °C
- Equivalent to USP G3 phase



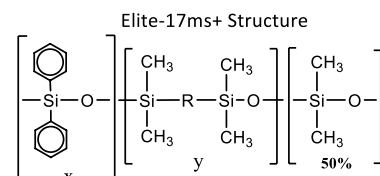
| ID (mm) | df (μm) | Temp Limits (°C) | 15 m Part No.   | 30 m Part No.   | 60 m Part No.   |
|---------|---------|------------------|-----------------|-----------------|-----------------|
| 0.18    | 1.411   | 40 to 300/340    | <b>N9316534</b> |                 |                 |
| 0.25    | 0.15    | 40 to 300/320    | <b>N9316535</b> | <b>N9316537</b> |                 |
|         | 0.25    | 40 to 300/320    | <b>N9316536</b> | <b>N9316538</b> | <b>N9316539</b> |
| 0.32    | 0.15    | 40 to 300/320    | <b>N9316540</b> | <b>N9316542</b> |                 |
|         | 0.25    | 40 to 300/320    | <b>N9316541</b> |                 |                 |

## Elite-17ms+

The Elite-17ms+ columns are general purpose, mid-polarity columns offering extremely low bleed at higher temperatures. They are coated with a unique blend of linked dimethyl polysiloxanes and diphenyl polysiloxanes that is inert and selective for active environmental compounds, such as PAHs, while maintaining a similar selectivity and polarity as traditional Elite-17 phases. This phase has been engineered for extremely low bleed as required by MS detectors at higher temperature (up to 360 °C) as required for sensitive MS detectors.

### Features and Benefits

- Temperature Range: 40 °C to 360 °C
- Equivalent to USP G3 phase



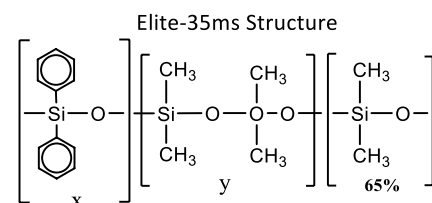
| ID (mm) | df (μm) | Temp Limits (°C) | 10 m Part No. | 15 m Part No. | 20 m Part No. | 30 m Part No. | 60 m Part No. |
|---------|---------|------------------|---------------|---------------|---------------|---------------|---------------|
| 0.15    | 0.15    | 40 to 340/360    | N9305677      |               | N9305678      |               |               |
| 0.18    | 0.18    | 40 to 340/360    |               |               | N9305679      |               |               |
|         | 0.36    | 40 to 340/360    |               |               | N9305680      |               |               |
| 0.25    | 0.25    | 40 to 340/360    | N9305681      |               | N9305682      |               | N9305685      |
| 0.32    | 0.25    | 40 to 340/360    | N9305683      |               | N9305684      |               |               |

## Elite-35ms

The Elite-35ms columns are general purpose, mid-polarity columns offering extremely low bleed at higher temperatures. They are coated with a unique blend of linked dimethyl polysiloxanes and diphenyl polysiloxanes that are inert and selective for substituted polar compounds, such as drugs, pesticides, herbicides, PCBs and phenyls, while maintaining a similar selectivity and polarity as traditional Elite-35 phases. This phase has been engineered for extremely low bleed as required by MS detectors at higher temperature (up to 360 °C) as required for sensitive MS detectors.

### Features and Benefits

- Temperature Range: 50 °C to 340/ 360 °C
- Equivalent to USP G42 phase



| ID (mm) | df (μm) | Temp Limits (°C) | 15 m Part No.   | 30 m Part No.   |
|---------|---------|------------------|-----------------|-----------------|
| 0.25    | 0.25    | 50 to 340/360    | <b>N9305686</b> | <b>N9305687</b> |
|         | 0.50    | 50 to 340/360    | <b>N9305688</b> | <b>N9305689</b> |
|         | 1.00    | 50 to 320/340    | <b>N9305690</b> | <b>N9305691</b> |
| 0.32    | 0.25    | 40 to 340/360    | <b>N9305692</b> | <b>N9305693</b> |
|         | 0.50    | 40 to 340/360    | <b>N9305694</b> | <b>N9305695</b> |
|         | 1.00    | 40 to 320/340    | <b>N9305696</b> | <b>N9305697</b> |

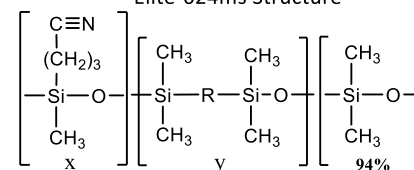
## Elite-624ms

The Elite-624ms incorporates a unique proprietary blend of cyanopropyl and methyl siloxanes that results in a very inert, extremely low bleed and high thermal stability column. This column provides excellent peak shape for a wide range of compounds and is highly selective for residual solvents making it a great choice for USP<467>. These columns are manufactured for column-to-column reproducibility, so they are well suited for validated methods.

## Features and Benefits

- Temperature Range: -20 °C to 240 °C
- Similar to USP G43 phase
- Ideal choice for USP method 467

Elite-624ms Structure



| ID (mm) | df (μm) | Temp Limits (°C) | 20 m Part No.   | 30 m Part No.   | 60 m Part No.       |
|---------|---------|------------------|-----------------|-----------------|---------------------|
| 0.18    | 1.00    | -20 to 240       | <b>N9315067</b> |                 |                     |
| 0.25    | 1.40    | -20 to 240       |                 | <b>N9315068</b> | <b>NEW N9315066</b> |
| 0.32    | 1.80    | -20 to 240       |                 | <b>N9315069</b> | <b>N9315070</b>     |

## High Temperature Columns

Available in a range of phases with varying polarity, the high temperature (ht) columns are specifically designed for reduced bleed when operating at higher temperatures, up to 400 °C.

### Elite-1ht

| ID (mm) | df (μm) | Temp Limits (°C) | 15 m Part No.   | 30 m Part No.   |
|---------|---------|------------------|-----------------|-----------------|
| 0.25    | 0.10    | -60 to 380/400   | <b>N9316268</b> | <b>N9316269</b> |
| 0.32    | 0.10    | -60 to 380/400   | <b>N9316270</b> | <b>N9316271</b> |

### Elite-5ht

| ID (mm) | df (μm) | Temp Limits (°C) | 15 m Part No.   | 30 m Part No.   |
|---------|---------|------------------|-----------------|-----------------|
| 0.25    | 0.10    | -60 to 400       | <b>N9316272</b> | <b>N9316273</b> |
| 0.32    | 0.10    | -60 to 400       | <b>N9316274</b> | <b>N9316275</b> |

### Elite-17ht

| ID (mm) | df (μm) | Temp Limits (°C) | 30 m Part No.   |
|---------|---------|------------------|-----------------|
| 0.25    | 0.15    | 40 to 300/320    | <b>N9316264</b> |
| 0.32    | 0.15    | 40 to 300/320    | <b>N9316266</b> |

### Elite-SimDist ht

**Application:** High-temperature simulated distillation

**Phase:** Metal Column, 100% dimethylpolysiloxane, non-polar

| ID (mm) | df (μm) | Length (m) | Temp Limits (°C) | 6 m Part No.    |
|---------|---------|------------|------------------|-----------------|
| 0.53    | 0.15    | 6          | -60 to 400       | <b>N9316572</b> |
| 0.53    | 1.0     | 10         | -60 to 400       | <b>N9316581</b> |



# Elite-BAC Advantage: Blood Alcohol Content

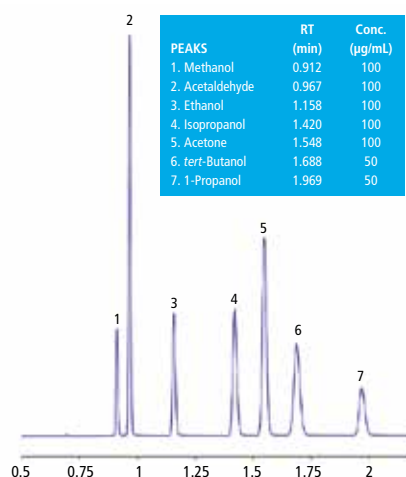
The Elite-BAC Advantage columns are optimized for selectivities guaranteed to resolve ethanol, internal standards, and frequently encountered interferences. These application-specific columns for blood alcohol analysis baseline separate all critical compounds, including ethanol, methanol, acetone, tert-butanol, acetaldehyde, isopropanol, and n-propanol, in less than 2 minutes. Every Elite-BAC 1 Advantage and Elite-BAC 2 Advantage column is qualified with a test mix containing these important BAC target compounds to ensure reproducibility. These columns, baseline separate all blood alcohol compounds in blood, breath, or urine, in less than 2 minutes, under isothermal conditions. Isothermal analysis increases productivity by eliminating the need for oven cycling. Confirmation is easily achieved with this tandem set because there are two elution order changes between the columns.

## Features and Benefits

- Robust and reproducible
- Baseline separation of all components in less than 2 minutes
- Stable to 260 °C

## Clinical

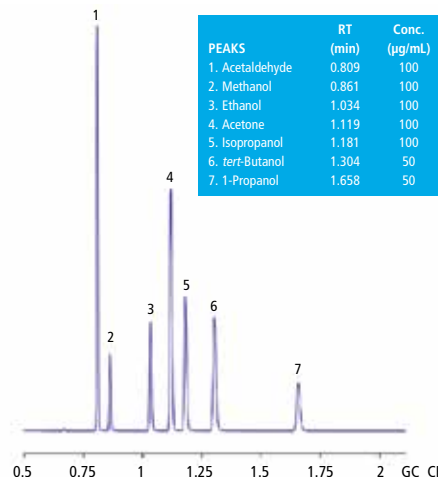
### Elite-BAC 1 Advantage



- Baseline resolution
- Symmetrical peaks
- Run time under 2 min

## Clinical

### Elite-BAC 2 Advantage



| Column Type           | ID (mm) | df (µm) | Temp Limits (°C) | 10 m Part No. | 30 m Part No. |
|-----------------------|---------|---------|------------------|---------------|---------------|
| Elite-BAC 1 Advantage | 0.18    | 1.00    | -20 to 240/260   | N9315075      |               |
|                       | 0.32    | 1.80    | -20 to 240/260   |               | N9315071      |
|                       | 0.53    | 3.00    | -20 to 240/260   |               | N9315072      |
| Elite-BAC 2 Advantage | 0.18    | 0.34    | -20 to 240/260   | N9315076      |               |
|                       | 0.32    | 0.60    | -20 to 240/260   |               | N9315073      |
|                       | 0.53    | 1.00    | -20 to 240/260   |               | N9315074      |
| Elite-BAC 3 Advantage | 0.18    | 0.30    | 20 to 250        | N9316575      |               |

## Elite-VMS

Elite-VMS columns offer lower bleed, better selectivity, and overall faster analysis for separating volatile organic compounds. These columns are capable of separating the compounds listed in U.S. EPA Method 8260B in under 10 minutes. The Elite-VMS stationary phase is a highly stable polymer that provides outstanding analysis of volatile compounds on MS detectors. The 0.18 and 0.25 mm ID columns allow sample splitting at the injection port, eliminating the added expense and maintenance of a jet separator. A 0.45 mm or 0.53 mm ID column can be directly connected to the purge-and-trap transfer line in a system equipped with a jet separator.

| ID (mm) | df (μm) | Temp Limits (°C) | 30 m Part No.               | 60 m Part No.               |
|---------|---------|------------------|-----------------------------|-----------------------------|
| 0.18    | 1.00    | -40 to 240/260   | <b>N9316650<sup>1</sup></b> | <b>N9316651<sup>1</sup></b> |
| 0.25    | 1.40    | -40 to 240/260   | <b>N9316652</b>             | <b>N9316653</b>             |
| 0.32    | 1.80    | -40 to 240/260   | <b>N9316654</b>             | <b>N9316655</b>             |
| 0.45    | 2.55    | -40 to 240/260   | <b>N9316656</b>             | <b>N9316657</b>             |
| 0.53    | 3.00    | -40 to 240/260   | <b>N9316658</b>             | <b>N9316659</b>             |

<sup>1</sup> The lengths of N9316650 and N9316651 are 20 m and 40 m, respectively

### Features and Benefits

- Temperature Range: -40 °C to 240/260 °C
- No known equivalent phases
- Ideal for analysis of volatile organic pollutants by GC/MS
- Suitable for EPA method 8260B

## Elite-XLB

The Elite-XLB phase is a proprietary low-polarity, very inert and exceptionally low bleed column for GC/MS analysis of pesticides, PCB congeners (e.g., Aroclor mixes) and PAHs. Improvements in polymer synthesis and tubing deactivation enable us to make inert, stable Elite-XLB columns especially well-suited for analyzing active, high molecular weight compounds with sensitive GC-MS systems, including ion trap detectors. Excellent efficiency, coupled with inertness, low bleed, and high thermal stability, make Elite-XLB columns ideal for analyzing semivolatile compounds in drinking water (e.g., US EPA Method 525).

### Features and Benefits

- Temperature Range: 30 °C to 340/360 °C
- No known equivalent phases
- Exceptionally low bleed for GC/MS

| ID (mm) | df (μm) | Temp Limits (°C) | 15 m Part No.               | 30 m Part No.               | 60 m Part No.   |
|---------|---------|------------------|-----------------------------|-----------------------------|-----------------|
| 0.18    | 0.18    | 40 to 340/360    |                             | <b>N9316480<sup>1</sup></b> |                 |
| 0.20    | 0.33    | 40 to 340/360    | <b>N9316496<sup>2</sup></b> | <b>N9316497<sup>2</sup></b> |                 |
| 0.25    | 0.10    | 40 to 340/360    |                             | <b>N9316483</b>             |                 |
|         | 0.25    | 40 to 340/360    | <b>N9316481</b>             | <b>N9316484</b>             | <b>N9316487</b> |
|         | 1.00    | 40 to 340/360    | <b>N9318482</b>             | <b>N9316485</b>             |                 |
| 0.32    | 0.10    | 40 to 340/360    |                             | <b>N9316489</b>             |                 |
|         | 0.25    | 40 to 340/360    | <b>N9316488</b>             | <b>N9316490</b>             | <b>N9316493</b> |
|         | 0.50    | 40 to 340/360    |                             | <b>N9316492</b>             |                 |
|         | 1.00    | 40 to 340/360    |                             | <b>N9316491</b>             |                 |
| 0.53    | 1.50    | 40 to 320/340    | <b>N9316494</b>             | <b>N9316495</b>             |                 |

<sup>1</sup> The length of N9316480 is 20 m

<sup>2</sup> The lengths of N9316496 and N9316497 are 12 m and 25 m, respectively

## Elite-Volatiles

The Elite-Volatiles stationary phase and optimized column dimensions provide low bleed, excellent resolution, and fast analysis times for volatile organic pollutants. These columns are excellent for U.S. EPA method 8021 compounds.

### Features and Benefits

- Temperature Range: -20 °C to 240 °C
- Proprietary phase
- Ideal for EPA Method 8021

| ID (mm) | df (μm) | Temp Limits (°C) | 30 m Part No.   | 60 m Part No.   | 75 m Part No.   |
|---------|---------|------------------|-----------------|-----------------|-----------------|
| 0.25    | 1.40    | -20 to 240       | <b>N9316388</b> | <b>N9316389</b> |                 |
| 0.32    | 1.80    | -20 to 240       | <b>N9316390</b> | <b>N9316391</b> |                 |
| 0.45    | 2.55    | -20 to 240       | <b>N9316392</b> |                 | <b>N9316393</b> |

## Elite-CLPesticides: Chlorinated Pesticides

Elite-CLPesticides is specially designed to overcome the coelutions and analyte breakdown typically encountered in chlorinated pesticide analyses for U.S. EPA methods 8081, 608, and CLP. Column bleed measured by ECD is extremely low at temperatures greater than 300 °C, which is critical for baking out the column to remove high-boiling compounds commonly found in pesticide/PCB extracts.

**Primary Applications:** Chlorinated Pesticides and Herbicides. U.S. EPA Methods 504, 608, 619, 8081, 8151, and CLP.

### Features and Benefits

- Thermally stable to 340 °C
- Low column bleed – ideal for ECD or GC/MS analysis
- Exceeds performance criteria for U.S. EPA Methods 8081, 608 and CLP
- Baseline separation in less than 15 minutes

| Column Type          | ID (mm) | df (μm) | Temp Limits (°C) | 15 m Part No.   | 30 m Part No.   |
|----------------------|---------|---------|------------------|-----------------|-----------------|
| Elite-CLPesticides   | 0.25    | 0.25    | -60 to 320/340   | <b>N9316661</b> | <b>N9316662</b> |
|                      | 0.32    | 0.50    | -60 to 320/340   | <b>N9316663</b> | <b>N9316664</b> |
|                      | 0.53    | 0.50    | -60 to 300/320   | <b>N9316665</b> | <b>N9316666</b> |
| Elite-CLPesticides 2 | 0.25    | 0.20    | -20 to 240/260   | <b>N9316667</b> | <b>N9316668</b> |
|                      | 0.32    | 0.25    | -20 to 240/260   | <b>N9316669</b> | <b>N9316670</b> |
|                      | 0.53    | 0.42    | -20 to 240/260   | <b>N9316671</b> | <b>N9316672</b> |

## Elite-502.2: U.S. EPA Method 502.2

**Application:** Analysis of volatiles by U.S. EPA method 502.2

**Phase:** Proprietary Dimethyl-diphenyl polysiloxane, low-polarity

| ID (mm) | df (μm) | Temp Limits (°C) | 60 m Part No. | 75 m Part No. | 105 m Part No. |
|---------|---------|------------------|---------------|---------------|----------------|
| 0.25    | 1.40    | 0 to 250/270     | N9316498      |               |                |
| 0.45    | 2.55    | 0 to 250/270     |               | N9316188      | N9316189       |
| 0.53    | 3.00    | 0 to 250/270     |               |               | N9316190       |

## Elite-RX: Drugs of Abuse

**Application:** Analysis of drugs of abuse

| Phase        | ID (mm) | df (μm) | Temp Limits (°C) | 12 m Part No. | 25 m Part No. |
|--------------|---------|---------|------------------|---------------|---------------|
| Elite-1 RX   | 0.20    | 0.33    | -60 to 330/350   | N9316345      | N9316346      |
| Elite-5ms RX | 0.20    | 0.33    | -60 to 330/350   | N9316349      | N9316350      |
| Elite-17 RX  | 0.20    | 0.33    | 40 to 300/320    | N9316347      | N9316348      |

## Elite-Betecyclodextrin: Chiral Separations

**Description:** General-purpose chiral, Chiral compounds in essential oils

| Column Type      | ID (mm) | df (μm) | Temp Limits (°C) | 30 m Part No. |
|------------------|---------|---------|------------------|---------------|
| Elite-Betacydex  | 0.25    | 0.25    | 40 to 230        | N9316319      |
| Elite-Cyclosil B | 0.25    | 0.25    | 40 to 230        | N9316545      |

## Elite-SimDist

**Application:** Simulated distillation

**Phase:** Specially processed dimethylpolysiloxane, non-polar

| ID (mm) | df (μm) | Temp Limits (°C) | 10 m Part No. |
|---------|---------|------------------|---------------|
| 0.45    | 2.55    | -60 to 360       | N9316261      |
| 0.53    | 3.00    | -60 to 360       | N9316262      |

## Elite-608

**Application:** Analysis of semivolatile pesticides by U.S. EPA method 608

**Phase:** Phenyl methyl polysiloxane, mid-polarity

| ID (mm) | df (μm) | Temp Limits (°C) | 15 m Part No. | 60 m Part No. |
|---------|---------|------------------|---------------|---------------|
| 0.32    | 0.50    | 40 to 290/310    |               | N9316191      |
| 0.45    | 0.42    | 40 to 270/290    | N9316194      | N9316195      |
|         | 0.70    | 40 to 260/280    | N9316192      | N9316193      |
| 0.53    | 0.50    | 40 to 270/290    | N9316198      | N9316199      |
|         | 0.83    | 40 to 260/280    | N9316196      | N9316197      |

## Elite-TPH

**Application:** Analysis of total petroleum hydrocarbons

**Phase:** (5%-diphenyl)-dimethylpolysiloxane, low polarity

| ID (mm) | df (μm) | Temp Limits (°C) | 30 m Part No. |
|---------|---------|------------------|---------------|
| 0.32    | 0.25    | -10 to 320       | N9316386      |
| 0.45    | 1.00    | -10 to 290       | N9316387      |

## Elite-PONA

**Application:** Detailed analysis of petroleum naphtha

**Phase:** Specially processed dimethylpolysiloxane, non-polar

| ID (mm) | df (μm) | Temp Limits (°C) | 50 m Part No. | 100 m Part No. |
|---------|---------|------------------|---------------|----------------|
| 0.20    | 0.50    | -60 to 300/320   | N9316065      |                |
| 0.25    | 0.50    | -60 to 300/320   |               | N9316015       |

## Elite-FFAP

**Application:** Free fatty acids

**Phase:** Nitroterephthalic acid modified PEG (bonded), polar

| ID (mm) | df (μm) | Temp Limits (°C) | 15 m Part No. | 30 m Part No. |
|---------|---------|------------------|---------------|---------------|
| 0.25    | 0.25    | 40 to 250        | N9316351      | N9316352      |
| 0.32    | 0.25    | 40 to 250        | N9316353      | N9316354      |
| 0.45    | 0.85    | 40 to 240/250    | N9316355      | N9316356      |
| 0.53    | 1.00    | 40 to 240/250    | N9316357      | N9316358      |

## Elite-5 Amine

Elite-5 Amine is an application-specific column for amines and other basic compounds, including alkylamines and di/triamines

| ID (mm) | df (μm) | Temp Limits (°C) | 15 m Part No. | 30 m Part No. |
|---------|---------|------------------|---------------|---------------|
| 0.25    | 0.50    | -60 to 300/315   | N9316684      | N9316673      |
|         | 1.00    | -60 to 300/315   | N9316674      | N9316675      |
| 0.32    | 1.00    | -60 to 300/315   | N9316676      | N9316677      |
|         | 1.50    | -60 to 290/305   | N9316678      | N9316679      |
| 0.53    | 1.00    | -60 to 290/305   |               | N9316680      |
|         | 3.00    | -60 to 280/295   | N9316681      | N9316682      |

## Elite-23

**Application:** Analysis of cis/trans isomers in FAMES and dioxins.

Equivalent to USP G5

**Phase:** (50%-cyanopropyl)-methylpolysiloxane

| ID (mm) | df (μm) | Temp Limits (°C) | 30 m Part No. | 60 m Part No. |
|---------|---------|------------------|---------------|---------------|
| 0.25    | 0.15    | 0 to 275         |               | N9316507      |
|         | 0.25    | 0 to 275         | N9316506      | N9316508      |

## Elite-MTBE

**Application:** Analysis of methyl t-butylether and other oxogenates

**Phase:** Proprietary low polarity phase

| ID (mm) | df (μm) | Temp Limits (°C) | 30 m Part No. |
|---------|---------|------------------|---------------|
| 0.45    | 2.55    | 10 to 250        | N9316520      |
| 0.53    | 3.00    | 10 to 250        | N9316521      |

## Elite-2560

**Application:** Application-specific column for cis/trans FAMES

**Phase:** Biscyanopropylpolysiloxane, highly polar

| ID (mm) | df (μm) | Temp Limits (°C) | 100 m Part No. |
|---------|---------|------------------|----------------|
| 0.25    | 0.20    | 20 to 250        | N9311570       |

## Elite-Alumina/KCl\* PLOT

| ID (mm) | Length (mm) | Film Thickness (μm) | Temp Limits (°C) | Part No.        |
|---------|-------------|---------------------|------------------|-----------------|
| 0.53    | 50          | 10                  | up to 200        | <b>N9316544</b> |

\* Lower Polarity than Elite-Alumina

## Elite-Alumina PLOT Phase for Analysis of Light Hydrocarbons

| ID (mm) | Length (mm) | Film Thickness (μm) | Temp Limits (°C) | Part No.        |
|---------|-------------|---------------------|------------------|-----------------|
| 0.53    | 30          | 6                   | -60 to 200       | <b>N9316304</b> |
| 0.53    | 50          | 10                  | -60 to 200       | <b>N9316305</b> |

Note: -60 °C is the lowest temperature used on this phase in our lab. Lower temperatures may be used depending on the sample

## Elite-Cyclosil B PLOT for Chiral Separations

| ID (mm) | Length (mm) | Film Thickness (μm) | Temp Limits (°C) | Part No.        |
|---------|-------------|---------------------|------------------|-----------------|
| 0.25    | 30          | 0.25                | 35 to 230        | <b>N9316545</b> |
| 0.32    | 30          | 0.25                | 35 to 230        | <b>N9316546</b> |

## Elite-Molesieve PLOT Phase for Analysis of Permanent Gases

| ID (mm) | Length (mm) | Film Thickness (μm) | Temp Limits (°C) | Part No.        |
|---------|-------------|---------------------|------------------|-----------------|
| 0.53    | 30          | —                   | -60 to 300       | <b>N9316361</b> |

Note: -60 °C is the lowest temperature used on this phase in our lab. Lower temperatures may be used depending on the sample

## Elite-Q PLOT Phase for Analysis of Light Gases and Hydrocarbons

| ID (mm) | Length (mm) | Film Thickness (μm) | Temp Limits (°C) | Part No.        |
|---------|-------------|---------------------|------------------|-----------------|
| 0.32    | 30          | 10                  | -60 to 250       | <b>N9316359</b> |
| 0.53    | 30          | 20                  | -60 to 250       | <b>N9316360</b> |

Note: -60 °C is the lowest temperature used on this phase in our lab. Lower temperatures may be used depending on the sample

## Elite-Carbon Columns for Volatiles in Hydrocarbon Streams

NEW

The Elite-Carbon columns offer rapid separation of permanent gas/light hydrocarbon mixtures; including carbon monoxide and carbon dioxide without cryogenic cooling. They are preconditioned and thus take less than 30 minutes to stabilize. They are used in conjunction with a molecular sieve column (Molecular sieve 5 Å, 50 m, 0.53 mm, 50 µm Part No. **NR201108**).

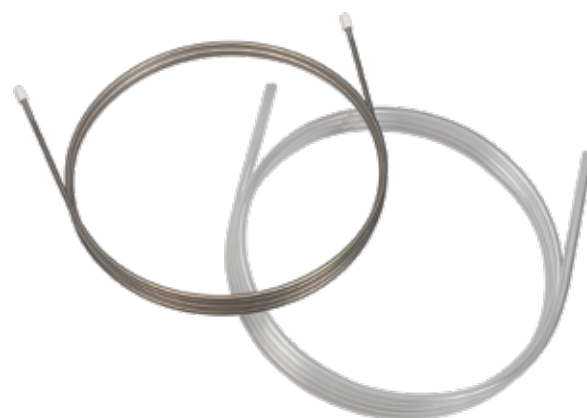
| ID (mm) | Length (m) | Mesh Size | Temp Limits (°C) | Part No.        |
|---------|------------|-----------|------------------|-----------------|
| 1.0     | 1          | 100/120   | Up to 300        | <b>N9303927</b> |
| 1.0     | 2          | 100/120   | Up to 300        | <b>N9303926</b> |

Fittings for the micropacked Elite-Carbon columns need to be ordered separately.

| Description                                                  | Part No.        |
|--------------------------------------------------------------|-----------------|
| Installation kit for 1 mm ID columns; for valve applications | <b>N9303450</b> |
| Installation kit for 1 mm ID columns; for direct injections  | <b>N9303451</b> |

## Custom Packed Capillary Columns

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# GC Accessories

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PerkinElmer offers a wide selection of superior quality products designed to work with your PerkinElmer instruments. Our precision designed products deliver the peace of mind that comes from knowing that you'll get the results you need.

## Glass Inlet Liners

The injector and liner is an essential component of the GC and users have a broad choice of different injectors and liners which allow you to adjust several variables in order to optimize the injection.



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## Injector Septa

Our injection septum provide extremely low bleed over a wide range of inlet temperatures – 100 °C to 350 °C. Easier needle penetration and high puncture tolerance make this septum ideal for autosamplers.



➤ [VIEW PAGE](#)

## Thermal Desorber Consumables

Our convenient starter kit includes all products you need to run the TurboMatrix Thermal Desorber. A wide range of conditioned and unconditioned tubes, other kits and accessories are also available.



➤ [VIEW PAGE](#)



# Swafer Micro-Channel Wafer Technology

PerkinElmer's Swafer™ micro-channel wafer technology is an innovative and user-friendly approach for flowswitching and splitting applications. It delivers unparalleled hardware and application flexibility, expanding the capabilities of capillary gas chromatography (GC).

## Features and Benefits

- Allows you to tackle difficult or otherwise impossible separations, delivering richer sample information which was previously unattainable
- User-friendly design and user-defined oven position allow easy setup and configuration changes, without requiring service intervention
- Complete independence of the column from injectors or detectors lets you combine injection techniques (headspace, thermal desorption, liquid, etc.), based on sample requirements
- 15 user-interchangeable configurations deliver over 18 possible modes of operation for unparalleled application flexibility
- Can be used on any Clarus 580/500 or 680/600 GC with programmable pneumatic control (PPC)
- Vent unwanted solvent or other large peak from chromatogram
- Tweak the column polarity with serial column for difficult separations



## Swafer Kits for Clarus GC Systems

| Description                                                                                                                                                   | Part No.        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| D-Swafer Complete Kit – for Clarus GC units only (for Clarus 680/580 GCs with PPC) Includes all required installation hardware user guides, and the D-Swafer  | <b>N6520273</b> |
| S-Swafer Complete Kit – for Clarus GC units only (for Clarus 680/580 GCs with PPC) Includes all required installation hardware, user guides, and the S-Swafer | <b>N6520272</b> |

## Swafer Kits and Accessories for Existing Clarus GC Systems

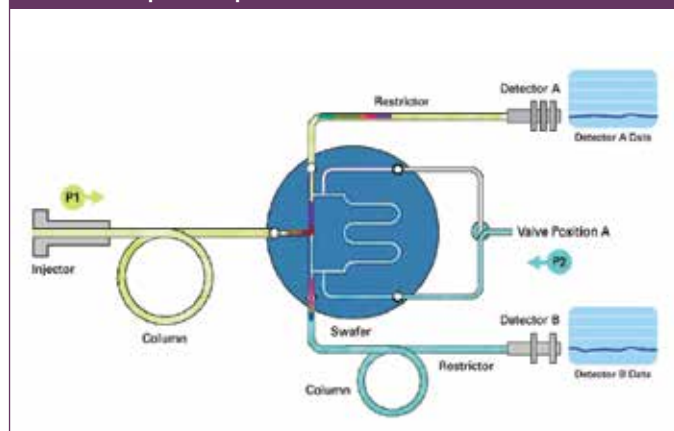
| Description                                                                                                                                                                                                                                                                                                     | Part No.        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Micro-Channel Kit for Existing Clarus 680/600/580/500 GC with PPC. Includes all hardware required to install a Swafer. The Swafer and installation are not included and must be purchased separately                                                                                                            | <b>N6520270</b> |
| Micro-Channel Kit for Existing Clarus 680/600/580/500 GCs with PreVent currently installed. If PreVent is already included in the GC configuration, this hardware kit provides the additional parts required to install a Swafer. The Swafer and installation are not included and must be purchased separately | <b>N6520271</b> |
| D-Swafer Dean's Switch (Swafer only)                                                                                                                                                                                                                                                                            | <b>N9306251</b> |
| S-Swafer Splitter (Swafer only)                                                                                                                                                                                                                                                                                 | <b>N9306262</b> |

## How Can the Swafer Help You?

| Enhanced Sample Information |                                                                                                         |                      |
|-----------------------------|---------------------------------------------------------------------------------------------------------|----------------------|
| Solvent venting             | Vent unwanted solvent or other large peak from chromatogram                                             | D-Swafer<br>S-Swafer |
| Detector switching          | Switch between your detectors of choice anytime during the run or between injections                    | D-Swafer             |
| Column switching            | Make your GC more flexible by choosing which column should be used to chromatograph the injected sample | D-Swafer             |
| Heartcutting                | Cut your chromatogram and analyze the cut on a different column for a better separation                 | D-Swafer             |
| Polarity tuning             | Tweak the column polarity with serial column for difficult separations                                  | D-Swafer<br>S-Swafer |
| Column selection            | Better utilize large and expensive detectors by choosing which of the two columns to monitor            | D-Swafer             |
| Carrier-gas swapping        | Use a different carrier gas in the injector or sampling system from that used for the chromatography    | D-Swafer             |
| Peak attenuation            | Analyze a wide dynamic range by diluting portions of your chromatography                                | D-Swafer             |
| Splitting                   | Split your chromatography between up to four channels (detectors, sniffer ports, etc.)                  | S-Swafer             |

| Throughput and Maintenance                              |                                                                                                                                                          |                      |
|---------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| Column backflushing                                     | Remove unwanted compounds from the column after the analytes have eluted                                                                                 | D-Swafer<br>S-Swafer |
| MS isolation                                            | Perform your MS, column and inlet maintenance without venting for less downtime                                                                          | D-Swafer<br>S-Swafer |
| Retention-gap purging                                   | Remove large amounts of solvent with cold on-column injection                                                                                            | D-Swafer             |
| Inlet selection                                         | Automate your inlet choices (headspace, thermal desorption, liquid autosampler, etc.) between injections                                                 | D-Swafer             |
| Injector maintenance or enhanced large volume injection | Enable injector septa or liner exchange while the system is still active Prevent solvent vapor from entering column and detector during injector purging | D-Swafer<br>S-Swafer |

**Heartcutting (D-Swafer) allows separation of selected peaks within a complex sample matrix.**



**Swafer can be installed in any Clarus 580/500 or 680/600 GC with programmable pneumatic control (PPC).**



# Ferules and Connectors

## SilTite Metal Ferrules

Provide a continuous leak-free connection and are perfect for connecting your column to a GC/MS.

The SilTite™ metal ferrule and nut are manufactured from the same material and therefore expand and contract at the same rate, eliminating the need to retighten – even after temperature cycling. The base of the SilTite ferrule forms a perfect seal with the MS interface, ensuring a leak-free connection. SilTite metal ferrules have a temperature limit well above the temperature capacity of the injector, MS interface or GC oven.



| Description                   | Hole Size (mm) | Part No.        |
|-------------------------------|----------------|-----------------|
| SilTite Ferrules Starter Kit* | 0.4            | <b>N9306090</b> |
| SilTite Ferrules Starter Kit* | 0.5            | <b>N9306091</b> |
| SilTite Ferrules Starter Kit* | 0.8            | <b>N9306092</b> |
| SilTite Ferrules (pkg. 10)    | 0.4            | <b>N9306093</b> |
| SilTite Ferrules (pkg. 10)    | 0.5            | <b>N9306094</b> |
| SilTite Ferrules (pkg. 10)    | 0.8            | <b>N9306095</b> |
| SilTite Nuts (pkg. 5)         |                | <b>N9306096</b> |

\* Kits include 2 nuts and 10 ferrules

## Capillary Column Ferrules\*

### Graphite

Ferrule of choice for high-temperature applications up to 450 °C. Graphite seals easily and does not stick to glass columns.

### Graphite/Vespel®

15% graphite/85% polyimide ferrule recommended for use with GC/MS systems. Temperature limit is 350 °C.

### Vespel®

Not reusable. Not recommended for fused silica capillary columns. Use these ferrules on 1/16 in. metal tubing and glass-lined receivers. Temperature limit is 350 °C.

| Size     | Column ID/Ferrule ID (mm) | Graphite Part No. | Graphite/Vespel Part No. |
|----------|---------------------------|-------------------|--------------------------|
| 1/16 in. | 0.18 – 0.25/0.4           |                   | <b>09920104</b>          |
| 1/16 in. | 0.18 – 0.32/0.5           | <b>09903700</b>   | <b>09920105</b>          |
| 1/16 in. | 0.18 – 0.32/0.5**         | <b>N9306001</b>   | <b>N9306000</b>          |
| 1/16 in. | 0.18 – 0.53/0.8           | <b>09920141</b>   | <b>09920107</b>          |
| 1/8 in.  | 0.18 – 0.53/1.0           | <b>09903394</b>   |                          |
| 1/8 in.  | 0.18 – 0.32/0.5**         | <b>09903395</b>   |                          |

\* Not suitable for Clarus 590/690 capillary injector \*\* 2-hole

## Wide-Bore Adapter Kit

Contains all the parts necessary to adapt to packed column injectors quickly and easily for use with wide-bore capillary columns. Includes 0–20 mL/min flow controller element, wide-bore adapter with 1/16 in. fitting, wide-bore glass liner and column support hanger.



| Description           | Part No.        |
|-----------------------|-----------------|
| Wide-Bore Adapter Kit | <b>N6120001</b> |



## Universal Connectors

| Description                                         | Part No.        |
|-----------------------------------------------------|-----------------|
| Universal Connector (pkg. 5)                        | <b>N9302149</b> |
| Metal Universal Connectors: 0.25 mm ID (pkg. 10)    | <b>N9301167</b> |
| Universal Y Splitter (pkg. 1)                       | <b>N9303448</b> |
| Polyimide Sealing Resin (5 g)                       | <b>N9301343</b> |
| Undeactivated Presstight Column Connectors (pkg. 5) | <b>N9303962</b> |



## Wafer Scribes

The PerkinElmer ceramic wafer scribe is inexpensive and ideal for cutting polyimide fused silica capillary columns and guard columns. The scribe is easy to hold and simple to use. All four sides can be used as a cutting tool.

| Description             | Part No.        |
|-------------------------|-----------------|
| Wafer Scribes (pkg. 10) | <b>N9301376</b> |

# Swagelok Fittings

The patented advanced-geometry back ferrule design provides a leak-tight tube connection on all Swagelok™ stainless steel tube fittings, in sizes 1/4 to 1/2 in., and 6 to 12 mm. Leak-tight seals that will withstand high-pressure, vibration, vacuum and temperature changes depend upon close tolerances and consistent, exacting quality control in conjunction with good design principles. Swagelok fittings from PerkinElmer are available in brass and stainless steel.

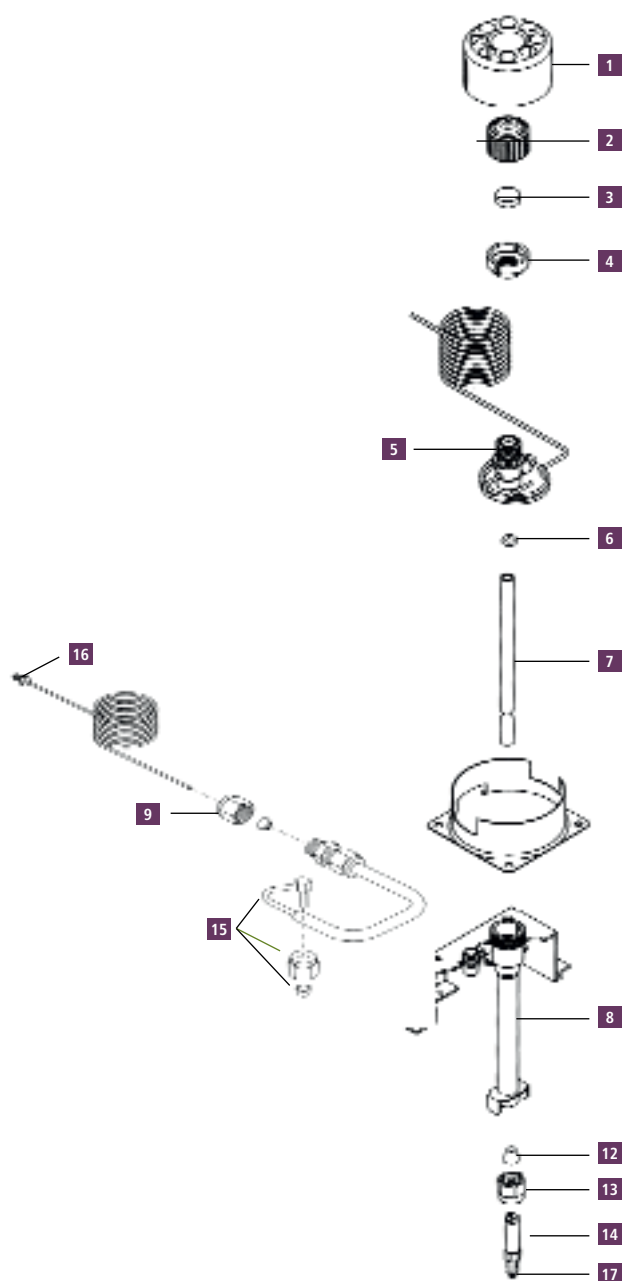
## Features and Benefits

- Ease of installation
- Back ferrule axially advances the front ferrule
- Vibration fatigue resistance
- Wide variety of configurations

## Swagelok™ Fittings

| Product                      |                                                                                     | Qty.   | Size                                                                                                 | Brass Part No.                               | Stainless Steel Part No.         |
|------------------------------|-------------------------------------------------------------------------------------|--------|------------------------------------------------------------------------------------------------------|----------------------------------------------|----------------------------------|
| Bulkhead Adapter             |    | pkg. 1 | 1/4 in. to 1/4 in. tube                                                                              |                                              | N9301267                         |
| Back Ferrule                 |    | pkg. 5 | 1/16 in.<br>1/8 in.<br>1/4 in.                                                                       | N9300040<br>N9300036<br>N9300030             | N9300042<br>N9300038<br>N9300032 |
| Cross Union                  |    | pkg. 1 | 1/8 in.                                                                                              | N9301259                                     |                                  |
| Front Ferrule                |   | pkg. 5 | 1/16 in.<br>1/8 in.<br>1/4 in.                                                                       | N9300041<br>N9300037<br>N9300031             | N9300043<br>N9300039<br>N9300033 |
| Male Adapter<br>Tube to Pipe |  | pkg. 1 | 1/4 in. tube to 1/8 in. NPT                                                                          | N9301266                                     |                                  |
| Male Connector               |  | pkg. 1 | 1/8 in. to 1/8 in. NPT<br>1/8 in. to 1/4 in. NPT<br>1/4 in. to 1/8 in. NPT<br>1/4 in. to 1/4 in. NPT | N9301253<br>N9301254<br>N9301255<br>N9301269 |                                  |
| Nut                          |  | pkg. 5 | 1/16 in.<br>1/8 in.<br>1/4 in.                                                                       | N9300058<br>N9300056<br>N9300054             | N9300059<br>N9300057<br>N9300055 |
| Plug                         |  | pkg. 1 | 1/16 in.<br>1/8 in.<br>1/4 in.                                                                       | N9300060<br>N9301268                         | N9300053<br>N9300061<br>N9301233 |
| Union                        |  | pkg. 2 | 1/16 in.<br>1/8 in.<br>1/4 in.                                                                       | N9300048<br>N9300046<br>N9300044             | N9300049<br>N9300047             |
| Union Tee                    |  | pkg. 1 | 1/16 in.<br>1/8 in.<br>1/4 in.                                                                       | N9301221<br>N9301222<br>N9301223             |                                  |
| Reducing Union               |  | pkg. 1 | 1/8 in. to 1/16 in.<br>1/4 in. to 1/8 in.<br>1/4 in. to 1/16 in.                                     | N9300051<br>N9300050<br>N9301227             | N9301225<br>N9301226             |

# Capillary Injector Replacement Parts\*



| Description                                                                                                                                     | Part No.        |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| <b>1</b> Injector Cover                                                                                                                         | <b>N6101482</b> |
| <b>2</b> Septum Cap                                                                                                                             | <b>N6100153</b> |
| <b>3</b> PerkinElmer Green Injection Septum (pkg. 50)                                                                                           | <b>N6621028</b> |
| <b>4</b> Injector Top Nut                                                                                                                       | <b>N6101358</b> |
| <b>5</b> Injector Head                                                                                                                          | <b>N6100158</b> |
| O-Ring, Silicone for Glass Liner (pkg. 10)<br>Maximum injector temperature 250 °C                                                               | <b>N6101374</b> |
| O-Ring, Graphite for Glass Liner (pkg. 5)<br>Maximum injector temperature 450 °C                                                                | <b>N6101378</b> |
| <b>6</b> O-Ring, KALREZ® for Glass Liner (pkg. 1)<br>Maximum injector temperature 450 °C                                                        | <b>N9302782</b> |
| O-Ring, Viton® for Glass liner (pkg. 1)<br>Maximum injector temperature 250 °C,<br>recommended for use with Mass Spec.<br>ships with instrument | <b>N9302783</b> |
| Quartz Liner (2 mm) for Splitless Operation                                                                                                     | <b>N6121002</b> |
| Quartz Liner (4 mm) for Split Operation<br>or Large Volume Splitless Injection                                                                  | <b>N6121001</b> |
| Glass Liner (2 mm) for Splitless Operation                                                                                                      | <b>N6101372</b> |
| Glass Liner (4 mm) for Split Operation                                                                                                          | <b>N6101052</b> |
| <b>7</b> Deactivated Liner for Splitless Operation<br>2 mm, packed with wool. (pkg. 5)                                                          | <b>N6121021</b> |
| Deactivated Liner for Split Operation<br>4 mm, packed with wool. (pkg. 5)                                                                       | <b>N6121020</b> |
| Deactivated Uniliner<br>4 mm, packed with wool. (pkg. 5)                                                                                        | <b>N6121022</b> |
| <b>8</b> Injector Body                                                                                                                          | <b>N6100047</b> |
| <b>9</b> 1/8 in. Swagelok™ Nut Brass (pkg. 5)                                                                                                   | <b>N9300056</b> |
| <b>10</b> Restrictor**                                                                                                                          | <b>N6101034</b> |
| <b>11</b> 1/8 in. Graphite/Vespel Ferrule (pkg. 10)*                                                                                            | <b>09920301</b> |
| <b>12</b> 1/4 in. Graphite Ferrule (pkg. 10)                                                                                                    | <b>09920140</b> |
| <b>13</b> 1/4 in. Swagelok Nut, Stainless Steel (pkg. 5)                                                                                        | <b>N9300055</b> |
| <b>14</b> Injector Adapter                                                                                                                      | <b>N6100157</b> |
| <b>15</b> Charcoal Trap                                                                                                                         | <b>N6100275</b> |
| Charcoal Trap for PPC Version*                                                                                                                  | <b>N6100331</b> |
| <b>16</b> Split Vent Tube                                                                                                                       | <b>N6100159</b> |
| <b>17</b> Column Nut 1/16 in.<br>Long length for reversed ferrule (pkg. 5)                                                                      | <b>09903392</b> |

\* Not suitable for Clarus 590 and 690 models. \*\* Not shown

## Miscellaneous Injector Accessories

| Description                                                                                               | Part No. |
|-----------------------------------------------------------------------------------------------------------|----------|
| 2 oz. Replacement Charcoal (30/60 mesh)                                                                   | 03300904 |
| Column Ferrule Graphite/Vespel                                                                            | 09920105 |
| Liner Removal Tool                                                                                        | N6100102 |
| Merlin Microseal Adapter Kit<br>Includes: 2 Merlin Microseal septa,<br>1 nut and 1 injection port adapter | N9303344 |
| Merlin Microseal Septa                                                                                    | N9303345 |
| Zero Dilution Liner (Inner)                                                                               | N1011446 |
| Zero Dilution Liner (Outer)                                                                               | N1011445 |

## Split/Splitless Injector Add-On Kits

## Capillary Injector with PPC

Kit includes split/splitless injector with programmable pneumatic control for carrier gas, split vent, heater, sensor, and heater block. The AutoSystem XL must be PPC™ ready. If not, a PPC upgrade kit (**N6120146**) is required. Installation by PerkinElmer Service is required, but not included. Not compatible with Clarus 590 and 690 models.

| Voltage | Part No. |
|---------|----------|
| 120 V   | N6120138 |
| 240 V   | N6120139 |

## Complete Capillary Injector Add-On Kits

Kit includes split/splitless injector in module with heater and sensor, 0 – 60 psi pressure regulator, and transducer for pressure readout. For manual gas control. Not compatible with Clarus 590 and 690 models.

| Voltage          | Part No. |
|------------------|----------|
| 120 V AutoSystem | N6120009 |
| 240 V AutoSystem | N6120022 |
| 120 V Clarus     | N6520012 |
| 230 V Clarus     | N6520013 |

## Dual Capillary Column Adapter Kit

Kit includes all necessary hardware to install two capillary columns to a capillary injector. Note: kit does not include appropriate 1/8 in. 2-hole ferrule. (See page 200) For manual gas control. Not compatible with Clarus 590/690 capillary injector.

| Voltage | Part No. |
|---------|----------|
| 120 V   | N6120050 |

## Split/Splitless Injector Starter Kit

Includes: 2 mm ID quartz liner, 4 mm ID quartz liner, silicone O-Rings (10), green septa (50), 0.5 mm graphite ferrules (10), 0.8 mm graphite ferrules (10), 1/16 in. stainless steel nuts (5), untreated quartz wool, packing rod, and wafer scribes (10). Not compatible with Clarus 590 and 690 models.

| Description                                                 | Part No. |
|-------------------------------------------------------------|----------|
| Split/Splitless Injector Starter Kit for Manual Gas Control | N6120101 |

## Packed Column Injector Add-On Kits

### Packed Column Injector Kit with Manual Pneumatics

Includes: complete injector assembly with heater and sensor, 0 – 100 mL flow controller, and column head pressure gauge for installation into the AutoSystem.

| Voltage | Part No. |
|---------|----------|
| 120 V*  | N6120007 |
| 240 V*  | N6120023 |

### Packed Column Injector Kit with PPC

The kit includes complete injector assembly with programmable pneumatic control, heater, sensor, and heater block. The GC must be PPC™ ready. If not, a PPC upgrade kit (N6120146) is required.

| Voltage | Part No. |
|---------|----------|
| 120 V*  | N6120136 |
| 240 V*  | N6120137 |

### Packed Column Injector Kit with Screen Readout and Manual Pneumatics

Includes: complete injector assembly with heater and sensor, 0 – 100 mL flow controller and column head pressure gauge, and transducer for screen readout of column carrier flow.

| Voltage           | Part No. |
|-------------------|----------|
| 120 V* AutoSystem | N6120008 |
| 240 V* AutoSystem | N6120025 |
| 120 V* Clarus     | N6520010 |
| 230 V* Clarus     | N6520011 |

### Packed Column Injector Kit AutoSystem XL and Clarus

The kit includes complete injector, heater, sensor, and heater block. (Does not include pneumatics.)

| Voltage | Part No. |
|---------|----------|
| 120 V*  | N6120071 |
| 240 V*  | N6120072 |

### Packed Column Injector Starter Kit

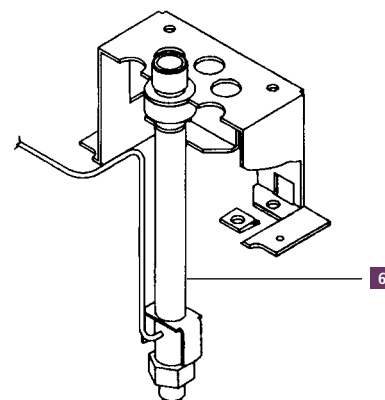
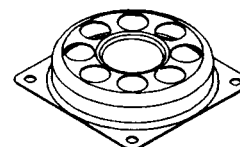
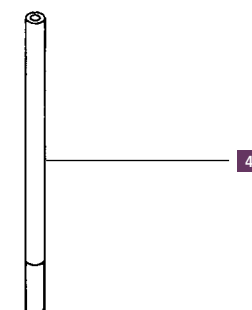
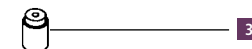
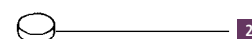
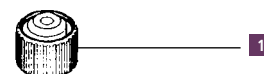
Includes glass liner, needle guide, green septa (50), untreated quartz wool, and packing rod.

| Description                        | Part No. |
|------------------------------------|----------|
| Packed Column Injector Starter Kit | N6120100 |

\*Service installation suggested

## Packed Injector Replacement Parts

|   | Description                                  | Part No. |
|---|----------------------------------------------|----------|
| 1 | Septum Cap                                   | N6100153 |
| 2 | PerkinElmer Green Injection Septum (pkg. 50) | N6621028 |
| 3 | Needle Guide                                 | N6101050 |
| 4 | Glass Liner                                  | N6101048 |
|   | Quartz Liner                                 | N6121000 |
| 5 | Packed Injector Assembly                     | N6100048 |



## Miscellaneous Accessories

### Injector/Detector Adapter 1/4 in.

Adapter fits on injector and detector outlet (inside oven) for use with 1/4 in. columns.

| Description                       | Part No.        |
|-----------------------------------|-----------------|
| Injector/Detector Adapter 1/4 in. | <b>00080100</b> |

### Liner Removal Tool

Allows easy removal of glass liners from injector port.

| Description        | Part No.        |
|--------------------|-----------------|
| Liner Removal Tool | <b>N6100102</b> |

### Silanized Glass Wool

Packing for wide-bore glass liners.



| Description                  | Part No.        |
|------------------------------|-----------------|
| Silanized Glass Wool (2 oz.) | <b>03300905</b> |

## Wide-Bore Adapter Kit

### 0.53 Capillary Column Adapter Kit

The AutoSystem Wide-Bore Adapter Kit allows conversion of the packed inlet for 0.53 mm capillary column operation. The kit includes 0 – 20 mL flow control element, wide-bore adapter with 1/16 in. fitting, wide-bore glass liner, and column support hanger. Can be used in both on-column and off-column modes of operation.

| Description                       | Part No.        |
|-----------------------------------|-----------------|
| 0.53 Capillary Column Adapter Kit | <b>N6120001</b> |

## Convenient GC/MS Consumable Kits\*

| Description                                   | Part No.        |      |                 |
|-----------------------------------------------|-----------------|------|-----------------|
| GC/MS PSS Injector Starter Kit                | <b>N6100447</b> |      |                 |
| Contents                                      | Pkg.            | Qty. | Part No.        |
| 5.0 µL Autosampler Syringe                    |                 | 1    | <b>N6101390</b> |
| Vial Locator (dongle)                         |                 | 2    | <b>N6101182</b> |
| PSS Injector Viton O-Rings (250 °C)           | 10              | 1    | <b>N6101747</b> |
| PSS Injector Kelrez O-Rings (350 °C)          | 1               | 1    | <b>09921004</b> |
| PSS Split/Splitless Injector, 2 mm, No Wool   |                 | 1    | <b>N6121004</b> |
| Graphite/Vespel Ferrules, for 0.25 mm Columns | 10              | 2    | <b>09920104</b> |
| PerkinElmer Green Speta (50 pieces)           |                 | 1    | <b>N6621028</b> |
| Marathon Filament                             |                 | 1    | <b>N6470012</b> |
| Aluminum Oxide Powder (3 oz.)                 |                 | 1    | <b>04190197</b> |

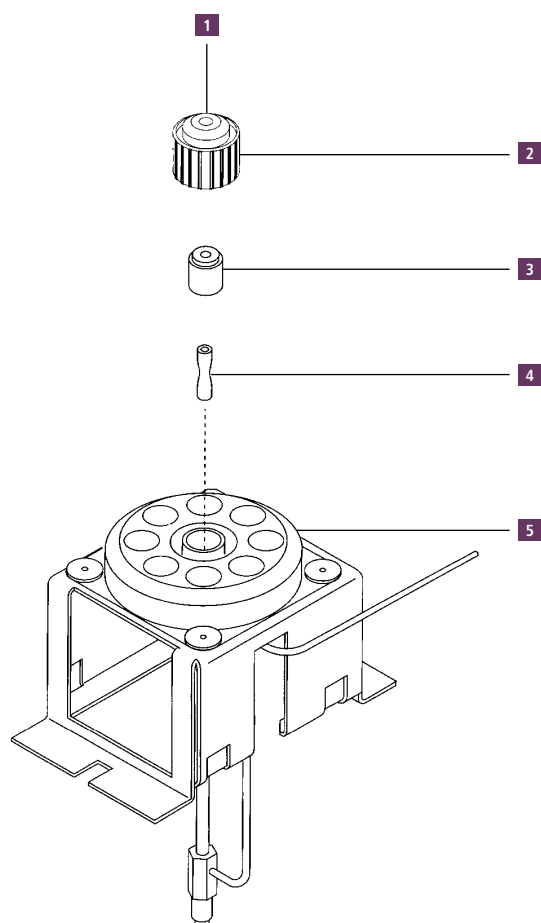
| Description                                             | Part No.         |      |                 |
|---------------------------------------------------------|------------------|------|-----------------|
| GC/MS CAP Injector Starter Kit for Clarus 680, 580, 480 | <b>N6100448*</b> |      |                 |
| Contents                                                | Pkg.             | Qty. | Part No.        |
| 5.0 µL Autosampler Syringe                              |                  | 1    | <b>N6101390</b> |
| Vial Locator (Dongle)                                   |                  | 2    | <b>N6101182</b> |
| CAP Injector Viton O-Rings (250 °C)                     |                  | 10   | <b>N9302783</b> |
| CAP Injector Kelrez O-Rings (350 °C)                    |                  | 10   | <b>N9302782</b> |
| CAP Split/Splitless Injector, 4 mm, No Wool             |                  | 2    | <b>N6121002</b> |
| Graphite/Vespel Ferrules, for 0.25 mm Columns           | 10               | 2    | <b>09920104</b> |
| PerkinElmer Green Speta (50 pieces)                     |                  | 1    | <b>N6621028</b> |
| Marathon Filament                                       |                  | 1    | <b>N6470012</b> |
| Aluminum Oxide Powder (3 oz.)                           |                  | 1    | <b>04190197</b> |

\* **N6100448** Not compatible with Clarus 590 and 690 models  
Refer to the Clarus 590/690 consumable reference guide for more details



## POC Replacement Parts

| Description                                           | Part No.        |
|-------------------------------------------------------|-----------------|
| <b>1</b> Septum Cap                                   | <b>N6100153</b> |
| <b>2</b> PerkinElmer Green Injection Septum (pkg. 50) | <b>N6621028</b> |
| <b>3</b> Needle Guide                                 | <b>N6101702</b> |
| <b>4</b> Liner/Hour Glass                             | <b>N6101703</b> |
| Body Assembly                                         | <b>N6100256</b> |
| <b>5</b> Packed Injector Assembly                     | <b>N6100048</b> |



## Programmed-Temperature On-Column Injector System

Programmed-Temperature On-Column (POC) Inlet is designed to be used with fused-silica capillary columns. The sample is injected onto the column while the inlet is cool. After the injection, the inlet begins to heat. This delay in heating avoids the flash vaporization associated with a normal injection. This explosive vaporization can cause thermal breakdown and/or discrimination of certain analytes, which can be avoided by using the POC.

The POC Injector is best used to achieve recovery of compounds of greater than C<sub>60</sub> (e.g., polywaxes). The POC utilizes flow control, producing the best recovery out to C<sub>100</sub> or greater.

### POC Injector with Manual Flow Controller and Head Pressure Gauge

Kit includes all necessary hardware to install injector into AutoSystem Series or Clarus Series.

| Voltage | Part No.        |
|---------|-----------------|
| 120 V*  | <b>N6120076</b> |
| 240 V*  | <b>N6120077</b> |

### POC Injector with Manual Flow Controller and Head Pressure Gauge with Flow Readout on Screen

Kit includes all necessary hardware to install injector into AutoSystem Series or Clarus Series.

| Voltage | Part No.        |
|---------|-----------------|
| 120 V*  | <b>N6120082</b> |
| 240 V*  | <b>N6120083</b> |

### POC Injector with PPC Add-On Kit

Kit includes injector with programmable pneumatic control, heater, sensor, and heater block. The AutoSystem XL or Clarus GC must be PPC™ ready. If not, a PPC upgrade kit (**N6120146**) is required. Installation by PerkinElmer Service is required, but not included.

| Voltage | Part No.        |
|---------|-----------------|
| 120 V*  | <b>N6120142</b> |
| 240 V*  | <b>N6120143</b> |

### POC Injector Starter Kit

Includes: needle guides (5), universal connectors (5), 0.53 mm ID deactivated fused silica (5 m), 1/16 in. stainless steel nuts (5), 0.8 mm graphite ferrules (10), green septa (50), and wafer scribes (10).

| Voltage                  | Part No.        |
|--------------------------|-----------------|
| POC Injector Starter Kit | <b>N6120098</b> |

\* Service installation suggested

# Programmed-Temperature Split/Splitless Injector System

## PSS Injector Add-On Kits with Manual Pneumatics

The programmed-temperature split/splitless (PSS) inlet allows accurate sample delivery to a capillary column. The PSS allows the analysis of thermally labile compounds, while eliminating the discrimination of high-boiling compounds. One of the major advantages of the PSS is that any nonvolatile material will remain in the inlet liner and not on the front of the column.

PSS with pneumatics and pressure readout on screen. Kit includes all necessary hardware to install injector into GC.

| Voltage           | Part No.        |
|-------------------|-----------------|
| 120 V* AutoSystem | <b>N6120074</b> |
| 240 V* AutoSystem | <b>N6120075</b> |
| 120 V* Clarus     | <b>N6520014</b> |
| 230 V* Clarus     | <b>N6520015</b> |

## PSS Injector with PPC

Kit includes injector with programmable pneumatic control, heater, sensor, and heater block. The GC must be PPC™ ready. If not, a PPC upgrade kit (**N6120146**) is required.

| Voltage | Part No.        |
|---------|-----------------|
| 120 V*  | <b>N6120140</b> |
| 240 V*  | <b>N6120141</b> |

## PSS Injector Starter Kit

Includes: universal connectors (5), 0.53 mm ID deactivated fused-silica (5 m), 2 mm ID quartz liner, 1 mm ID quartz liner, glass hourglass liner, 1/16 in. stainless steel nuts (5), 0.5 mm ID graphite ferrules (10), 0.8 mm ID graphite ferrules (10), Viton® O-Rings (6), graphite O-Rings (5), untreated quartz wool, wafer scribes (10), and green septa (50).

| Voltage                  | Part No.        |
|--------------------------|-----------------|
| PSS Injector Starter Kit | <b>N6120102</b> |

## Zero Dilution Liners

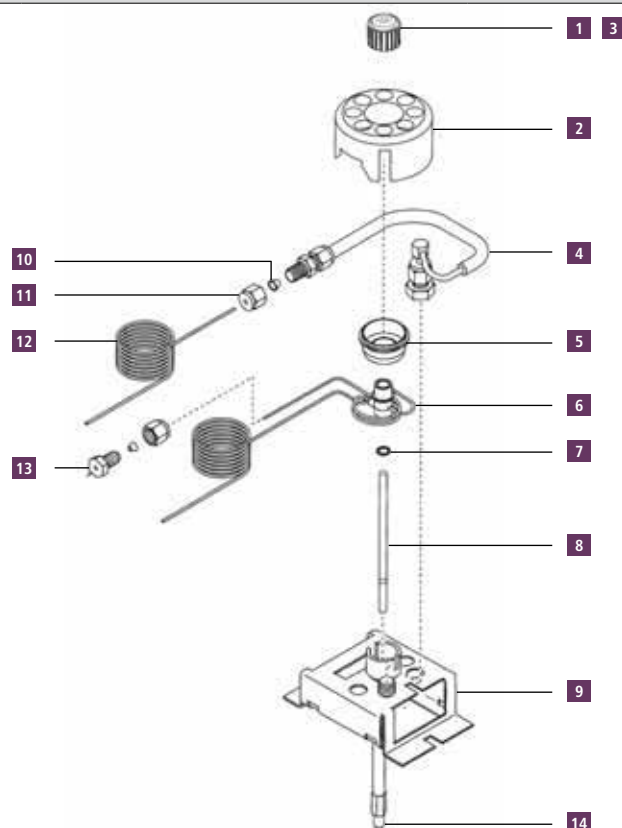
Used together as set.

| Voltage     | Part No.        |
|-------------|-----------------|
| Inner Liner | <b>N1011446</b> |
| Outer Liner | <b>N1011447</b> |

\* Service installation suggested

# PSS Replacement Parts

|           | Description                                                                                               | Part No.        |
|-----------|-----------------------------------------------------------------------------------------------------------|-----------------|
| <b>1</b>  | Septum Cap                                                                                                | <b>N6100153</b> |
| <b>2</b>  | Injector Cover                                                                                            | <b>N6101482</b> |
| <b>3</b>  | PerkinElmer Green Injection Septum (pkg. 50)                                                              | <b>N6621028</b> |
| <b>4</b>  | Trap, Charcoal – non PPC version<br>PPC version (not shown)                                               | <b>N6100275</b> |
| <b>5</b>  | Nut                                                                                                       | <b>N6101705</b> |
| <b>6</b>  | Septum Purge                                                                                              | <b>N6100260</b> |
| <b>7</b>  | O-Ring Viton (pkg. 10) max temp 250 °C,<br>recommended for use with<br>mass spec. Shipped with instrument | <b>N6101747</b> |
|           | O-Ring KALREZ® (pkg. 1)<br>max temp. 450 °C                                                               | <b>09921004</b> |
| <b>8</b>  | O-Ring Graphite (pkg. 5)<br>max temp. 450 °C                                                              | <b>N6101751</b> |
|           | Quartz Liner, 2 mm Split Mode<br>Shipped with instrument.                                                 | <b>N6121004</b> |
|           | Quartz Liner, 1 mm Splitless Mode                                                                         | <b>N6121006</b> |
| <b>9</b>  | On-column liner                                                                                           | <b>N6101539</b> |
|           | Body Assembly                                                                                             | <b>N6100261</b> |
| <b>10</b> | Ferrule 1/8 in. x 1/16 in. (pkg. 10)                                                                      | <b>09920301</b> |
| <b>11</b> | Nut 1/8 in.                                                                                               | <b>09903128</b> |
| <b>12</b> | Split Vent Line                                                                                           | <b>N6100159</b> |
| <b>13</b> | Purge Restrictor                                                                                          | <b>N6101034</b> |
| <b>14</b> | Nut                                                                                                       | <b>09903392</b> |





# BETTER GC FOR THE MOST CRITICAL APPLICATIONS – YOURS

## Superior sensitivity, capacity, and throughput – with flexibility to handle more applications

Our new Clarus® 590 and 690 systems are making GC more productive, more consistent – and more flexible than ever. Productive, because our proprietary autosampler technology, superfast oven cool-down, and programmable temperature injectors make it much more efficient. Consistent, because it delivers precise, repeatable sample introduction and fewer reruns. And flexible, because we integrate best-in-class TurboMatrix® headspace, thermal desorption, and hands-free liquid or SPME sample prep. Highly capable Clarus systems are simply better for the most important applications of all – those most important to you.

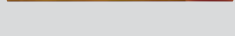
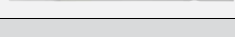
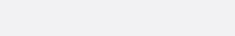
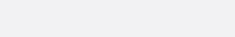
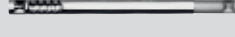
Learn more at [www.perkinelmer.com/gc](http://www.perkinelmer.com/gc)

## Glass Inlet Liners

Inlet liners for split injection have mixing chambers with tortuous flow paths to allow full vaporization of the sample. Deactivating the surface of these liners prevents active compounds from degrading. Packing the liner with wool will trap non-volatile residue and prevent column contamination when analyzing dirty samples.

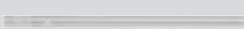
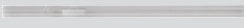
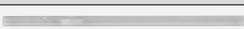
Inlet liners for splitless injection are generally designed as straight tubes, although new designs such as the gooseneck will help contain the sample in the injector. Packing these liners with wool will also help trap non-volatile residue and prevent column contamination.

### Capillary Split/Splitless Injector Liners\*

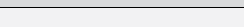
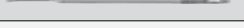
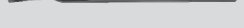
| Product                                                                             | Description                                                                                                                                                                                                                                          | ID (mm) | OD (mm) | Length (mm) | Pkg. | Part No. |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------|-------------|------|----------|
|    | Split Glass Liner Siltek Deactivated Surface Liner (with wool) – Universal liner for general purpose analyses. Surface provides inertness over a wide sample pH range. Wool can be adsorptive if fibers are broken                                   | 4       | 6.2     | 92.1        | 5    | N6121020 |
|    | Split Glass Liner (with wool) – Universal liner for general purpose analyses                                                                                                                                                                         | 4       | 6.2     | 92.1        | 5    | N6502009 |
|    | Split Siltek Deactivated Glass Liner (with wool) – Universal liner for general purpose analyses. Deactivated surface provides minimal bleed and inertness over a wide sample pH range                                                                | 4       | 6.2     | 92.1        | 5    | N6502010 |
|    | Clarus Cup Split Glass Liner – Good for both high and low molecular weight compounds. Sample vaporization is aided by tortuous flow path and minimizes molecular weight discrimination. Difficult to clean                                           | 4       | 6.2     | 92.1        | 5    | N6502011 |
|  | Clarus Cycloplitter Glass Liner – Patented cylindrical design for dirty samples, easy to clean and allows many injections before cleaning is required. Not recommended for large volume injections                                                   | 4       | 6.2     | 92.1        | 5    | N6502012 |
|  | Uniliner Deactivated Glass Liner (with wool) – Universal liner for general purpose analyses                                                                                                                                                          | 4       | 6.2     | 92.1        | 5    | N6121022 |
|  | Clarus Splitless Glass Liner – Low volume sample analyses, beneficial with headspace and purge/trap                                                                                                                                                  | 1       | 6.2     | 92.1        | 5    | N6502006 |
|  | Quartz Liner for Splitless Operation (ships with instrument) – Standard injector liner                                                                                                                                                               | 2       | 6.2     | 92.1        | 1    | N6121002 |
|  | Glass Liner for Splitless Operation – Universal liner for general purpose analyses                                                                                                                                                                   | 2       | 6.2     | 92.1        | 1    | N6101372 |
|  | Deactivated Glass Liner for Splitless Operation (with wool) – Good for analyses of trace samples                                                                                                                                                     | 2       | 6.2     | 92.1        | 5    | N6121021 |
|  | Siltek Deactivated Liner (with wool) for Splitless Operation – Optimum sample dispersion for active samples. Surface provides inertness over a wide sample pH range. Wool can be adsorptive if fibers are broken                                     | 2       | 6.2     | 92.1        | 5    | N6502004 |
|  | Quartz Liner for Split Operation – Good for large volume injection samples                                                                                                                                                                           | 4       | 6.2     | 92.1        | 1    | N6121001 |
|  | Glass Liner for Split Operation – Universal liner for general purpose analyses                                                                                                                                                                       | 4       | 6.2     | 92.1        | 1    | N6101052 |
|  | Siltek Deactivated Double Gooseneck Glass Liner (with wool) – Optimum sample dispersion for active samples. Decreases breakdown of active compounds such as endrin and DDT. Chamber contains sample vaporization cloud. Not suitable for PPC systems | 4       | 6.2     | 92.1        | 5    | N6502003 |
|  | Cyclo Double Gooseneck Liner for Split Operation – Cylindrical design for large volume and trace dirty samples. Decreases injection port discrimination. Cannot be packed with wool and more difficult to clean                                      | 4       | 6.2     | 92.1        | 5    | N6502005 |
|  | Zero Dilution Glass Outer Liner – Ideal for trace HS work. Use in conjunction with N1011446                                                                                                                                                          | 2       | 6.3     | 90          | 1    | N1011445 |
|  | Zero Dilution Glass Inner Liner – Ideal for trace HS work. Use in conjunction with N1011445                                                                                                                                                          |         | 2       | 73          | 1    | N1011446 |

\* Not compatible with Clarus 590/690 capillary injector. Refer to the Clarus 590/690 consumable reference guide for more details

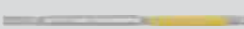
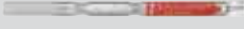
## Programmed Temperature Split/Splitless (PSS) Injector Liners

| Product                                                                           | Description                                                                                                                                                                                                                                   | ID (mm) | OD (mm) | Length (mm) | Pkg. | Part No.        |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------|-------------|------|-----------------|
|  | Quartz Liner for Splitless operation (ships with instrument)<br>– Excellent liner for low volume analyses                                                                                                                                     | 1       | 4       | 86.2        | 1    | <b>N6121006</b> |
|  | Siltek Deactivated Glass PSS Liner<br>– Used for low volume trace sample analyses                                                                                                                                                             | 1       | 4       | 86.2        | 5    | <b>N6502000</b> |
|  | Quartz Liner for Split operation (ships with instrument)<br>– Approved PerkinElmer standard injector liner                                                                                                                                    | 2       | 4       | 86.2        | 1    | <b>N6121004</b> |
|  | Siltek Deactivated Glass Liner for Split operation (with wool)<br>– Maximum inertness and packed with wool gives optimum sample dispersion. Surface provides inertness over wide sample pH range. Wool can be adsorptive if fibers are broken | 2       | 4       | 86.2        | 5    | <b>N6502001</b> |
|  | Siltek Deactivated Glass Liner for Split operation<br>– Max inertness gives optimum sample dispersion. Deactivated surface provides minimal bleed and inertness over a wide sample pH range                                                   | 2       | 4       | 86.2        | 5    | <b>N6502002</b> |
|  | Zero Dilution Outer Liner – Use in conjunction with <b>N1011446</b>                                                                                                                                                                           | 2.8     | 4       | 83          | 1    | <b>N1011447</b> |
|  | Zero Dilution Inner Liner – Use in conjunction with <b>N1011447</b>                                                                                                                                                                           |         | 2       | 73          | 1    | <b>N1011446</b> |
|  | On-column Glass Liner                                                                                                                                                                                                                         | 2.4     | 4       | 86.2        | 1    | <b>N6101539</b> |
|  | Liner/Hour Glass for POC Injector                                                                                                                                                                                                             | 2.4     | 4       | 19.05       | 1    | <b>N6101703</b> |
|  | Quartz Split Liner with Silanized Glass Wool                                                                                                                                                                                                  | 2       | 4       | 86.2        | 1    | <b>N6121008</b> |
|  | Quartz Split Liner with Silanized Glass Wool                                                                                                                                                                                                  | 2       | 4       | 86.2        | 5    | <b>N6121009</b> |

## Packed Column Injector Liners

| Product                                                                             | Description                                                                                                                                                                     | ID (mm) | OD (mm) | Length (mm) | Pkg. | Part No.        |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------|-------------|------|-----------------|
|  | Drilled Uniliner (hole on top) – Excellent liner for high sample recovery and linearity, recommended for aqueous injections. Good for PPC equipped GCs                          | 4       | 6.2     | 92.1        | 5    | <b>N6121022</b> |
|  | Drilled Uniliner (hole on bottom) – Recommended for analysis in which compounds of interest could be affected by a tailing solvent peak. Good for PPC equipped GCs              | 4       | 6.2     | 92.1        | 5    | <b>N6502013</b> |
|  | Gooseneck Drilled Uniliner (hole on top)<br>– Use for trace, active samples, high recovery and linearity                                                                        | 4       | 6.2     | 92.1        | 5    | <b>N6502014</b> |
|  | Gooseneck Drilled Uniliner (hole on bottom)<br>– Use for trace, active samples, high recovery and linearity                                                                     | 4       | 6.2     | 92.1        | 5    | <b>N6502015</b> |
|  | Open Top Uniliner (with wool) – Packed with fused silica wool, highly recommended for high molecular weight active samples. The fused silica wool traps dirt and sample residue | 4       | 6.2     | 92.1        | 5    | <b>N6502016</b> |
|  | Cyclo Uniliner – Cylindrical design for high molecular weight samples provides an excellent vaporization surface. Spiral traps dirt reducing further residue sample interaction | 4       | 6.2     | 92.1        | 5    | <b>N6502017</b> |
|  | Wide-Bore Column Glass Liner                                                                                                                                                    | 6       | 4       | 92.1        | 1    | <b>N6101375</b> |
|  | Wide-Bore Column On/Off Quartz Liner                                                                                                                                            | 6       | 4       | 92.1        | 1    | <b>N6121003</b> |

## Colored Injector Liners

| Product                                                                             | Description                                                                                                                 | ID (mm) | OD (mm) | Length (mm) | Pkg. | Part No.        |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|---------|---------|-------------|------|-----------------|
|  | PSS deactivated glass liners with deactivated wool. Narrow bore and quartz wool increase volatilization and reproducibility | 2       | 4       | 86.2        | 5    | <b>N9306232</b> |
|  | Capillary split/splitless deactivated glass liners with deactivated wool*                                                   | 4       | 6.2     | 92.1        | 5    | <b>N9306233</b> |
|  | Capillary split/splitless deactivated glass liners with deactivated wool and tapered end*                                   | 4       | 6.2     | 92.1        | 5    | <b>N9306235</b> |
|  | Capillary split/splitless deactivated glass liners with deactivated wool. Quartz wool is used to fully vaporize the sample* | 4       | 6.2     | 92.1        | 5    | <b>N9306236</b> |
|  | PSS Splitless deactivated glass liners                                                                                      | 1.25    | 4       | 86.2        | 5    | <b>N9306237</b> |

\*Not compatible with Clarus 690/590 GC capillary injector. Refer to the Clarus 590/690 consumable reference guide for more details

# Autosampler and Manual Syringes



New Blue Barrel color design for enhanced sample volume verification (packs of 5 and 10 syringes)

## Autosampler Syringes

Syringes from PerkinElmer are individually inspected for accuracy and performance.

Recommended autosampler syringes are available in 0.5, 5 and 50 µL capacities. For routine analyses, the metal plunger in barrel with PTFE-tipped seal is the standard syringe as shipped with each Clarus® GC instrument. Alternative syringes to use are the metal plunger in barrel or the 0.53 mm on-column injection.

| Description                                                                                        | Part No.        |
|----------------------------------------------------------------------------------------------------|-----------------|
| 50 µL Syringe, Metal Plunger 0.63 mm OD Needle                                                     | <b>N6101760</b> |
| 5 µL Syringe, Metal Plunger PTFE-tipped Seal 0.63 mm OD Needle                                     | <b>N6101390</b> |
| 5 µL Syringe, Metal Plunger PTFE-tipped Seal 0.63 mm OD Needle BLUE Barrel (pkg. 5 syringes)       | <b>N6103240</b> |
| 5 µL Syringe, Metal Plunger PTFE-tipped Seal 0.63 mm OD Needle BLUE Barrel (pkg. 10 syringes)      | <b>N6103241</b> |
| 5 µL Syringe, Metal Plunger 0.63 mm OD Needle                                                      | <b>N6101251</b> |
| 5 µL On-column Syringe Metal Plunger 0.47 mm OD Needle                                             | <b>N6101380</b> |
| 0.5 µL Low Injection Volume Syringe, Metal Plunger 0.63 mm OD Needle                               | <b>N6101252</b> |
| 0.5 µL Low Injection Volume Syringe Metal Plunger 0.63 mm OD Needle BLUE Barrel (pkg. 5 syringes)  | <b>N6103242</b> |
| 0.5 µL Low Injection Volume Syringe Metal Plunger 0.63 mm OD Needle BLUE Barrel (pkg. 10 syringes) | <b>N6103243</b> |
| 0.5 µL Low Injection Volume Syringe, Metal Plunger 0.47 mm OD Needle                               | <b>N6101253</b> |
| 0.5 µL Low Injection Volume Syringe, Metal Plunger 0.63 mm OD Needle                               | <b>N6101252</b> |
| 0.5 µL Low Injection Volume Syringe Metal Plunger 0.63 mm OD Needle BLUE Barrel (pkg. 5 syringes)  | <b>N6103242</b> |
| 0.5 µL Low Injection Volume Syringe Metal Plunger 0.63 mm OD Needle BLUE Barrel (pkg. 10 syringes) | <b>N6103243</b> |
| 0.5 µL Low Injection Volume Syringe, Metal Plunger 0.47 mm OD Needle                               | <b>N6101253</b> |

## Needles and Syringe Kits

Needle has a 90° bevel. Point style is recommended when the syringe is used for accurate pipetting of liquids. Excellent for mixing standards of very small volume.

### Needles

| Description                                      | Part No.        |
|--------------------------------------------------|-----------------|
| Sample Needle w/ Fittings                        | <b>N2936009</b> |
| Air Guide Needle (62 mm)                         | <b>N2936000</b> |
| Bio Compatible Sample Needle w/ Tubing Connector | <b>N2936010</b> |
| Needle (80 mm)                                   | <b>N2936342</b> |
| Low volume needles                               | <b>N2931199</b> |

### Syringe Kits

| Description | Hole Size | Part No.        |
|-------------|-----------|-----------------|
| 100 µL      | 200 µL    | <b>N2936051</b> |
| 250 µL      | 500 µL    | <b>N2936052</b> |
| 500 µL      | 1,000 µL  | <b>N2936053</b> |
| 1,000 µL    | 2,000 µL  | <b>N2936054</b> |
| 2,500 µL    | 2,000 µL  | <b>N2936055</b> |

### Point Style 2

This is a general purpose point style designed for septum penetration in all chromatographic techniques. The needle has a 22° bevel to minimize coring and needle plugging.



### Point Style 3

Needle has a 90° bevel. Point style is recommended when the syringe is used for accurate pipetting of liquids. Excellent for mixing standards of very small volume.





## GC Injector Syringes

### Features and Benefits

- All PerkinElmer injectors have been tested and optimized for use with a 7 cm needle
- A 7 cm needle is critical to be sure your sample is deposited in the optimal zone

| Syringe Capacity                           | Gauge | Length | Pkg. | Point Style | Part No.        |
|--------------------------------------------|-------|--------|------|-------------|-----------------|
| <b>Removable Needle Syringes (RN)</b>      |       |        |      |             |                 |
| 10 µL                                      |       |        | 1    | #2          | <b>N9302210</b> |
| 25 µL                                      |       |        | 1    | #2          | <b>N9302211</b> |
| 50 µL                                      |       |        | 1    | #2          | <b>N9302212</b> |
| 100 µL                                     |       |        | 1    | #2          | <b>N9302213</b> |
| <b>Replacement Needles for RN Syringes</b> |       |        |      |             |                 |
| 10 µL                                      |       |        | 1    | #2          | <b>N9302222</b> |
| 25/50/100 µL                               | 22S   | 2 in.  | 3    | #2          | <b>N9302224</b> |
| 250 µL                                     | 22S   | 2 in.  | 3    | #2          | <b>N9302226</b> |
| <b>Fixed Needle Syringes</b>               |       |        |      |             |                 |
| 10 µL <sup>3</sup>                         |       |        | 1    | #2          | <b>00230523</b> |
| 10 µL <sup>2</sup>                         |       |        | 6    | #2          | <b>N9302230</b> |
| 25 µL                                      |       |        | 1    | #2          | <b>N9302202</b> |
| 25 µL                                      |       |        | 1    | #3          | <b>09904823</b> |
| 50 µL                                      |       |        | 1    | #2          | <b>N9302203</b> |
| 50 µL                                      |       |        | 1    | #3          | <b>09904941</b> |

<sup>2</sup> Savings based on one-piece price. Savings of 20% reflected in price shown

<sup>3</sup> Standard fitted with 7 cm needle

## Merlin MicroSeal Septum

The Merlin MicroSeal™ septa is a unique replacement septa employing a two-step sealing system and an advanced elastomer material.

Because the syringe needle does not pierce the septa, there is no debris and ghost peaks are greatly reduced. The MicroSeal septa also reduces the incidence of bent syringe needles and liner contamination.

Usable in either manual or autosampler applications, this septa can improve your productivity and run reliability. Designed to be used with 23 gauge straight needle syringes. Pressure ranges from 4 to 100 psi and injection port temperatures up to 325 °C. This is not compatible with Clarus 690/590 GCs.



| Description                                                                       | Part No.        |
|-----------------------------------------------------------------------------------|-----------------|
| Merlin MicroSeal Septum Kit<br>Includes: Injector Port Adapter, 2 Septa and 1 Nut | <b>N9303344</b> |
| Merlin MicroSeal Septum                                                           | <b>N9303345</b> |

## Injector Septa



### Features and Benefits

- PerkinElmer Green Injection septum, extremely low bleed over a wide range of inlet temperatures – 100 °C to 350 °C. Easier needle penetration and high puncture tolerance make this septum ideal for autosamplers. This septum is already conditioned and ready to use
- BTO™ (Bleed Temperature Optimized) injector septa, 11 mm diameter. Maximum recommended operating temperature 300 °C
- PTFE/Silicone injector septa, 11 mm diameter

| Description                        | Pkg. | Part No.        |
|------------------------------------|------|-----------------|
| PerkinElmer Green Injection Septum | 50   | <b>N6621028</b> |
| Low Bleed Injector Septa           | 25   | <b>N9303343</b> |
| PTFE/Silicone Injector Septa       | 50   | <b>00090652</b> |
| Green Injection Port Septa         | 10   | <b>N9306218</b> |
| Green Injection Port Septa         | 50   | <b>N9306219</b> |
| Orange Injection Port Septa        | 50   | <b>N9302972</b> |

### Green

Septa rated to 400 °C. The advanced green septum was created to combine significantly longer injection life, low bleed and low injection port adhesion. The result is a general use green septum made of uniquely formulated silicone rubber you can use for all your daily analyses. Packaged in a pre-cleaned glass screw top jar for high purity.

### Orange

Septa rated to 400 °C. Uniquely formulated silicone rubber septa BTO® is bleed and temperature optimized for today's most demanding GC and GC/MS applications. Septa BTO is formulated to extend low-bleed and outstanding mechanical properties of premium GC septa. It retains remarkable softness at high temperatures and has been optimized to reduce injection port adhesion. Packaged in a pre-cleaned glass screw top jar for high purity.

## FID Add-On Kits

### Auto-Ignite FID with PPC Add-On Kit\*

Kit includes: detector assembly with heater and sensor, heater block, igniter, programmable pneumatics, and controls for detector combustion gases. Requires, but does not include, amplifier (N6120162) and AutoSystem XL firmware revision 3.3 or higher. The AutoSystem XL must be PPC ready. If not, a PPC upgrade kit (N6120146) is required.

| Voltage | Part No. |
|---------|----------|
| 120 V*  | N6120167 |
| 240 V*  | N6120168 |

\*Not compatible with the FID detector on the Clarus 690 and 590 GCs  
Refer to the Clarus 590/690 consumables reference guide for more details

### Auto-Ignite FID Add-On Kit (Manual Pneumatics)

Kit includes: detector assembly with heater and sensor, heater block, igniter, hydrogen pressure regulator, and needle valve. Requires, but does not include, amplifier (N6120162). Requires AutoSystem XL to have firmware revision 3.3 or higher.

| Voltage          | Part No. |
|------------------|----------|
| 120 V AutoSystem | N6120165 |
| 240 V AutoSystem | N6120166 |
| 120 V Clarus*    | N6520018 |
| 230 V Clarus*    | N6520019 |

\*Not compatible with the FID detector on the Clarus 690 and 590 GCs  
Refer to the Clarus 590/690 consumables reference guide for more details

### FID Amplifier

Required for use with FID Detector Add-On Kit\*.

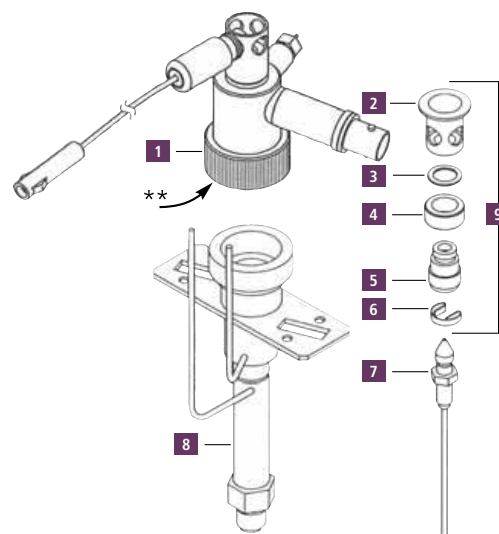
| Description   | Part No. |
|---------------|----------|
| FID Amplifier | N6120162 |

\* This is not required for the Clarus 590/690 FID add-on kits

### Auto-Ignite FID Replacement Parts\*

| Description                                                             | Part No.             |
|-------------------------------------------------------------------------|----------------------|
| <b>1</b> Collector Head Assembly<br>Silicone Rubber O-Ring* (not shown) | N6100357<br>09902143 |
| <b>2</b> Polarizer Nozzle                                               | N6103167             |
| <b>3</b> Nozzle Insulator                                               | 09907827             |
| <b>4</b> Nozzle Collector                                               | N6101085             |
| <b>5</b> Body Assembly                                                  | N6103175             |
| <b>6</b> FID Jet Contact/Spring                                         | N6001204             |
| <b>7</b> Jet Assembly*                                                  | N6100361             |
| <b>8</b> FID Body                                                       | N6100364             |
| <b>9</b> Nozzle Assembly                                                | N6100430             |

\*Not compatible with the FID detector on the Clarus 690 and 590 GCs  
Refer to the Clarus 590/690 consumables reference guide for more details



## Detector Series Operation Kit

### TCD/FID Series Operation Kit

Used to direct sample effluent from the TCD to the FID.

| Description                  | Part No. |
|------------------------------|----------|
| TCD/FID Series Operation Kit | N6120006 |

### PID/FID Series Operation Kit

Used to direct sample effluent from the PID to the FID.

| Description                  | Part No. |
|------------------------------|----------|
| PID/FID Series Operation Kit | N6120059 |



## FID Miscellaneous Accessories\*

| Description                                                                                                                          | Part No.        |
|--------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Auto-Ignite Nozzle Replacement Tool for removing nozzle from auto-ignite FID body                                                    | <b>N6103188</b> |
| Auto-Ignite FID Catalytic Reactor Accessory*                                                                                         | <b>N6120161</b> |
| Capillary Column Adapter for capillary column use with the FID 1/8 to 1/16 in. detector adapter                                      | <b>N6120020</b> |
| Ceramic Column Cutter                                                                                                                | <b>N9301376</b> |
| Cotton Applicators                                                                                                                   | <b>N9301272</b> |
| Detector Cover (Brown Color)                                                                                                         | <b>N6103225</b> |
| Detector Cover (White Color)                                                                                                         | <b>N6103151</b> |
| Eraser Brush-Pencil                                                                                                                  | <b>09923078</b> |
| Jet Assembly*                                                                                                                        | <b>N6100194</b> |
| Jet Replacement Tool<br>1/4 in. nut driver for removing jet from auto-ignite FID body                                                | <b>N6101297</b> |
| Quartz Wool                                                                                                                          | <b>N6102354</b> |
| Replacement Stainless Steel Glow Plug for Auto-ignite FID                                                                            | <b>N6103089</b> |
| Septa, low bleed (pkg. 50)                                                                                                           | <b>N9302972</b> |
| 1/4 in. Packed Column Adapter<br>for use with 1/4 in. packed columns.<br>1/8 to 1/4 in. adapter fits both injector and detector ends | <b>00080100</b> |

\*Not compatible with the FID detector on the Clarus 690 and 590 GCs  
Refer to the Clarus 590/690 consumables reference guide for more details

## Catalytic Reactor Accessory

### Auto-Ignite FID with PPC Add-On Kit

The catalytic reactor converts CO and CO<sub>2</sub> to methane conveniently and efficiently. The lower detection limit is extended to well below 0.1 ppm.

The catalytic reactor consists of a special catalytic reactor base which replaces the FID base. The reactor body contains a quantity of catalyst held in place by a quartz wool plug.

Kits include base assembly, reactor tube, and instructions.

### External Igniter FID Catalytic Reactor Accessory

| Description                                       | Part No.        |
|---------------------------------------------------|-----------------|
| External Igniter FID Catalytic Reactor Accessory* | <b>N6120070</b> |

### Auto-Ignite FID Catalytic Reactor Accessory

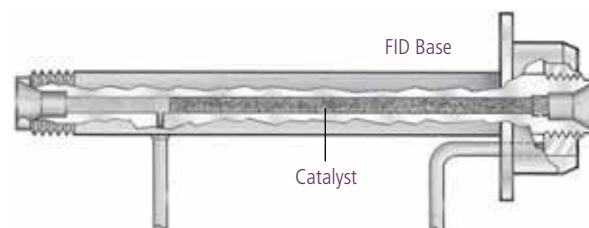
| Description                                  | Part No.        |
|----------------------------------------------|-----------------|
| Auto-Ignite FID Catalytic Reactor Accessory* | <b>N6120161</b> |

\*Not compatible with the FID detector on the Clarus 690 and 590 GCs  
Refer to the Clarus 590/690 consumables reference guide for more details

### Catalytic Reactor Replacement Parts

| Description  | Part No.        |
|--------------|-----------------|
| Catalyst     | <b>N9302698</b> |
| Jet Assembly | <b>N6100194</b> |
| Quartz Wool* | <b>N6102354</b> |

\* Product available in the USA only



## Miscellaneous Accessories

### External Ignite Nozzle Replacement Tool

For removing nozzle from External Ignite FID body.

| Description                             | Part No.        |
|-----------------------------------------|-----------------|
| External Ignite Nozzle Replacement Tool | <b>N6103188</b> |

### Hydrogen Regulator Replacement Kit

| Description                        | Part No.        |
|------------------------------------|-----------------|
| Hydrogen Regulator Replacement Kit | <b>N6100289</b> |

### Hydrogen/Air Replacement Needle Valve

| Description                           | Part No.        |
|---------------------------------------|-----------------|
| Hydrogen/Air Replacement Needle Valve | <b>N6101412</b> |

### Igniter Assembly

Complete replacement igniter assembly with glow plug.

| Description      | Part No.        |
|------------------|-----------------|
| Igniter Assembly | <b>N6100016</b> |

### Replacement Glow Plug for External Ignite FID

| Description                                   | Part No.        |
|-----------------------------------------------|-----------------|
| Replacement Glow Plug for External Ignite FID | <b>00091279</b> |

### FID Flow Measurement Adapter

| Description                  | Part No.        |
|------------------------------|-----------------|
| FID Flow Measurement Adapter | <b>N6101345</b> |

## FPD Add-On Kits

The FPD is a highly sensitive and selective detector for both sulfur and phosphorus compounds. It is especially suitable for environmental monitoring of H<sub>2</sub>S and sulfur gases in general and for organophosphorus compounds present at trace levels in pesticide analysis. Alkyl tin compounds can also be analyzed by changing the filter assembly. The sulfur filter is shipped standard.

The FPD mounts in either the front or rear detector position. This allows many detector combinations, such as FPD/FPD, FPD/TCD, and FPD/ELCD.

The AutoSystem also includes a linearizer function for the sulfur filter mode and convenient control of the photomultiplier tube from the keyboard.

The FPD is capillary-column compatible. The detector will accept columns of 0.530 mm ID or less. The standard jet shipped with the FPD does not have a glass-lined tail pipe. If an all-glass system is required and glass packed columns will be used, then a glass-lined tail pipe should be ordered (**N6100264**). As a reminder, use of packed 1/4 in. columns requires a 1/8 to 1/4 in. adapter.

### Filters

| Description              | Part No.        |
|--------------------------|-----------------|
| Phosphorus Lens (Yellow) | <b>N6000981</b> |
| Sulfur Lens* (Blue)      | <b>N6000637</b> |
| Tin Lens (Orange)        | <b>L4135472</b> |

\* Shipped standard

### FPD Add-On Kit (Manual Pneumatics)

Kit includes detector, heater, sensor, heater block, hydrogen needle valve, air pressure regulator, and sulfur photomultiplier filter. Requires but does not include FPD amplifier (**N6120095**). Firmware revision 1.6 or greater required. Firmware must be PerkinElmer Service installed. AutoSystem operator's manual (**09938559**) revision E or higher required.

| Voltage          | Part No.        |
|------------------|-----------------|
| 120 V AutoSystem | <b>N6120088</b> |
| 240 V AutoSystem | <b>N6120089</b> |
| 120 V Clarus     | <b>N6520028</b> |
| 230 V Clarus     | <b>N6520029</b> |

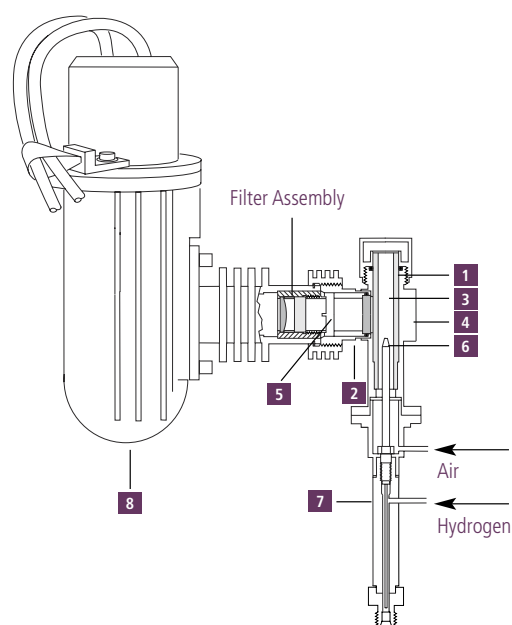
### FPD Amplifier

Firmware revision 1.6 or greater required. Firmware must be PerkinElmer Service installed. AutoSystem operator's manual (**09938559**) revision E or higher required.

| Description   | Part No.        |
|---------------|-----------------|
| FPD Amplifier | <b>N6120095</b> |

### FPD Replacement Parts for AutoSystem Series GCs

| Description                                     | Part No.        |
|-------------------------------------------------|-----------------|
| <b>1</b> O-Ring                                 | <b>09902247</b> |
| <b>2</b> Seal Assembly and Window (heat shield) | <b>N9300096</b> |
| <b>3</b> Liner (window)                         | <b>N6003057</b> |
| <b>4</b> FPD Body (upper)                       | <b>N6100243</b> |
| <b>5</b> Window Holder                          | <b>N6003066</b> |
| <b>6</b> FPD Jet                                | <b>N6100245</b> |
| Glass-lined Jet Tailpipe (for all-glass system) | <b>N6100264</b> |
| <b>7</b> FPD Body (lower)                       | <b>N6100244</b> |
| <b>8</b> Photomultiplier Tube                   | <b>09972321</b> |



### FPD with PPC Add-On Kit

Kit includes: detector, heater, sensor, heater block, programmable pneumatic control for detector combustion gases, and sulfur photomultiplier filter. Requires, but does not include, FPD amplifier (**N6120095**). AutoSystem XL GC must be PPC ready. If not, a PPC upgrade kit (**N6120146**) is required. Installation by PerkinElmer Service is required, but not included.

| Voltage | Part No.        |
|---------|-----------------|
| 120 V   | <b>N6120128</b> |
| 230 V   | <b>N6120129</b> |

### Packed Column Adapter

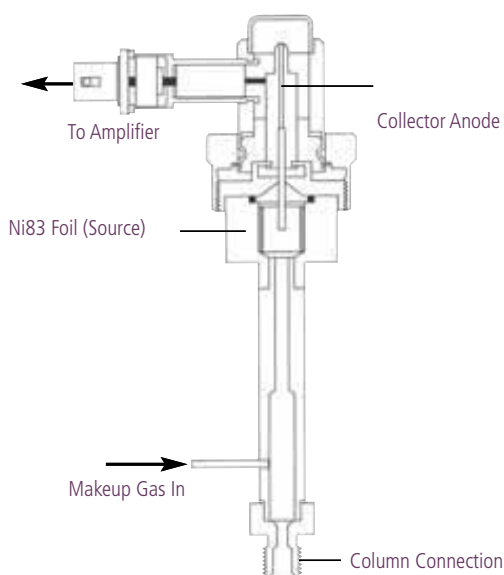
1/8 to 1/4 in. adapter for use with 1/4 in. packed columns.

| Description        | Part No.        |
|--------------------|-----------------|
| Adapter (set of 2) | <b>00080100</b> |

## ECD Add-On Kits

The ECD is a versatile, nondestructive detector which responds strongly to halogen-containing compounds as well as to certain other electron-capturing substances. The ECD's high sensitivity and selectivity make it an ideal choice for pesticide-residue analysis and for detection of halogen-derivatized compounds.

The ECD has an independent temperature range of 100 – 450 °C. The detector contains thermal protection that prevents heating the Ni63 source to temperatures beyond safe operating limits. Two ECDs can be installed and operated simultaneously on the AutoSystem Series and Clarus GCs. Nitrogen or argon/methane is the required detector operating gas. The base of the detector terminates in a 1/8 in. fitting.



### ECD Add-On Kit (Manual Pneumatics)

Kit includes all parts necessary to install an ECD on the AutoSystem Series or Clarus GCs. Includes: detector, heater, sensor, heater block, 1/16 in. makeup gas line, makeup gas needle valve, and vent tube assembly. Requires, but does not include, ECD amplifier (**N6120014**). Installation by PerkinElmer Service is recommended.

| Voltage          | Part No.        |
|------------------|-----------------|
| 120 V AutoSystem | <b>N6120011</b> |
| 240 V AutoSystem | <b>N6120026</b> |
| 120 V Clarus     | <b>N6520020</b> |
| 230 V Clarus     | <b>N6520021</b> |

### ECD Amplifier

Required for use with ECD detector with add-on kit.

| Description   | Part No.        |
|---------------|-----------------|
| ECD Amplifier | <b>N6120014</b> |

### ECD Add-On Kit (PPC Pneumatics)

Kit includes: detector, heater, sensor, heater block, and programmable pneumatic control for makeup gas. Requires, but does not include, ECD amplifier (**N6120014**). The AutoSystem XL or Clarus GCs must be PPC ready. If not, a PPC upgrade kit (**N6120146**) is required. Installation by PerkinElmer Service is required, but not included.

| Voltage | Part No.        |
|---------|-----------------|
| 120 V   | <b>N6120122</b> |
| 230 V   | <b>N6120123</b> |

### Vent Tube Assembly

Flexible tube to safely vent toxic sample effluent.

| Description        | Part No.        |
|--------------------|-----------------|
| Vent Tube Assembly | <b>N6100161</b> |

## Column Adapters

### Column Adapter/Receiver

Adapter converts 1/8 in. fitting to 1/16 in. for use with capillary columns. **Note:** Glass-lined tubing reduces background from polyimide coating in high-temperature applications.

| Description                       | Part No.        |
|-----------------------------------|-----------------|
| Capillary Column Adapter/Receiver | <b>N6000968</b> |

### PID/ECD Series Operation Kit

Kit for directing effluent from PID to ECD.

| Description                  | Part No.        |
|------------------------------|-----------------|
| PID/ECD Series Operation Kit | <b>N6120059</b> |

### 1/4 in. Packed Column Adapter

For use with 1/4 in. packed columns. 1/8 to 1/4 in. adapters fit both injector and detector ends. (Pkg. 2).

| Description                   | Part No.        |
|-------------------------------|-----------------|
| 1/4 in. Packed Column Adapter | <b>00080100</b> |

## ECD Wipe Test Kit

U.S. Federal law requires that all ECDs be wipe-tested periodically as described in the instrument operator's manual. In the U.S., possession and use of ECD is regulated by N.R.C. and/or state regulatory agencies. Licensing by regulatory agencies is required. Outside of the U.S., check with governing bodies for licensing and regulations covering possession and use. This kit contains everything necessary to do a complete wipe test. For use on any model GC ECD.

| Description       | Part No.        |
|-------------------|-----------------|
| ECD Wipe Test Kit | <b>00091667</b> |

## NPD Add-On Kits

### NPD Add-On Kit (Manual Pneumatics)

The NPD can be used for the analysis of organic compounds containing nitrogen or phosphorus down to the picogram level. The NPD has become the detector of choice for low-level drug and pesticide applications because of its sensitivity and selectivity.

Kit includes: detector, heater, sensor, heater block, air needle valve, and hydrogen pressure regulator with snubber and two beads. Requires, but does not include, amplifier. For AutoSystem GC Firmware revision 1.4 or greater is required. Firmware must be PerkinElmer Service installed.

| Voltage          | Part No.        |
|------------------|-----------------|
| 120 V AutoSystem | <b>N6120090</b> |
| 240 V AutoSystem | <b>N6120091</b> |
| 120 V Clarus     | <b>N6520024</b> |
| 230 V Clarus     | <b>N6520025</b> |

### NPD Amplifier

Required for use with NPD Add-On Kit.

| Description   | Part No.        |
|---------------|-----------------|
| NPD Amplifier | <b>N6120094</b> |

### NPD with PPC Add-On Kit

Kit includes: detector, heater, sensor, heater block, and programmable pneumatic control for detector combustion gases and two beads. Requires, but does not include, amplifier (**N6120094**). The AutoSystem XL or Clarus GC must be PPC ready. If not, the PPC upgrade kit (**N6120146**) is required. Installation by PerkinElmer Service is required, but not included.

| Voltage | Part No.        |
|---------|-----------------|
| 120 V   | <b>N6120126</b> |
| 240 V   | <b>N6120127</b> |

## Column Adapter

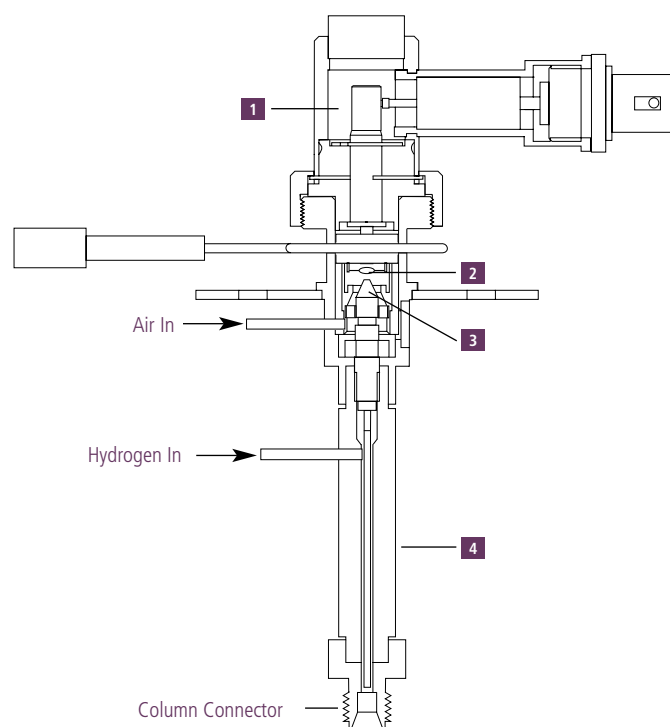
### 1/4 in. Packed Column Adapter

1/8 to 1/4 in. detector receiver adapter for use with 1/4 in. packed columns. Two included (injector/detector).

| Description                   | Part No.        |
|-------------------------------|-----------------|
| 1/4 in. Packed Column Adapter | <b>00080100</b> |

## NPD Replacement Parts

|          | Description            | Part No.        |
|----------|------------------------|-----------------|
| <b>1</b> | Collector Head         | <b>N6100253</b> |
| <b>2</b> | Bead Assembly (pkg. 5) | <b>N6120093</b> |
|          | Single pkg.            | <b>N6120092</b> |
| <b>3</b> | Jet Assembly           | <b>N6100038</b> |
| <b>4</b> | NPD Body               | <b>N6100228</b> |



## PID Add-On Kits

### PID Add-On Kit (Manual Pneumatics)

The PID utilizes a high-intensity ultraviolet light source to ionize the sample components eluting from the column in order to generate the chromatographic signal. The PID has a maximum recommended operating temperature of 250 °C. The lamp can be replaced with a blanking disk to allow bake-out operation (up to 350 °C). Kit includes: detector, heater, sensor, makeup gas needle valve, and all necessary mounting hardware for installation on an AutoSystem GC. Requires, but does not include, amplifier (**N6120061**) and lamp power supply (**N6120062**). Firmware revision 1.2 or greater is required. Firmware must be PerkinElmer Service installed. AutoSystem operator's manual (**09908559**) is required if not revision F or higher.

| Voltage          | Part No.        |
|------------------|-----------------|
| 120 V AutoSystem | <b>N6120047</b> |
| 240 V AutoSystem | <b>N6120057</b> |
| 120 V Clarus     | <b>N6520026</b> |
| 230 V Clarus     | <b>N6520027</b> |

### PID Amplifier

Required for use with PID Add-On Kit.

| Description   | Part No.        |
|---------------|-----------------|
| PID Amplifier | <b>N6120061</b> |

### PID Lamp Power Supply

Required for use with PID Add-On Kit.

| Description           | Part No.        |
|-----------------------|-----------------|
| PID Lamp Power Supply | <b>N6120062</b> |

### PID with PPC Add-On Kit

Kit includes: detector, heater, sensor, heater block, and programmable pneumatic control for makeup gas. Requires, but does not include, amplifier (**N6120061**) and power supply (**N6120062**). The GC must be PPC ready. If not, a PPC upgrade kit (**N6120146**) is required. Installation by PerkinElmer Service is required, but not included.

| Voltage | Part No.        |
|---------|-----------------|
| 120 V   | <b>N6120130</b> |
| 230 V   | <b>N6120131</b> |

## Detector Series Operation Kits

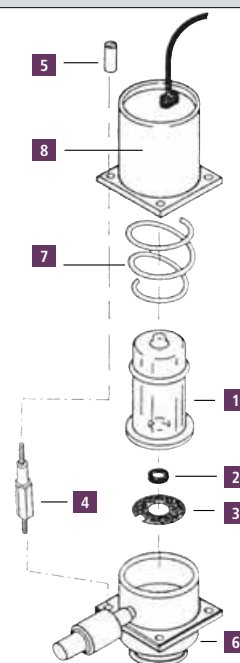
| Description                                                                          | Part No.        |
|--------------------------------------------------------------------------------------|-----------------|
| PID/FID, PID/ECD<br>Series kit for directing effluent from a PID to an FID or an ECD | <b>N6120059</b> |

## Miscellaneous Accessories

| Description               | Part No.        |
|---------------------------|-----------------|
| Bakeout Disk              | <b>03302989</b> |
| Lamp Cleaning Compound    | <b>03302775</b> |
| 1/4 in. Detector Receiver | <b>03300866</b> |
| 1/8 in. Detector Receiver | <b>03300865</b> |

## PID Replacement Parts

| Description                                                                                                                     | Part No.        |
|---------------------------------------------------------------------------------------------------------------------------------|-----------------|
| PID Lamp (10.2eV), For most applications including aromatics, alkenes, and aliphatics higher than C4. Shipped standard with PID | <b>03303599</b> |
| <b>1</b> PID Lamp (9.5eV), Improved selectivity for multiple ring aromatic, sulfur compounds                                    | <b>03303598</b> |
| <b>2</b> PID Lamp Window Seal                                                                                                   | <b>03302778</b> |
| <b>3</b> PID Lower Lamp Seal                                                                                                    | <b>03302777</b> |
| <b>4</b> Shoulder Pin                                                                                                           | <b>03302976</b> |
| <b>5</b> Cap Nut                                                                                                                | <b>03303773</b> |
| <b>6</b> Base Assembly                                                                                                          | <b>03302979</b> |
| <b>7</b> Spring                                                                                                                 | <b>03302973</b> |
| <b>8</b> Cap with Harness                                                                                                       | <b>N6101696</b> |



## TCD Add-On Kits

### Features and Benefits

- Lower Internal Volume and Smaller Overall Size
- No Makeup Gas Required with 0.53 mm and 0.32 mm ID Capillary Columns
- Series Connection Option
- Excellent Sensitivity Over a Wide Dynamic Range

### TCD Add-On Kit (Manual Pneumatics)

Kit includes all necessary items to install the TCD into the instrument: detector, heater, sensor, heater block, 1/16 in. gas line, and flow controller pneumatics. Requires, but does not include, amplifier (**N6120015**). The TCD can only be installed in the rear detector position.

| Voltage          | Part No.        |
|------------------|-----------------|
| 120 V AutoSystem | <b>N6120012</b> |
| 240 V AutoSystem | <b>N6120027</b> |
| 120 V Clarus     | <b>N6520022</b> |
| 230 V Clarus     | <b>N6520023</b> |

### TCD Amplifier

| Description   | Part No.        |
|---------------|-----------------|
| TCD Amplifier | <b>N6120015</b> |

### TCD with PPC Add-On Kit

Kit includes: detector, heater, sensor, heater block, and programmable pneumatic control for reference gas. Requires, but does not include, amplifier (**N6120015**). The TCD can only be installed in the rear detector position. The GC must be PPC ready. If not, a PPC upgrade kit (**N6120146**) is required. Installation by PerkinElmer Service is required, but not included.

| Voltage | Part No.        |
|---------|-----------------|
| 120 V   | <b>N6120124</b> |
| 240 V   | <b>N6120125</b> |

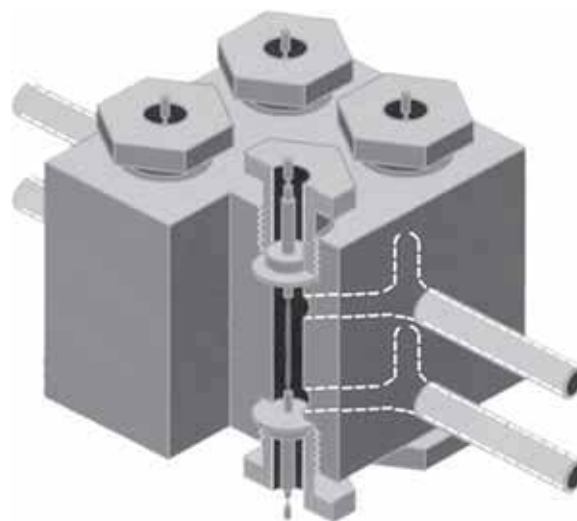
### TCD with PPC Makeup Gas Kit

Includes parts required to add PPC controlled makeup gas to an existing TCD. Includes tubing, tee-piece, PPC pneumatics module, and PPC frit #4 (**N6120155**). Requires PPC capability in the GC.

| Description                 | Part No.        |
|-----------------------------|-----------------|
| TCD with PPC Makeup Gas Kit | <b>N6120150</b> |

## Column Adapter

| Description                                                          | Part No.        |
|----------------------------------------------------------------------|-----------------|
| 1/8 to 1/4 in.<br>Column adapter for use with 1/4 in. packed columns | <b>00080100</b> |
| 1/8 to 1/16 in.<br>Column adapter for use with capillary columns     | <b>N6120020</b> |



Thermal Conductivity Detector

## TCD/FID Series Operation Kit

TCD and FID series operation kit for directing effluent from a TCD to an FID.

| Description                  | Part No.        |
|------------------------------|-----------------|
| TCD/FID Series Operation Kit | <b>N6120006</b> |

### TCD Detector Makeup Gas Kit (Manual Pneumatics)

For use with TCD (at low flow rates). Required when using 0.25 mm ID and recommended when using 0.32 mm ID capillary columns. Kit includes 1 m of 1/16 in. tubing to connect to gas supply, graphite/vespel ferrules, manual pneumatics, and installation instructions.

| Description                                     | Part No.        |
|-------------------------------------------------|-----------------|
| TCD Detector Makeup Gas Kit (Manual Pneumatics) | <b>N6120080</b> |

# Marathon Filament



**The Marathon™ Filament is a revolutionary, patent-pending technology developed exclusively by PerkinElmer, delivering long life even under the most difficult chromatography conditions.**

After lengthy performance testing and filament research, the new Marathon Filament has been engineered to provide exceptional long life and withstand difficult chromatography conditions.

It has high resistance to demanding injections such as Headspace or purge and trap and has stood up to challenging applications such as flame-retardant analysis.

The Marathon Filament is a direct replacement of the previous rhenium filament – no system changes required.

At PerkinElmer, we understand your challenges and are committed to providing the best solutions to make your life easier. The new Marathon Filament is part of our ongoing efforts to deliver the latest technology for our PerkinElmer GC/MS platform.

## Features and Benefits

- Long life even under the most difficult chromatography conditions
- Unique white surface engineered for maximum durability and optimum performance
- Now included with all new Clarus® GC/MS systems (580 and SQ8 series)
- Backward compatible with all units using rhenium filaments
- Works with both electron and chemical ionization sources

| Description                                     | Part No. |
|-------------------------------------------------|----------|
| Marathon Filament for PerkinElmer GC/MS Systems | N6470012 |

**To view the webcast and to order your replacement filament, visit:**  
<https://perkinelmer.com/marathonfilament>



# SMARTsource with Marathon Filament for Clarus SQ 8 GC/MS Systems

Capable of both EI and CI ionization, the SMARTsource™ (Simplified Maintenance And Removal Technology) on the Clarus® SQ 8 GC/MS has been designed for ultimate simplicity, flexibility and productivity. Switching sources can be done in a matter of seconds by simply twisting and pulling – no tools required, no wires to disconnect. Cleaning the source is equally as easy and can be performed by the user. So even if you're running tough matrices, you won't be slowed down by time-consuming expensive source cleanings and replacements.

## Fewer Parts, Greater Ease

With very few parts, the SMARTsource is exceptionally robust and easy to maintain. Each component is clearly marked for simple reassembly, and reconfiguring between EI and CI can even be performed in less than 3 minutes with a quick-conversion kit. Since the source is removed from the front of the Clarus SQ 8, the analyzing quadrupole is never exposed, minimizing the risk of contamination to ensure more reliable data.



Take the guesswork out of setting your column depth. Our Handle Assembly allows for precise alignment of the column within the SMARTsource every time.



## Features and Benefits

- 12 parts make up EI source
- SMARTsource rebuilt in minutes
- Remove SMARTsource with the twist of a wrist
- Marathon filament has a long life even under the most difficult chromatography conditions and is engineered for maximum durability and optimum performance

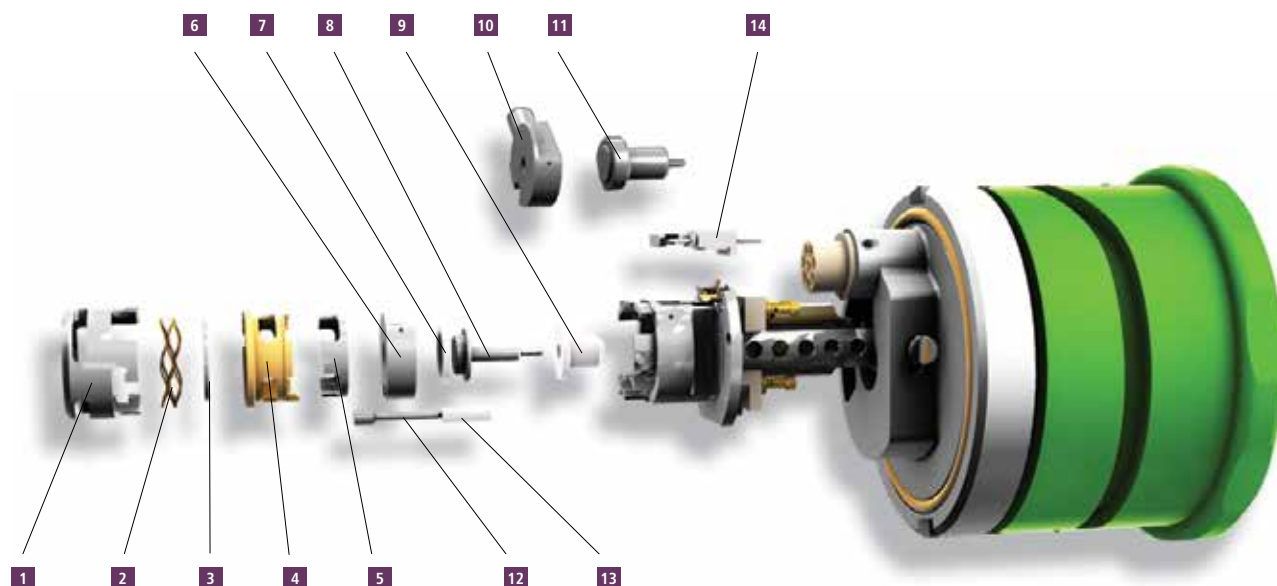
## Handle Assembly (Source Blank and Sight)

| Description                              | Part No. |
|------------------------------------------|----------|
| Handle Assembly (Source Blank and Sight) | N6480380 |
| Replacement Protective Cover             | N6482024 |

## SMARTsource Maintenance Kits

| Description                                                                     | Part No. |
|---------------------------------------------------------------------------------|----------|
| SQ8 Maintenance Kit<br>Tool kit needed to maintain source                       | N6480360 |
| SQ8 Deluxe Polishing Kit (120 Volt)<br>Kit for polishing cleanable source parts | N6480361 |
| SQ8 Deluxe Polishing Kit (240 Volt)                                             | N6480362 |





### SMARTsource Replacement Parts

| Description                     | Part No.        |
|---------------------------------|-----------------|
| <b>1</b> Source Lens #3         | <b>N6480149</b> |
| <b>2</b> Source Spring          | <b>N6480151</b> |
| <b>3</b> Source Lens #2         | <b>N6480148</b> |
| <b>4</b> Lens Insulator         | <b>N6480153</b> |
| <b>5</b> Source Lens #1         | <b>N6480147</b> |
| <b>6</b> EI Ion Volume          | <b>N6480144</b> |
| <b>7</b> Insulator (Ion Volume) | <b>N6480145</b> |
| <b>8</b> Repeller               | <b>N6480140</b> |
| <b>9</b> Insulator (Repeller)   | <b>N6480141</b> |
| <b>10</b> CI Ion Volume         | <b>N6480146</b> |
| <b>11</b> CI Ion Volume Disc    | <b>N6480154</b> |
| <b>12</b> Trap                  | <b>N6480142</b> |
| <b>13</b> Insulator (Trap)      | <b>N6480143</b> |
| <b>14</b> Marathon Filament     | <b>N6470012</b> |

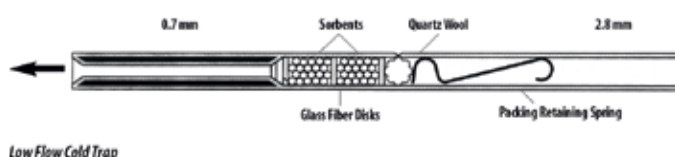
### SMARTsource Kits

| Description                                                                     | Part No.        |
|---------------------------------------------------------------------------------|-----------------|
| Complete CI Source<br>Consists of a fully assembled CI Source, ready to install | <b>N6480130</b> |
| Complete EI Source<br>Consists of a fully assembled EI Source, ready to install | <b>N6480132</b> |
| Insulator Replacement Kit (Numbers 2, 4, 7, 9, 13)                              | <b>N6480080</b> |
| EI Optics Replacement Kit (Numbers 1, 3, 5, 6, 8, 12)                           | <b>N6480081</b> |
| CI Optics Replacement Kit (Numbers 1, 3, 5, 8, 10, 12)                          | <b>N6480082</b> |

# Packed Traps for PerkinElmer Thermal Desorbers

## Air Monitoring Trap

Low flow trap packed with carbonaceous sorbents suitable for ozone precursor and air toxin monitoring.



## TurboMatrix Thermal Desorption Cold Trap Supplies

Trap supplies from PerkinElmer, the market leader in thermal desorption, will provide exceptional analytical performance. Used for U.S. EPA Method TO17, the PerkinElmer standard trap, packed with Tenax™, on the TurboMatrix™ Thermal Desorber, will improve productivity and trapping capacity. The TurboMatrix air monitoring trap is packed with carbonaceous sorbents suitable for ozone precursor and air toxics monitoring.

| Description                                                                                              | Qty. | Part No.        |
|----------------------------------------------------------------------------------------------------------|------|-----------------|
| <b>Cold Traps for TurboMatrix</b>                                                                        |      |                 |
| Air Monitoring Trap                                                                                      | 1    | <b>M0413628</b> |
| Empty Trap                                                                                               | 1    | <b>M0413627</b> |
| Tenax™ TA 60/80 Packed Trap                                                                              | 1    | <b>M0413535</b> |
| Carbopack® C Packed Trap                                                                                 | 1    | <b>N6200150</b> |
| <b>Cold Traps for ATD 400</b>                                                                            |      |                 |
| Air Monitoring Trap                                                                                      | 1    | <b>L4275108</b> |
| Trap Nuts (2 required)                                                                                   | 1    | <b>L4275009</b> |
| Trap Tube Low Flow, Empty<br>(Narrow-bore at one end. Allows minimum<br>gas flow during trap desorption) | 1    | <b>L4275107</b> |
| Tenax™ TA 60/80 Packed Trap                                                                              | 1    | <b>L4275089</b> |
| Empty Trap                                                                                               | 1    | <b>L4271106</b> |



## Cold Traps Fittings and Accessories

| Description                                       | Qty. | Part No.        |
|---------------------------------------------------|------|-----------------|
| Graphite Ferrule                                  | 2    | <b>L4271187</b> |
| SilTite™ Ferrule (GC/MS) 0.4 mm                   | 10   | <b>N9306093</b> |
| SilTite™ Ferrule (GC/MS) 0.5 mm                   | 10   | <b>N9306094</b> |
| SilTite™ Ferrule (GC/MS) 0.8 mm                   | 10   | <b>N9306095</b> |
| SilTite™ Nuts                                     | 5    | <b>N9306096</b> |
| PTFE Ferrule                                      | 10   | <b>L4275110</b> |
| Graphite/Vespel® Ferrule for ATD 400              | 5    | <b>L1003027</b> |
| Valco® Graphite/Vespel® Ferrule for ATD 400       | 5    | <b>L1003028</b> |
| Trap Filter Disk                                  |      | <b>L1003030</b> |
| Trap Packing Disk                                 | 20   | <b>L4271290</b> |
| Trap Packing Retaining Spring                     | 5    | <b>N6301054</b> |
| Quartz Wool (Untreated) 5 g                       |      | <b>N6102354</b> |
| Cold Trap Packing Tool                            |      | <b>L4271203</b> |
| Cold Trap Removal Tool                            |      | <b>L4271205</b> |
| Regulator 0–60 psig                               |      | <b>N6101474</b> |
| Backflush Nozzle for ATD 400                      |      | <b>L4275072</b> |
| Internal Standard Injection Accessory for ATD 400 |      | <b>L4270010</b> |
| Liquid Nitrogen Accessory for ATD 400             |      | <b>L4270009</b> |
| Gauze Loading Rig                                 |      | <b>L4070023</b> |
| Replacement Plastic Plunger for Gauze Loading Rig |      | <b>L4071151</b> |



## Thermal Desorber Starter Kit

PerkinElmer's convenient starter kit includes all products you need to run the TurboMatrix Thermal Desorber.

### Features and Benefits

- All items available under one part number in a convenient kit
- Guaranteed PerkinElmer parts
- Improved chromatography with exceptional analytical performance using PerkinElmer parts

| Description                           | Part No.        |      |                 |
|---------------------------------------|-----------------|------|-----------------|
| Thermal Desorber Starter Kit          | <b>N6100448</b> |      |                 |
| Contents                              | Pkg.            | Qty. | Part No.        |
| Glass Fiber Separator Disks           | 20              | 1    | <b>L4271290</b> |
| Glass Sample Tubes                    | 10              | 1    | <b>M0413598</b> |
| Glass Wool                            | 1               | 1    | <b>54120790</b> |
| Graphite Ferrules                     | 2               | 1    | <b>L4271187</b> |
| O-Ring                                | 5               | 1    | <b>L1003006</b> |
| O-Ring, Viton                         | 1               | 1    | <b>L1003008</b> |
| Packing Gauze                         | 100             | 1    | <b>L4071034</b> |
| PTFE Filter Discs                     | 10              | 1    | <b>L1003030</b> |
| PTFE Filter Discs – Large             | 10              | 1    | <b>L1003029</b> |
| Retaining Spring                      | 50              | 1    | <b>L4071123</b> |
| Sample Tube – 5 mL                    | 1               | 1    | <b>04970673</b> |
| Stainless Steel Retaining Spring      | 2               | 1    | <b>N6301054</b> |
| Stainless Steel Sample Tubes – Capped | 10              | 1    | <b>M0413595</b> |
| Tenax TA 60/80, Mesh – 15 g           | 1               | 1    | <b>04978064</b> |
| Trap Tube Nuts                        | 2               | 1    | <b>L4275009</b> |
| Trap Tubes                            | 2               | 1    | <b>M0410094</b> |

## Thermal Desorber Industrial Hygiene Application Kit

All your consumable needs in one convenient kit, designed specifically for Industrial Hygiene using Thermal Desorption\*.

| Description                                                   | Part No.        |      |                 |
|---------------------------------------------------------------|-----------------|------|-----------------|
| Workplace Air Monitoring Industrial Hygiene Application Kit** | <b>N6100448</b> |      |                 |
| Contents                                                      | Pkg.            | Qty. | Part No.        |
| Cold Trap O-Ring, 0.145 ID/0.070 w.d.                         | 1               | 1    | <b>09200091</b> |
| Cold Trap Tube (Tenax TA)                                     | 1               | 1    | <b>L4275089</b> |
| Empty Glass Sample Tubes – No Caps                            | 10              | 1    | <b>L4071594</b> |
| Graphite Ferrule                                              | 2               | 1    | <b>L4271187</b> |
| Pen Clips for Stainless Steel Sample Tubes                    | 10              | 1    | <b>L4071029</b> |
| PTFE Ferrule                                                  | 10              | 1    | <b>L4275110</b> |
| PTFE Filter Disk – Either Side of the Cold Trap               | 10              | 1    | <b>L1003030</b> |
| Tenax TA Stainless Steel Sample Tubes                         | 10              | 1    | <b>N9307005</b> |

\* For full downloadable pdf format application notes, please visit: <http://las.perkinelmer.com/applications>

\*\* Applicable to TurboMatrix 100/150/300/350 and 650 only

### Thermal Desorber Caps and Accessories

| Description                                                                                                                              | Pkg. | Part No.        |
|------------------------------------------------------------------------------------------------------------------------------------------|------|-----------------|
| Brass Long-Term Storage Caps<br>Recommended for long-term storage, two required per tube. Also requires PTFE Ferrule ( <b>L1003015</b> ) | 1    | <b>09908851</b> |
| Combined PTFE Ferrule for use with ¼ in. Brass Long-Term Storage Caps ( <b>09908851</b> ), two required per tube                         | 5    | <b>L1003015</b> |
| Diffusion Caps – Standard For passive air sampling, to ensure correct diffusion path length                                              | 10   | <b>L4070207</b> |
| Diffusion Caps with Membrane As above, with silicone membrane inserted                                                                   | 10   | <b>L4070208</b> |
| Pen Clips For Stainless Steel Thermal Desorber Tubes                                                                                     | 10   | <b>L4071029</b> |
| PFA PTFE Ferrules For TurboMatrix Storage End Caps                                                                                       | 20   | <b>M0413625</b> |
| TurboMatrix Analytical Caps PTFE Caps with O-Ring, Required for Use on the TurboMatrix Instrument During Analysis                        | 20   | <b>N6200119</b> |

## ATD Tubes

PerkinElmer's New ATD tube conditioning oven now conditions tubes faster and easier than ever before. ATD tubes must be re-conditioned after analysis to remove contaminants before they are used for sampling. You can do this one of two ways. You can condition each tube individually on your thermal desorption instrument. This takes time – especially if you have several tubes to condition – and also ties up your instrument which could be used for more important analysis. Or, a better more efficient alternative is to condition your tubes in a separate oven.



### Features and Benefits

- Condition any number or combination of stainless steel and glass tubes simultaneously without wasting gas
- Hood interlock protects anyone in the lab from opening the oven until it's cool
- Dual automatic fan design cools the oven in minutes
- Oven vent through the top hood ensuring a contaminant free oven

| Description                | Part No.        |
|----------------------------|-----------------|
| TurboMatrix TC 220 (120 V) | <b>N9309160</b> |
| TurboMatrix TC 220 (230 V) | <b>N9309161</b> |

| Specifications    |                      |
|-------------------|----------------------|
| Capacity          | Holds up to 20 tubes |
| Temperature Range | Ambient – 400 °C     |
| Programming       | 4 Ramps + 4 Soaks    |
| Flow Rate         | 25 – 150 mL/min      |

## Unconditioned Thermal Desorber Tubes

For your convenience, new low-cost thermal desorber tubes are offered in both stainless steel and glass. Each tube maintains its unique serial number which is etched for easy identification. Tubes are offered with a variety of sorbent packing materials for many GC applications including indoor and outdoor air monitoring, analysis of flavors and fragrances and the analysis of outgassing from packaging, polymers, pharmaceuticals and semiconductor material. These tubes are unconditioned and ship with plastic end caps for short-term storage.



Unconditioned Thermal Desorber Tubes

### Packed Unconditioned Sample Tubes, Plastic End Caps (pkg. 10)

| Description            | Stainless Steel Part No. | Glass Part No.  |
|------------------------|--------------------------|-----------------|
| Air Toxics             | <b>N9307050</b>          | <b>N9307058</b> |
| Carbopack™ B60/80      | <b>N9307051</b>          | <b>N9307059</b> |
| Carbosieve™ SIII 60/80 | <b>N9307052</b>          | <b>N9307060</b> |
| Tenax™ GR 60/80        | <b>N9307053</b>          | <b>N9307061</b> |
| Tenax™ TA 60/80        | <b>N9307054</b>          | <b>N9307062</b> |
| Chromasorb™ 60/80      | <b>N9307055</b>          | <b>N9307063</b> |
| Carbopack™ B 60/80     | <b>N9307056</b>          | <b>N9307064</b> |
| Carbopack™ C 60/80     |                          |                 |
| Carbosievev SIII 60/80 |                          |                 |
| Carbotrap™ C/B         |                          | <b>N9307065</b> |
| NIOSH                  | <b>N9307057</b>          | <b>N9307066</b> |

### Empty Sample Tubes without Caps

| Description     | Pkg. | Part No.        |
|-----------------|------|-----------------|
| Stainless Steel | 10   | <b>L4270128</b> |
| Glass           | 10   | <b>L4071594</b> |
| Stainless Steel | 100  | <b>L4270129</b> |

### Empty Sample Tubes with Plastic End Caps

| Description                 | Pkg. | Part No.        |
|-----------------------------|------|-----------------|
| Stainless Steel             | 10   | <b>M0413595</b> |
| Glass Lined Stainless Steel | 10   | <b>M0413597</b> |
| Glass                       | 10   | <b>M0413598</b> |

## Soil Vapor Intrusion (SVI™) Tubes

Soil vapor intrusion occurs when toxic compounds that are present in the air space in soil of a contaminated location have ways of entering a



building, potentially creating a health risk. Our new multi-bed construction extends the hydrocarbon range past naphthalene while retaining the lighter components, enabling larger sample volumes, hence, enhancing detection limits. Has a unique design that meets the challenges and criteria of the EPA regulations for air monitoring.

### Features and Benefits

- From chloromethane through diesel range hydrocarbons
- After the analysis, tubes are clean and ready for re-sampling reducing costs

| Description                             | Part No.        |
|-----------------------------------------|-----------------|
| Stainless Steel TD Tubes Conditioned    | <b>N9306277</b> |
| Stainless Steel TD Tubes Un-Conditioned | <b>N9306278</b> |

## Conditioned Thermal Desorber Tubes

Stainless steel and glass sample tubes are available with a wide variety of packing materials from single to multi-bed. PerkinElmer Thermal Desorber tubes are printed with the packing material and an arrow, which points to the end of the tube where sample is drawn from, and also indicates the end that desorb vapors will exit.



Fully conditioned Thermal Desorber tubes

Each tube is etched with a unique serial number for ease of traceability and adsorbent identification. Stainless steel tubes may also be fitted with clips that accept adhesive labels for identification. Packed tubes are shipped with long-term brass storage caps and all tubes are thermally conditioned and tested for background and backpressure.

### Packed Conditioned Sample Tubes, Brass Long-Term Storage End Caps (pkg. 10)

'NOT for Analytical test applications', use **N6200119** PTFE caps and O-Rings. (pkg. 20).

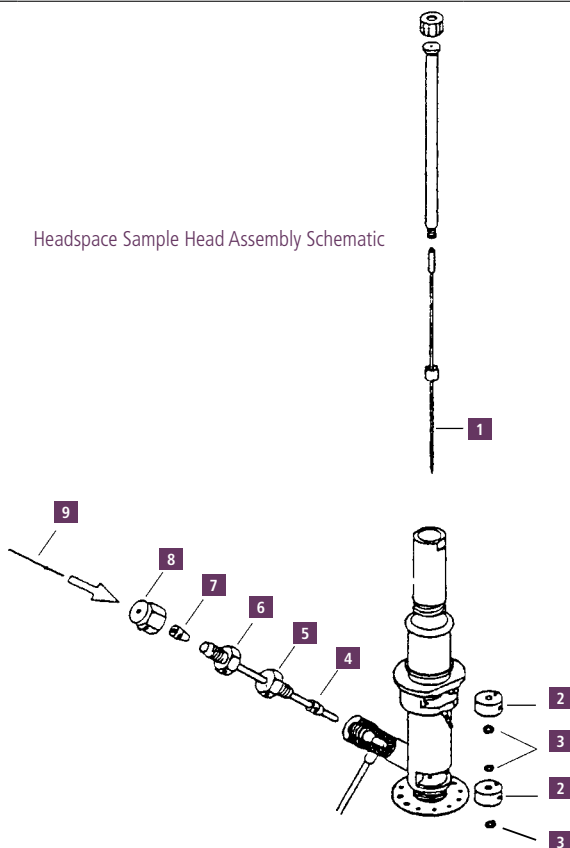
| Description             | Stainless Steel Part No. | Glass Part No.  |
|-------------------------|--------------------------|-----------------|
| Air Toxics              | <b>N9307001</b>          | <b>N9307008</b> |
| Carbopack™ B60/80       | <b>N9307002</b>          | <b>N9307009</b> |
| Carbosieve™ SIII 60/80  | <b>N9307003</b>          | <b>N9307010</b> |
| Tenax™ GR 60/80         | <b>N9307004</b>          | <b>N9307011</b> |
| NEW PKI Tenax™ TA 60/80 | <b>N9309130</b>          |                 |
| Tenax™ TA 60/80         | <b>N9307005</b>          | <b>N9307012</b> |
| Chromasorb™ 60/80       | <b>N9307006</b>          | <b>N9307013</b> |
| Carbopack™ B 60/80      | <b>N9307000</b>          | <b>N9307007</b> |
| Carbopack™ C 60/80      |                          |                 |
| Carbosieve™ SIII 60/80  |                          |                 |
| Carbotrap™ C/B          | <b>N9307026</b>          |                 |
| NIOSH 2549              | <b>N9307038</b>          | <b>N9307037</b> |

# TurboMatrix 40 Headspace Trap

## Sample Head Assembly Replacement Parts

|   | Description                                                                                  | Part No. |
|---|----------------------------------------------------------------------------------------------|----------|
|   | Platinum/Iridium Needle, Wide-bore                                                           | B0144169 |
|   | Platinum/Iridium Needle, Small-bore                                                          | B0500959 |
|   | Platinum/Iridium Needle, Jet                                                                 | B0510364 |
| 1 | Silcosteel Needle, for Headspace Trap Only                                                   | N6700130 |
|   | Stainless Steel Needle, Wide-bore                                                            | B0131385 |
|   | Stainless Steel Needle, Small-bore                                                           | B0500987 |
|   | Stainless Steel Needle, Jet (Ships with Instrument)                                          | B4000011 |
| 2 | Needle Seal Assembly (Without O-Rings)                                                       | B0500833 |
| 3 | O-Ring for Needle Seal Assembly (pkg. 10)                                                    | B0198110 |
| 4 | Vespel Ferrule 1/16 in. (pkg. 10)                                                            | 09920127 |
| 5 | Male Nut 1/16 in.                                                                            | N9302832 |
| 6 | GLT Adapter Tube                                                                             | B0503956 |
|   | GLT Adapter Tube, Silcosteel                                                                 | N6700113 |
| 7 | Graphite/Vespel Ferrule 1/16 in. x 0.4 mm<br>For use with 0.25 mm ID Transfer Line (pkg. 10) | 09920104 |
|   | Graphite/Vespel Ferrule 1/16 in. x 0.5 mm<br>For use with 0.32 mm ID Transfer Line (pkg. 10) | 09920105 |
| 8 | Nut 1/16 in. Swagelok                                                                        | N9300059 |
| 9 | Fused-Silica Capillary Transfer Line:<br>0.25 mm ID x 5 m Length                             | N9301356 |
|   | 0.32 mm ID x 5 m Length                                                                      | N9301357 |

Headspace Sample Head Assembly Schematic



## Solid Glass Blocking Trap

| Description                              | Part No. |
|------------------------------------------|----------|
| Block for Use in Standard Headspace Mode | N6701170 |

## Sample Trays

For use on the Mid-Range or High-Capacity headspace sampler.

| Description                               | Part No. |
|-------------------------------------------|----------|
| TurboMatrix 40 Mid-Range Sample Tray      | M0413592 |
| TurboMatrix 110 High-Capacity Sample Tray | M0413593 |

## Transfer Lines

| Description                     | Tubing ID (mm) | Length | Part No. |
|---------------------------------|----------------|--------|----------|
| Siltek Deactivated Fused Silica | 0.25           | 5 m    | N9316607 |
| Siltek Deactivated Fused Silica | 0.32           | 5 m    | N9316608 |

## Miscellaneous Accessories

| Description                                                                                | Part No. |
|--------------------------------------------------------------------------------------------|----------|
| Gas Chromatography – Theory and Practice,<br>Static Headspace Book by L. Ettre and B. Kolb | N1011210 |

## Cold Trap Options

Headspace Trap instruments only.

| Description                                      | Part No. |
|--------------------------------------------------|----------|
| TurboMatrix HS Trap Cold Trap Tube (Carbopack C) | N6200150 |
| TurboMatrix HS Trap Air Monitoring Trap*         | M0413628 |





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For anyone charged with protecting the public from VOCs in the air, water, and soil, time is of the essence. So the big question becomes: How do I get accurate – and *actionable* – results even faster than before? With the Torion® T-9 portable GC/MS, you do your testing where the hazardous event occurs, and get your results there, too. No sample transportation or degradation. No processing, packaging, and prep time. You simply respond, collect, analyze, and identify, right there on the ground. So who gets you from response to remedial action 70 times faster than conventional lab analysis? The answer is perfectly clear.

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**PerkinElmer**  
*For the Better*

## Arnel Analyzer Consumables

PerkinElmer offers a wide selection of superior quality products designed to work with your PerkinElmer instruments. Our precision designed products deliver the peace of mind that comes from knowing that you'll get the results you need.

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## Valves

A majority of the Arnel configurations utilize two different types of valves. Most can be categorized as external volume injectors while the other type is an internal sample injector.



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## Sample Loops

A range of stainless steel sample loops are available for varying applications; with injection volumes from 100 µL to 5 mL and options for 6, 8 or 10 port valves. The Arnel sample loops are set apart from standard stainless steel loops due to the materials that are used in their manufacture.



➤ [VIEW PAGE](#)

## Capillary Columns for Arnel Engineered Analyzers

PerkinElmer capillary column replacement sets are available for a wide range of applications. From refinery and natural gas to specific and also including many standard methods, ASTM and trace gases for example.

➤ [VIEW PAGE](#)

## Calibration Materials

Our calibration gas blends were formulated to be used exclusively in our Refinery and Natural Gas Analyzers. These are the same test gases that are used in the verification and validation processes that take place at our factory.



➤ [VIEW PAGE](#)



## Arnel Analyzers

The measurement of semivolatile and volatile compounds in petrochemical feeds, processes and products can be easily accomplished with turnkey analyzers and systems designed to meet accepted standard methods. PerkinElmer's Arnel™ analysers offer a market leading customized chromatography solution. We provide, install, and support a full range of guaranteed analyzers, systems and accessories.

# Arnel

## We have an APP for that!

**The Arnel Group** within PerkinElmer Gas Chromatography is responsible for providing complete engineered solutions for a wide array of often encountered analytical problems. Do you have the need for a custom solution to perform ASTM or other regulated methods in your lab? Some of the types of analyzers Arnel has supplied are found in the list of categories shown here:

**Natural Gas/NGL**

**Condensates**

**LPG**

**Refinery/Light Hydrocarbon Gas**

**Olefins**

**Aromatics**

**Oxygenates**

**Industrial Solvents**

**Naphthas**

**Gasoline**

**Distillates**

**Lube Oils/Waxes**

**Crude Oils**

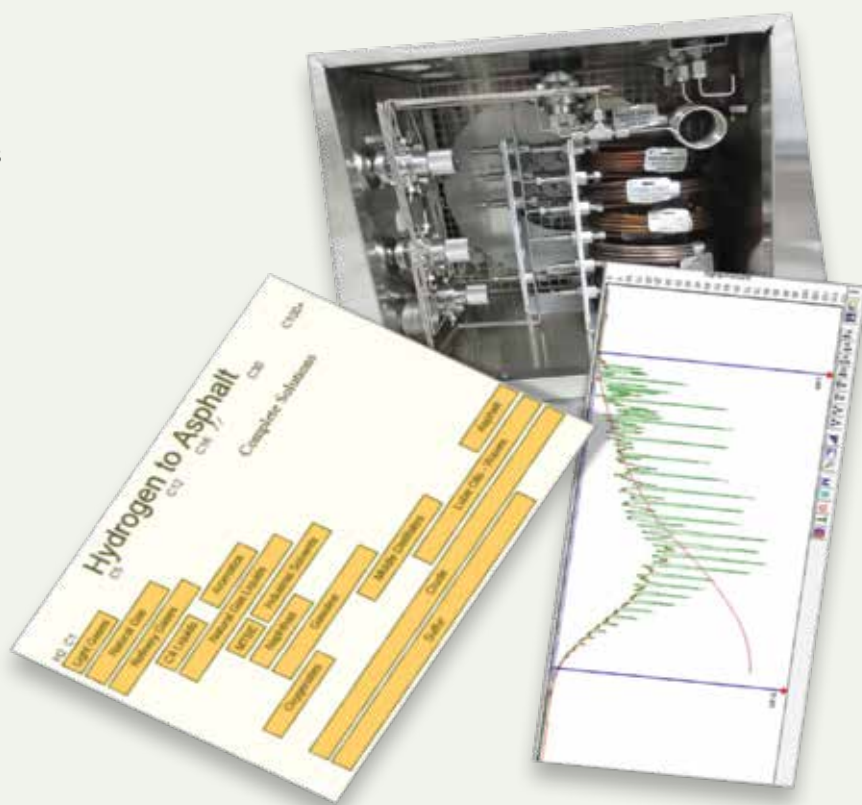
**Asphalt**

**Bulk Gases**

**Trace Gases**

**TOGA**

**SCD**



## Capillary Columns for Arnel Engineered Analyzers

Why would you compromise your gas chromatography by accepting cheap substitutes when replacing the columns in your Arnel Analyzer? Use only genuine PerkinElmer column sets as replacements to meet your specific chromatographic needs.

### Don't see what you need?

Please contact your local PerkinElmer sales representative for replacement column sets for Custom Engineered Arnel Analyzers or for more information about our Arnel Engineered Solutions Analyzers.

# ARNEL ANALYZER CONSUMABLES

## Replacement Column Sets for Standard Arnel Refinery Gas Analyzers

| Model               | Description                                                                                                                                           | Part No. |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 1015                | Replacement column set for the RGA Model 1015 – Two channel RGA; Hydrocarbons (FID) and Light Gases (TCD)                                             | N6107032 |
| 1115                | Replacement column set for the Arnel RGA – Three channel RGA; Hydrocarbons (FID), Light Gases (TCD) and He/H <sub>2</sub> channel (TCD)               | N6107033 |
| 1116                | Replacement column set for the RGA Model 1116<br>– Three channel RGA; Hydrocarbons (TCD) and Light Gases (TCD) + He/H <sub>2</sub> channel (TCD)      | N6107033 |
| 1157                | Replacement column set for the RGA Model 1157 – Three channel RGA; Hydrocarbons (FID), Light Gases (TCD) and He/H <sub>2</sub> channel (TCD)          | N6107033 |
| 1215                | Replacement column set for the RGA Model 1215 – Two channel RGA; Hydrocarbons (FID) and Light Gases (TCD) + LSV                                       | N6107032 |
| 1315                | Replacement column set for the RGA Model 1315 – Three channel RGA; Hydrocarbons (FID) and Light Gases (TCD) and He/H <sub>2</sub> channel (TCD) + LSV | N6107033 |
| 1317                | Replacement column set for the RGA Model 1317 – Three channel RGA; Hydrocarbons (FID) and Light Gases (TCD) and He/H <sub>2</sub> channel (TCD) + LSV | N6107033 |
| 1515                | Replacement column set for the RGA Model 1515 – Three channel RGA; Hydrocarbons (FID) and Light Gases (TCD) and He/H <sub>2</sub> channel (TCD) + LSV | N6107033 |
| <b>Other</b>        |                                                                                                                                                       |          |
| Hydrocarbon channel | Replacement column set for the hydrocarbon channel in any RGA model                                                                                   | NR00HC15 |

## Replacement Column Sets for Standard Arnel Natural Gas Analyzers

| Model | Description                                                                                                                                    | Part No. |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 2000  | Replacement column set for the NGA Model 2000 – Detection of hydrocarbons                                                                      | N6107040 |
| 2001  | Replacement column set for the NGA Model 2001 – Detection of hydrocarbons, CO <sub>2</sub> , air and H <sub>2</sub> S                          | N6107040 |
| 2002  | Replacement column set for the NGA Model 2002 – Separation of air and methane                                                                  | N6107048 |
| 2003  | Replacement column set for the NGA Model 2003 – Separation of O <sub>2</sub> and N <sub>2</sub>                                                | N6107052 |
| 2006  | Replacement column set for the NGA Model 2006 – Detection of hydrocarbons, CO <sub>2</sub> , air and H <sub>2</sub> S                          | N6107056 |
| 2008  | Replacement column set for the NGA Model 2008 – Separation of O <sub>2</sub> and N <sub>2</sub> (with capillary channel)                       | N6107060 |
| 2101  | Replacement column set for the NGA Model 2101 – Detection of hydrocarbons, CO <sub>2</sub> , air, H <sub>2</sub> S and He/H <sub>2</sub>       | N6107041 |
| 2103  | Replacement column set for the NGA Model 2103 – Separation of O <sub>2</sub> and N <sub>2</sub> + He/H <sub>2</sub> channel                    | N6107053 |
| 2106  | Replacement column set for the NGA Model 2106 – Detection of hydrocarbons, CO <sub>2</sub> , air, H <sub>2</sub> S and He/H <sub>2</sub>       | N6107057 |
| 2108  | Replacement column set for the NGA Model 2108 – Separation of O <sub>2</sub> , N <sub>2</sub> and He/H <sub>2</sub> (with capillary channel)   | N6107061 |
| 2201  | Replacement column set for the NGA Model 2201 – Detection of hydrocarbons, CO <sub>2</sub> , air and H <sub>2</sub> S + LSV                    | N6107040 |
| 2203  | Replacement column set for the NGA Model 2203 – Separation of O <sub>2</sub> and N <sub>2</sub> + LSV                                          | N6107052 |
| 2206  | Replacement column set for the NGA Model 2206 – Detection of hydrocarbons, CO <sub>2</sub> , air, and H <sub>2</sub> S + LSV                   | N6107056 |
| 2208  | Replacement column set for the NGA Model 2208 – Separation of O <sub>2</sub> and N <sub>2</sub> (with capillary channel) + LSV                 | N6107060 |
| 2301  | Replacement column set for the NGA Model 2301 – Detection of hydrocarbons, CO <sub>2</sub> , air, H <sub>2</sub> S and He/H <sub>2</sub> + LSV | N6107041 |
| 2303  | Replacement column set for the NGA Model 2303 – Separation of O <sub>2</sub> and N <sub>2</sub> + He/H <sub>2</sub> channel + LSV              | N6107053 |
| 2306  | Replacement column set for the NGA Model 2306 – Detection of hydrocarbons, CO <sub>2</sub> , air, H <sub>2</sub> S and He/H <sub>2</sub> + LSV | N6107057 |
| 2406  | Replacement column set for the NGA Model 2406 – Detection of hydrocarbons, CO <sub>2</sub> , air, and H <sub>2</sub> S + LSV                   | N6107056 |
| 2501  | Replacement column set for the NGA Model 2501 – Detection of hydrocarbons with sulfur channel                                                  | NR002500 |
| 2503  | Replacement column set for the NGA Model 2503 – Detection of hydrocarbons with sulfur channel                                                  | NR002503 |

## Replacement Column Sets for Other Standard Arnel Analyzers

| Model | Description                                                         | Part No. |
|-------|---------------------------------------------------------------------|----------|
| 3023  | Sim Dis Capillary Column, COL C 10 x 0.53 x 2.65 MXT-2887           | NR213000 |
| 3023  | Sim Dis Capillary Column, COL C 5 x 0.53 x 0.10 MXT-1 HT            | NR213314 |
| 4001  | Replacement column set for the Models 4001 and 4002 – ASTM 4815     | N6107070 |
| 4002  | Replacement column set for the Models 4001 and 4002 – ASTM 4815     | N6107070 |
| 4003  | Replacement column set for the Model 4003 – TOGA                    | N6107072 |
| 4004  | Replacement column set for the Model 4004 – ASTM 4815 and ASTM 5580 | N6107073 |

Note: Column sets are sold only as spares with an order, or as replacements to installed analyzers

| Model  | Description                                                                                                        | Part No. |
|--------|--------------------------------------------------------------------------------------------------------------------|----------|
| 4005   | Replacement column set for the Model 4005 – ASTM 5580                                                              | N6107073 |
| 4012   | Replacement column set for Models 4012 – ASTM 3606 + ASTM 4815                                                     | N6107216 |
| 4013   | Replacement column set for the Models 4013 and 4014 – ASTM 3606                                                    | N6107218 |
| 4014   | Replacement column set for the Models 4013 and 4014 – ASTM 3606                                                    | N6107218 |
| 4015   | Replacement column set for the Model 4015 – ASTM 3606, 5580 + 4815                                                 | N6107216 |
| 4016   | Replacement column set for the Model 4016 – Light and combustion gas                                               | N6107221 |
| 4017   | Replacement column set for the Model 4017 – Light and combustion gas                                               | N6107222 |
| 4019   | Replacement column set for the Model 4019 – Light and combustion gas                                               | N6107224 |
| 4020   | Replacement column set for the Model 4020 – Impurities in chlorine                                                 | N6107075 |
| 4021   | Replacement column set for the Model 4021 – Trace CO, CH <sub>4</sub> and CO <sub>2</sub>                          | N6107225 |
| 4022   | Replacement column set for the Model 4022 – CO, CO <sub>2</sub> in propylene                                       | N6107076 |
| 4024   | Replacement column set for the Model 4024 – UOP 603                                                                | N6107226 |
| 4025   | Replacement column set for the Model 4025 – Trace sulfur in gases by GSV                                           | N6107208 |
| 4027   | Replacement column set for the Model 4027 – Trace sulfur in gases by syringe                                       | N6107208 |
| 4028   | Replacement column set for the Model 4028 – Trace sulfur in gases by GSV and LSV                                   | N6107241 |
| 4029   | Replacement column set for the Model 4029 – Trace sulfur in gases by GSV and syringe                               | N6107241 |
| 4030   | Replacement column set for the Model 4030 – Trace sulfur in gases by GSV + PID                                     | NR004030 |
| 4031   | Replacement column set for the Model 4031 – Trace sulfur in gases by GSV + FID                                     | NR004031 |
| 4032   | Replacement column set for the Model 4032 – Full range H <sub>2</sub>                                              | N6107227 |
| 4033   | Replacement column set for the Model 4033 – Full range O <sub>2</sub> and N <sub>2</sub>                           | N6107228 |
| 4034   | Replacement column set for the Model 4034 – Full range H <sub>2</sub> , O <sub>2</sub> and N <sub>2</sub>          | N6107229 |
| 4035   | Replacement column set for the Model 4035 – Light hydrocarbons by GSV                                              | N6107230 |
| 4036   | Replacement column set for the Model 4036 – Light hydrocarbons by LSV                                              | N6107230 |
| 4037-1 | Replacement column set for the Model 4037 – LPG light hydrocarbons by GSV and LSV with one column                  | N6107230 |
| 4037-2 | Replacement column set for the Model 4037 – LPG light hydrocarbons by GSV and LSV with two columns                 | N6107232 |
| 4038   | Replacement column set for the Model 4038 – Trace sulfur in gases by GSV + PID and FID                             | NR004038 |
| 4040   | Replacement column set for the Model 4040 – Trace light gases by DID                                               | NR004040 |
| 4041   | Replacement column set for the Model 4041 – Trace light gases by PID                                               | NR004041 |
| 4043   | Replacement column set for the Model 4043 – Trace gases by PID and DID                                             | NR004043 |
| 4044   | Replacement column set for the Model 4044 – Trace gases by DID and FID                                             | NR004044 |
| 4045   | Replacement column set for the Model 4045 – Trace gases by FID and PID                                             | NR004045 |
| 4046   | Replacement column set for the Model 4046 – Trace gases by DID, FID and PID                                        | NR004046 |
| 4050   | Replacement column set for the Model 4050 – Detailed Hydrocarbon Analyzer                                          | N6107220 |
| 4080   | Replacement column set for the Model 4080 – Oxygenates and Aromatics in Gasoline                                   | N6107233 |
| 4083   | Replacement column set for the Model 4083 – ASTM 2504                                                              | NR004083 |
| 4086   | Replacement column set for the Model 4086 – Analysis of Trace Methanol and MTBE in Light Hydrocarbon Gases         | NR004086 |
| 4087   | Replacement column set for the Model 4087 – Transformer Oil Gases using ASTM 3612 Headspace Method C               | NR004087 |
| 4227   | Replacement column set for the Model 4227 – Trace sulfur in gases by syringe + LSV                                 | N6107241 |
| 4425   | Replacement column set for the Model 4425 – Trace sulfur in gases by GSV with permeation chamber                   | N6107208 |
| 4428   | Replacement column set for the Model 4428 – Trace sulfur in gases by GSV + LSV with permeation chamber             | N6107241 |
| 4429   | Replacement column set for the Model 4429 – Trace sulfur in gases by GSV and syringe with permeation chamber       | N6107241 |
| 4430   | Replacement column set for the Model 4430 – Trace sulfur in gases by GSV + PID with permeation chamber             | NR004030 |
| 4431   | Replacement column set for the Model 4431 – Trace sulfur in gases by GSV + FID with permeation chamber             | NR004031 |
| 4438   | Replacement column set for the Model 4438 – Trace sulfur in gases by GSV + PID and FID with permeation chamber     | NR004038 |
| 4629   | Replacement column set for the Model 4629 – Trace sulfur in gases by GSV and syringe + LSV with permeation chamber | N6107241 |
| 51XX   | Replacement column set for the 51XX PET Bottle Analyzer                                                            | NR005100 |
| 52XX   | Replacement column set for the 52XX Workspace Air Monitoring System                                                | NR005200 |

Note: Column sets are sold only as spares with an order, or as replacements to installed analyzers

## Valves

A majority of the Arnel configurations utilize two different types of valves. Most can be categorized as external volume injectors while the other type is an internal sample injector. The injection volume of an internal sample injector valve is determined by the size of etching on the rotor of the valve. External volume sample size is determined by a sample loop outside the valve. External valves are used primarily for sample injection and/or switching applications. A valve used for just switching requires another valve for sample injection. Valves include nuts and ferrules, but not loops.



| Ports   | Part No.         | Max Temperature (C°) | Rotation | Max Pressure (psi) | Fitting (in.) | Material        | Rotor Type | Replacement Rotor Part No. |
|---------|------------------|----------------------|----------|--------------------|---------------|-----------------|------------|----------------------------|
| 3 Port  | <b>N9302885</b>  | 330                  | 90°      | 300                | 1/16          | Stainless Steel | T          |                            |
| 4 Port  | <b>N9302809</b>  | 175                  | 90°      | 400                | 1/16          | Stainless Steel | P          |                            |
|         | <b>N9302813</b>  | 350                  | 90°      | 300                | 1/16          | Stainless Steel | T          |                            |
|         | <b>N9302817</b>  | 330                  | 90°      | 300                | 1/8           | Stainless Steel | T          |                            |
| 6 Port  | <b>N9302810</b>  | 175                  | 60       | 400                | 1/16          | Stainless Steel | P          | <b>N9302897</b>            |
|         | <b>N9302814</b>  | 350                  | 60       | 300                | 1/16          | Stainless Steel | T          | <b>N9302901</b>            |
|         | <b>N9302818</b>  | 330                  | 60       | 300                | 1/8           | Stainless Steel | T          | <b>N9302905</b>            |
| 8 Port  | <b>N9302811</b>  | 175                  | 45       | 400                | 1/16          | Stainless Steel | P          |                            |
|         | <b>N9302815</b>  | 350                  | 45       | 300                | 1/16          | Stainless Steel | T          |                            |
|         | <b>N9302819</b>  | 330                  | 45       | 300                | 1/8           | Stainless Steel | T          |                            |
| 10 Port | <b>N9302812</b>  | 175                  | 36       | 400                | 1/16          | Stainless Steel | P          | <b>N9302899</b>            |
|         | <b>N9302816</b>  | 350                  | 36       | 300                | 1/16          | Stainless Steel | T          | <b>N9302903</b>            |
|         | <b>N9302820*</b> | 330                  | 36       | 300                | 1/8           | Stainless Steel | T          |                            |

\*(P) PTFE-Carbon Composite(T) Polyimide-PTFE-Carbon Composite

## Liquid Sample Valves

Arnel liquid sample valves come with a complete valve, close-mount kit, actuator and valve mounting bracket.

| Ports | Part No.        | Volume (µL) | Rotation | Max Pressure (psi) | Fitting (in.) | Material        | Rotor Type | Replacement Rotor Part No. |
|-------|-----------------|-------------|----------|--------------------|---------------|-----------------|------------|----------------------------|
| 4     | <b>NR810070</b> | 0.2 and 0.5 | 90       | 1000               | 1/16          | Stainless Steel | 75 °C      | <b>NR510291</b>            |

## Liquid Sample Valve Accessories

| Description                                                                  | Part No.        |
|------------------------------------------------------------------------------|-----------------|
| 2 Micron In-line Filter – 1/8 in. Stainless Steel – Used on 'Sample In' line | <b>N6107085</b> |
| Check Valve (10 psi) – Brass – Used on 'Sample Out' Line                     | <b>N6107086</b> |

## Standoffs

A standoff supports both the actuator and the valve. The standoff places the valve at the specific distance from the actuator. A 4 1/8 in. standoff is recommended for mounting valves in PerkinElmer GC ovens. Standoff and actuator sold separately.

| Length                                                                                      | Part No.        |
|---------------------------------------------------------------------------------------------|-----------------|
| 2 in.      | <b>N9302909</b> |
| 3 1/4 in.  | <b>N9302910</b> |
| 4 1/8 in.  | <b>N9302911</b> |
| 6 in.      | <b>N9302912</b> |
| Description                                                                                 | Part No.        |
| Close mount hardware kit                                                                    | <b>N9302908</b> |

## Sample Loops



| Volume | Size (in.) | 6 Port Part No. | 8 Port Part No. | 10 Port Part No. |
|--------|------------|-----------------|-----------------|------------------|
| 100 µL | 1/16       | <b>N9302851</b> | <b>N9302854</b> | <b>N9302857</b>  |
| 100 µL | 1/8        | <b>N9302860</b> |                 | <b>N9302866</b>  |
| 250 µL | 1/16       | <b>N9302852</b> | <b>N9302855</b> | <b>N9302858</b>  |
| 250 µL | 1/8        |                 |                 | <b>N9302867</b>  |
| 500 µL | 1/16       | <b>N9302853</b> |                 | <b>N9302859</b>  |
| 500 µL | 1/8        | <b>N9302862</b> |                 | <b>N9302868</b>  |
| 1 mL   | 1/16       | <b>N9302950</b> | <b>N9302953</b> | <b>N9302956</b>  |
| 1 mL   | 1/8        |                 | <b>N9302962</b> | <b>N9302965</b>  |
| 2 mL   | 1/16       | <b>N9302951</b> | <b>N9302954</b> | <b>N9302957</b>  |
| 2 mL   | 1/8        | <b>N9302960</b> |                 | <b>N9302966</b>  |
| 5 mL   | 1/16       | <b>N9302952</b> |                 | <b>N9302958</b>  |
| 5 mL   | 1/8        | <b>N9302961</b> |                 | <b>N9302967</b>  |

1/8 in. fitting loop for valves with 0.030 in. standard port diameter  
1/16 in. fitting loop for valves with 0.016 in. standard port diameter

## Arnel Sample Loops

The Arnel sample loops are set apart from standard stainless steel loops due to the materials that are used in their manufacture. Arnel offers loops made of nickel and Sulfinert treated stainless steel tubing.

| Description                | Part No.          |
|----------------------------|-------------------|
| 0.1 cc Nickel              | <b>NR950001</b>   |
| 0.125 cc Nickel            | <b>NR950007</b>   |
| 0.2 cc Nickel              | <b>NR950002</b>   |
| 0.25 cc Nickel             | <b>NR950003</b>   |
| 0.5 cc Nickel              | <b>NR950004</b>   |
| 1.0 cc Nickel              | <b>NR950005</b>   |
| 2.0 cc Nickel              | <b>NR950006</b>   |
| 0.07 cc Sulfinert Treated  | <b>NRSLSF0.07</b> |
| 0.1 cc Sulfinert Treated   | <b>NR950008</b>   |
| 0.125 cc Sulfinert Treated | <b>NR950014</b>   |
| 0.2 cc Sulfinert Treated   | <b>NR950009</b>   |
| 0.25 cc Sulfinert Treated  | <b>NR950010</b>   |
| 0.5 cc Sulfinert Treated   | <b>NR950011</b>   |
| 1.0 cc Sulfinert Treated   | <b>NR950012</b>   |
| 2.0 cc Sulfinert Treated   | <b>NR950013</b>   |
| 3.0 cc Sulfinert Treated   | <b>NR950015</b>   |

## Calibration Material

Our calibration gas blends were formulated to be used exclusively in our Refinery and Natural Gas Analyzers. These are the same test gases that are used in the verification and validation processes that take place at our factory. Please contact your local PerkinElmer sales representative for more information about the composition of the gas blends.



| Description                                                                                                                                                                                                | Part No.        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| RGA Calibration Blend With Syringe Adapter                                                                                                                                                                 | <b>N6107198</b> |
| RGA Calibration Blend Without Adapter                                                                                                                                                                      | <b>N6107199</b> |
| NGA Calibration Blend With Syringe Adapter                                                                                                                                                                 | <b>N6107200</b> |
| NGA Calibration Blend Without Adapter                                                                                                                                                                      | <b>N6107201</b> |
| Sampling Kit – Arnel GSV; Connects to 1/16 in. sample inlet line for easy gas sample introduction<br>– Content of kit: 3 – BD 30 mL Luer Lock Syringes,<br>1 six-pack of needles, 1 port adapter, 10 septa | <b>N6100724</b> |

## Permeation Tubes



Full NIST traceability using established EPA and ASTM protocols by using the appropriate combination of permeation devices. The permeation tubes are certified to be permeating at a certain weigh and threshold ( $\sim \pm 2\%$ ). Uncertified tubes have an estimated rate and a very large threshold, up to  $\pm 25\%$ .

| Description                                 | Part No.        |
|---------------------------------------------|-----------------|
| Dimethylsulfide permeation tube (certified) | <b>N6107361</b> |
| Ethanol permeation tube (certified)         | <b>N6107362</b> |
| Benzene permeation tube (certified)         | <b>N6107363</b> |

## SCD Maintenance

The SCD parts listed are to support the Agilent 355 Dual Plasma Sulfur Chemiluminescence Detector (SCD).

| Description                                           | Part No.        |
|-------------------------------------------------------|-----------------|
| 12 Month Maintenance Kit for Dual Plasma SCD          | <b>N6107237</b> |
| Ceramic Tube Package for the Dual Plasma SCD Burner   | <b>NR310502</b> |
| 12 Month Maintenance Kit for Single Plasma SCD        | <b>N6107209</b> |
| Ceramic Tube Package for the Single Plasma SCD Burner | <b>N6107313</b> |

These kits support the PAC SeNse® NCD and SCD detectors.

| Description                            | Part No.        |
|----------------------------------------|-----------------|
| SeNse Consumable Sulfur Kit            | <b>NR333003</b> |
| SeNse Spare Kit for the Consumable Kit | <b>NR333004</b> |

## Sampling and Installation Parts

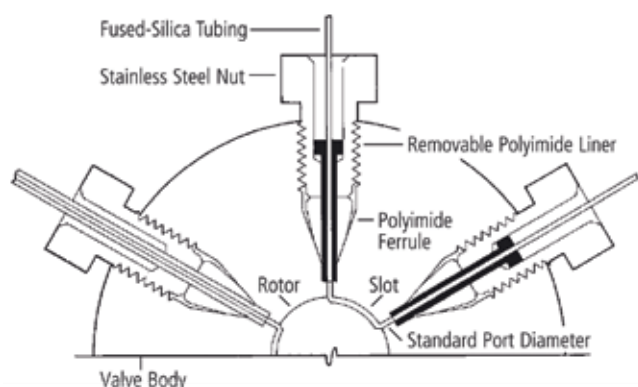
| Description                                                                                                                                                                                           | Part No.         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Sampling Accessories</b>                                                                                                                                                                           |                  |
| Sampling Kit – Arnel GSV; Connects to 1/16 in. sample inlet line for easy gas sample introduction<br>– Content of kit: 3 – BD 30 mL Luer Lock Syringes, 1 6-pack of needles, 1 port adapter, 10 septa | <b>N6100724</b>  |
| <b>Installation Hardware</b>                                                                                                                                                                          |                  |
| Tee 1/8 in. brass                                                                                                                                                                                     | <b>09903170</b>  |
| Cross 1/8 in. brass                                                                                                                                                                                   | <b>N9301259</b>  |
| Pre-cleaned copper tubing. 1/8 in. OD x 50 ft.                                                                                                                                                        | <b>N9300077</b>  |
| <b>VCR Gasket (PDID Channel)</b>                                                                                                                                                                      |                  |
| Nickel Face Seal VCR Gasket – For use with PDID channel 'Sample In' line connections                                                                                                                  | <b>NR410252N</b> |

## Nuts and Ferrules

| Description                                                                                                    | Part No.           |
|----------------------------------------------------------------------------------------------------------------|--------------------|
| <b>Nuts</b>                                                                                                    |                    |
| Nut 1/16 Stainless Steel – For use with Valco valves and fittings                                              | <b>09903980</b>    |
| Nut for 1/8 in. Tube Fitting – Stainless Steel<br>– Used to make connections at FID, TCD, FPD, PID             | <b>09903453</b>    |
| Nut 1/16 in. Stainless Steel<br>– Used to make connections at CAP, PSS and POC injectors                       | <b>09903392</b>    |
| Nut 1/8 in. – Stainless Steel<br>– For use with Valco Valves and Fittings                                      | <b>N9302833</b>    |
| <b>Ferrules</b>                                                                                                |                    |
| FRL 1/16 in. 0.8 mm ID (pkg. 10)<br>– For use with capillary columns 0.18 – 0.53 mm ID and nut <b>09903392</b> | <b>09920141</b>    |
| FRL 1/16 in. 0.5 mm ID (pkg. 10)<br>– For use with capillary columns 0.18 – 0.32 mm ID and nut <b>09903392</b> | <b>09903700</b>    |
| FRL 1/32 in. 0.8 mm ID Polyamide<br>– For use with 1/32 in. unions and fittings                                | <b>NR410229</b>    |
| FRL 1/32 in. 0.8 mm ID Polyamide<br>– For use with 1/32 in. unions and fittings (pkg. 5)                       | <b>NR410229-5</b>  |
| FRL 1/8 in. Graphite 0.5 mm ID<br>– For use with capillary columns 0.18 – 0.32 mm ID and nut <b>09903453</b>   | <b>NR510002</b>    |
| Ferrule Set 1/16 in. Stainless Steel (pkg. 10)<br>(1 front ferrule/1 back ferrule)                             | <b>NR410049-10</b> |
| Ferrule Set 1/8 in. Stainless Steel (pkg. 10)<br>(1 front ferrule/1 back ferrule)                              | <b>NR410068-10</b> |
| FRL 1/16 in. Stainless Steel<br>– For use with Valco Valves and Fittings                                       | <b>09903891</b>    |
| Ferrule 1/8 in. Graphite/Vespel<br>– For use with packed columns union <b>NR410110</b>                         | <b>09920133</b>    |
| Ferrule Reducing 1/8 in. – 1/16 in ID Graphite/Vespel                                                          | <b>09920301</b>    |
| FRL 1/32 in. 0.5 mm ID Polyamide<br>– For use with 1/32 in. unions and fittings                                | <b>NR510486</b>    |
| FRL 1/32 in. 0.5 mm ID Polyamide<br>– For use with 1/32 in. unions and fittings (pkg. 5)                       | <b>NR510486-5</b>  |

## Fused Silica Adaptors

These adaptors allow connection of fused silica to unions, valves and ports.



| Description                                             | Part No.        |
|---------------------------------------------------------|-----------------|
| Fused Silica Adapter 1/16 in. for 0.2 to 0.4 mm ID tube | <b>NR510233</b> |
| Fused Silica Adapter 1/16 in. for 0.4 to 0.5 mm ID tube | <b>N9302846</b> |
| Fused Silica Adapter 1/16 in. for 0.5 to 0.8 mm ID tube | <b>NR510030</b> |

## Union and Tees

| Description                                                                                              | Part No.        |
|----------------------------------------------------------------------------------------------------------|-----------------|
| Union 1/16 x 0.75 mm ID bore – Stainless Steel                                                           | <b>N9302839</b> |
| Union 1/16 x 0.75 mm ID bore – Stainless Steel Silco treated                                             | <b>NR410175</b> |
| Reducing union 1/16 in. to 1/32 in. Stainless Steel<br>– For use with 1/16 in. Valco valves and fittings | <b>09920163</b> |
| Tee – 1/16 in. x 0.75 mm Bore – Stainless Steel                                                          | <b>NR410245</b> |
| Tee – 1/32 in.<br>Low dead volume connector for capillary tubing/columns                                 | <b>NR410262</b> |
| Bulkhead Reducing union 1/8 in. to 1/16 in. Stainless Steel.<br>For use with packed columns in rack      | <b>NR410110</b> |

## Methanizers

| Description                                                                                  | Part No.        |
|----------------------------------------------------------------------------------------------|-----------------|
| <b>Methanizers</b>                                                                           |                 |
| Replacement Methanizer Assembly for Models containing Arnel Methanizers. For 115 V operation | <b>N6107080</b> |
| Replacement Methanizer Assembly for Models containing Arnel Methanizers. For 230 V operation | <b>N6107081</b> |

## PID Maintenance

Details of the replacement lamp for Arnel instruments equipped with a PID detector.

| Description           | Part No.        |
|-----------------------|-----------------|
| 10.0/10.6 eV PID Lamp | <b>NR510522</b> |



Column: Elite-1 30 m x 0.53 mm x 5.0  $\mu$ m Part No. **N9316052**  
 S-Swafer Part No. **N6520272**

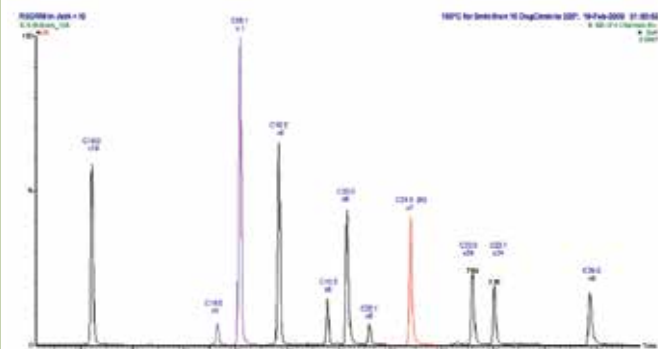
Column: Elite-WAX, 30 m x 0.25 mm x 0.5  $\mu$ m Part No. **N9316404**  
 and  $\text{Al}_2\text{O}_3$  PLOT/ $\text{Na}_2\text{SO}_4$  50 m x 0.32 mm Part No. **N6107777**  
 S-Swafer Part No. **N6520272**

Chromatogram showing peaks for Octane, Ethanol, Benzene, and Toluene. The x-axis is labeled from 0.0 to 4.8. The y-axis is labeled 'Freedom chromatography'.

Column: 10 m x 0.53 mm x 2.65  $\mu$ m MXT-2887 Part No. **NR213000**

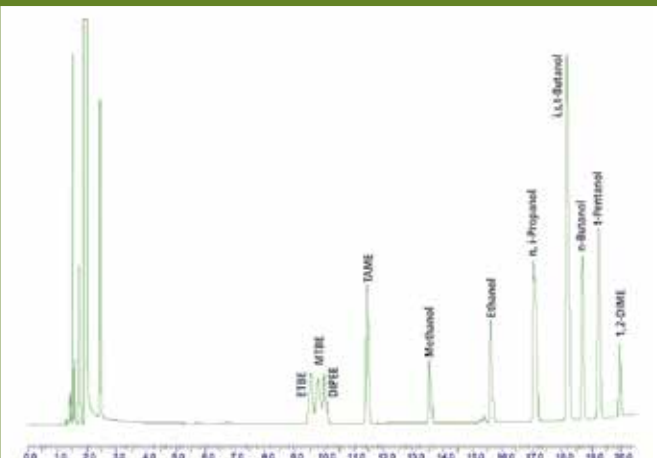


## Fatty Acid Methyl Ester Contamination of Aviation Fuel by GC/MS.



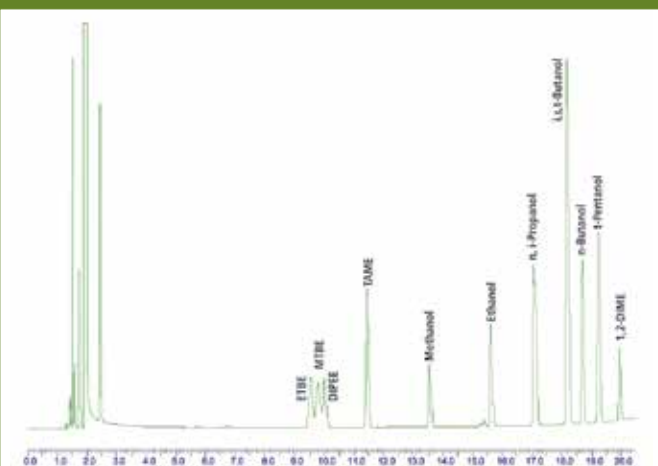
Column: 25 m x 0.32 mm ID x 0.25 µm BPX70

## Determination of Low-Level Oxygenated Compounds in Gasoline Using the Clarus GC with S-Swafer Micro-Channel Flow Technology.



Column: Elite-1, 15 m x 0.530 mm x 1.5 µm Part No. **N9316046**  
S-Swafer Part No. **N6520272**

## Fast Detailed Hydrocarbon Analysis by Modified ASTM Method D6730.



Column: DHA He CARR tuned with conditions Part No. **N9316015**  
or DHA H<sub>2</sub> CARR tuned with conditions Part No. **N6107238**

# Torion

PerkinElmer offers a wide selection of superior quality products designed to work with your PerkinElmer instruments. Our precision designed products deliver the peace of mind that comes from knowing that you'll get the results you need.

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## Custodion SPME Syringes

The Custodion® SPME (Solid Phase Microextraction) syringes useful for sampling and identification of a wide range of volatiles and semi-volatile compounds while in the field; used conjunction with the Torion T-9 portable system.



➤ [VIEW PAGE](#)

## Custodion Needle Trap – Basic Kit

Our Custodion needle trap kits enable users to collect air samples in the field, adsorbing analytes directly onto our novel Custodion needle trap devices.



➤ [VIEW PAGE](#)

## Calion Chemical Standards

Calion standards are premixed and adsorbed into a solid phase. These standards are ideal for in-field use because they contain no liquids.



➤ [VIEW PAGE](#)

## Merlin Seal

The Merlin Microseal is an alternative to the conventional silicone rubber septa. Its unique design is ideal to use with the Custodion SPME and Needle Trap.



➤ [VIEW PAGE](#)

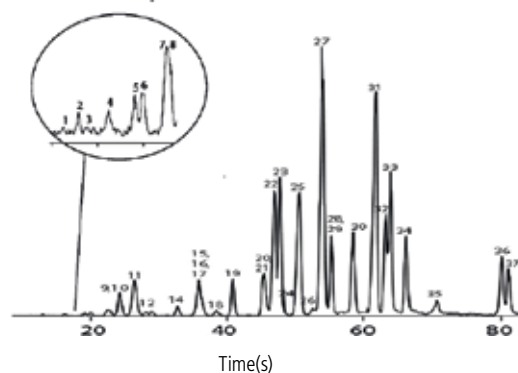
## Torion T-9 portable GC/MS

PerkinElmer's Torion® T-9 is a portable GC/MS integrating a high speed Low Thermal Mass (LTM) capillary GC with a miniaturized toroidal ion trap mass spectrometer (TMS). It is designed to be carried in the field and is ideal for rapid screening of chemicals such as environmental volatiles and semi-volatiles (VOCs/ SVOCs), explosives, chemical threats, and hazardous substances. The Torion T-9 family includes accessories for sampling air, water and soil.



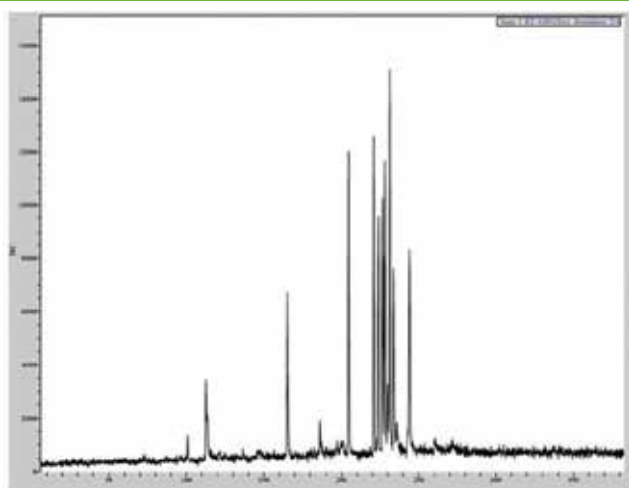
### Volatile Organic Compound Screening in Soil Using SPME-GC/MS.

- |                                |                                 |
|--------------------------------|---------------------------------|
| 1. Trichlorofluoromethane      | 20. Chlorobenzene               |
| 2. 1,1-Dichloroethylene        | 21. 1,1,1,2-Tetrachloroethane   |
| 3. Dichloromethane             | 22. Ethylbenzene                |
| 4. MTBE                        | 23. Xylene                      |
| 5. 1,2-Dichloroethylene (Z)    | 24. Bromoform                   |
| 6. Chloroform                  | 25. Styrene                     |
| 7. 1,1-Trichloroethane         | 26. 1,1,2,2-Tetrachloroethane   |
| 8. 1,2-Dichloroethane          | 27. Isopropylbenzene            |
| 9. Carbon Tetrachloride        | 28. Bromobenzene                |
| 10. Benzene                    | 29. 1,2,3-Trichloropropane      |
| 11. 2-Butanone                 | 30. 1,3,5-Trimethylbenzene      |
| 12. Trichloroethylene          | 31. 1,2,4-Trimethylbenzene      |
| 13. Bromodichloromethane       | 32. 1,3-Dichlorobenzene         |
| 14. 1,3-Dichloro-1-propene (Z) | 33. 1,4-Dichlorobenzene         |
| 15. 1,3-Dichloro-1-propene (E) | 34. 1,2-Dichlorobenzene         |
| 16. Toluene                    | 35. 1,2-Dibromo-3-chloropropane |
| 17. 1,1,2-Trichloroethane      | 36. 1,2,4-Trichlorobenzene      |
| 18. 4-Methyl-2-pentanone       | 37. Naphthalene                 |
| 19. Tetrachloroethylene        |                                 |



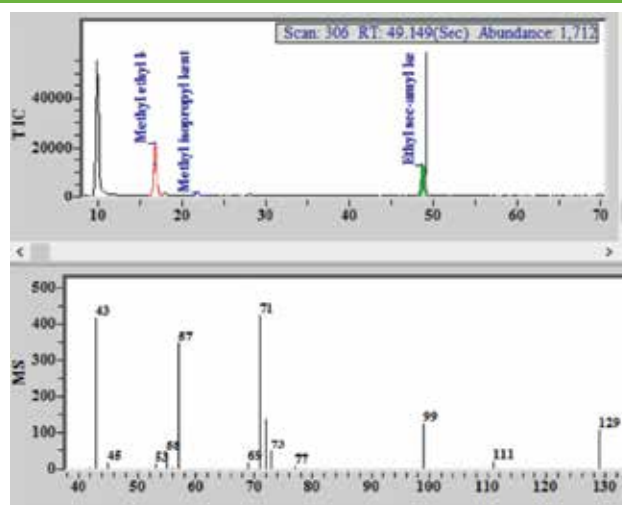
SPME Phase: Divinylbenzene/Polydimethylsiloxane (DVB/PDMS, 65 µm)

### Rapid Identification of Illicit Drug Substances Using Thermal Desorption Coupled with a Portable Toroidal Trap GC/MS System.



SPME Phase: Polydimethylsiloxane/divinylbenzene/carboxen (PDMS/DVB/CAR)

### Method Development for Identification of Adulterated Spirits using Field Portable GC/MS.



SPME Phase: Divinylbenzene/Polydimethylsiloxane (DVB/PDMS, 65 µm)

# Sample Prep Station (SPS-3) for Rapid Field Sampling

The SPS-3 expands sampling capabilities of the Torion T-9 GC/MS. The SPS-3 has a single sample desorption module (DM) and an internal standard module.

The Internal Standard (IS) module adds the capability for semi-quantitative and quantitative analysis through addition of a fixed amount of 2 internal standard reference compounds onto a Custodion Needle Trap (NT). The addition of the desorption module extends the limits of detection of the T-9 by allowing samples to be collected using full size conventional thermal desorption tubes prior to analysis.

## SPS-3 Sample Prep Station Single DM with Internal Standard (IS)

| Description                                                                                        | Qty. | Part No.           |
|----------------------------------------------------------------------------------------------------|------|--------------------|
| <b>SPS-3 Sample Prep Station with single sample desorption module and internal standard module</b> |      | <b>NTSSPS30001</b> |
| SPS-3 with Single DM and IS Modules                                                                | 1    |                    |
| CT Handle Assembly                                                                                 | 1    |                    |
| CT Holder Assembly                                                                                 | 1    |                    |
| Helium Quick Disconnect with 1/16 in.                                                              | 1    |                    |
| Power Cord                                                                                         | 1    |                    |
| Power Supply                                                                                       | 1    |                    |
| Ethernet LAN Cable                                                                                 | 1    |                    |
| SPS-3 User Manual                                                                                  | 1    |                    |
| SPS-3 Transport Case with Foam                                                                     | 1    |                    |

## SPS-3 Consumables

### Replacement Seal Kits

Replacement Seal and O-Ring kits for SPS-3 and Accessories.



| Description                       | Part No.           |
|-----------------------------------|--------------------|
| Internal Standard Module Seal kit | <b>NTSSPS30013</b> |
| CT Holder Seal Kit                | <b>NTSSPS30011</b> |
| CT Handle Seal Kit                | <b>NTSSPS30014</b> |



## SPS-3 Sample Prep Station Dual DM with Internal Standard (IS)

| Description                                                                                       | Qty. | Part No.           |
|---------------------------------------------------------------------------------------------------|------|--------------------|
| <b>SPS-3 Sample Prep Station with dual sample desorption modules and internal standard module</b> |      | <b>NTSSPS30002</b> |
| SPS-3 with Dual DM and single IS Modules                                                          | 1    |                    |
| CT Handle Assembly                                                                                | 1    |                    |
| CT Holder Assembly                                                                                | 1    |                    |
| Helium Quick Disconnect with 1/16 in.                                                             | 1    |                    |
| Power Cord                                                                                        | 1    |                    |
| Power Supply                                                                                      | 1    |                    |
| Ethernet LAN Cable                                                                                | 1    |                    |
| SPS-3 User Manual                                                                                 | 1    |                    |
| SPS-3 Transport Case with Foam                                                                    | 1    |                    |

## SPS-3 Accessories

### CT Handle

Replacement CT Handle unit.

Acts as interface between Needle Trap and Conventional Trap during SPS-3 desorption cycle.



| Description              | Part No.           |
|--------------------------|--------------------|
| Conventional Trap Handle | <b>NTSS0060015</b> |

### CT Holder

Replacement CT Holder unit.

Holds Conventional Trap during SPS-3 desorption cycle.



| Description              | Part No.           |
|--------------------------|--------------------|
| Conventional Trap Holder | <b>NTSS0060016</b> |

### SPS-3 Tool Kit

Contains tools for operation and maintenance of the SPS-3.

| Description    | Part No.           |
|----------------|--------------------|
| SPS-3 Tool kit | <b>NTSSPS30020</b> |

## Starter Kits

Two different starter kits are available to provide everything you need to get up and running with ease.

| Description                              | Qty. | Part No.              |
|------------------------------------------|------|-----------------------|
| <b>Torion T-9 Basic Package</b>          |      | <b>NTSST090505</b>    |
| BB-2590 Charger                          | 1    | <b>09280440</b>       |
| Transcend 32 GB Class 10 SDHC/SDXC UHS-I | 1    | <b>09400003</b>       |
| Merlin Seal 19 GA for SPME NT Injector   | 6    | <b>NTS25700012</b>    |
| SRN SPME 19G BT W/DVB/PDMS 3 Rep Fibers  | 1    | <b>NTSC19SN3B171</b>  |
| Filament Assembly for T-9                | 1    | <b>NTSS0070034</b>    |
| GC Injector Liner Deactivated Gasket     | 1    | <b>NTSS20000021CG</b> |
| Spare Cable Kit for ION Trap             | 1    | <b>NTSST090012</b>    |
| ION Spare O-Ring Kit Trap                | 1    | <b>NTSST090045</b>    |
| Spare Screws and Washer Kit              | 1    | <b>NTSST090047</b>    |

| Description                              | Qty. | Part No.              |
|------------------------------------------|------|-----------------------|
| <b>Torion T-9 Advanced Kit</b>           |      | <b>NTSST090506</b>    |
| BB-2590 Charger                          | 1    | <b>09280440</b>       |
| Transcend 32 GB Class 10 SDHC/SDXC UHS-I | 1    | <b>09400003</b>       |
| Merlin Seal 19 GA for SPME NT Injector   | 12   | <b>NTS25700012</b>    |
| SRN SPME 19G BT W/DVB/PDMS 3 Rep Fibers  | 2    | <b>NTSC19SN3B171</b>  |
| Filament Assembly for T-9                | 1    | <b>NTSS0070034</b>    |
| GC Injector Liner Deactivated Gasket     | 1    | <b>NTSS20000021CG</b> |
| Spare Cable Kit for ION Trap             | 2    | <b>NTSST090012</b>    |
| ION Spare O-Ring Kit Trap                | 2    | <b>NTSST090045</b>    |
| Spare Screws and Washer Kit              | 2    | <b>NTSST090047</b>    |

## Sampling Accessories

### Custodion Needle Trap Samplers

The Custodion Needle Trap (NT) is a miniature thermal desorption tube used for extracting and concentrating volatile compounds from air samples used with the Clairion pump. The Custodion-NT should be used with a flow rate range of 5 – 15 mL/min. The Custodion-NT is small enough to desorb samples directly into the Torion T-9 portable GC/MS. The NT is packed with 3 different adsorption beds to give it a broad range of chemical compatibility.

### Custodion SPME Samplers

The Custodion SPME (Solid Phase Microextraction) is ideal for quick screening and identification of volatile and semi-volatile compounds. The active phase on the fiber is 65 µm film of DVB/PDMS (Divinylbenzene/ Polydimethylsiloxane) is a general purpose material useful for a wide range of volatilities and chemistries.

Available as a single Custodion syringe handle and fiber, or as a kit with 3 replacement fibers (4 fibers total). Replacement fibers are available as singles.



### Needle Trap

| Description                                                                                     | Qty. | Part No.             |
|-------------------------------------------------------------------------------------------------|------|----------------------|
| Custodion SPME Syringe, 19 gauge blunt needle, with DVB/PDMS fiber                              | 1    | <b>NTSC19SNB171</b>  |
| Custodion SPME Syringe, 19 gauge blunt needle, with DVB/PDMS fiber and three replacement fibers | 1    | <b>NTSC19SN3B171</b> |
| Custodion SPME 19 gauge DVB/PDMS Replacement fiber                                              | 1    | <b>NTS25710033</b>   |



With needle trap (NT)



With conventional trap (CT)

### Conventional Trap

| Description                                               | Qty. | Part No.            |
|-----------------------------------------------------------|------|---------------------|
| Custodion Needle Trap (NT) Syringe, 19 gauge blunt needle | 1    | <b>NTSC19NTB200</b> |
| Custodion Needle Trap (NT) Syringe, 19 gauge blunt needle | 3    | <b>NTSC19NTB203</b> |
| Custodion Needle Trap (NT) Syringe, 19 gauge blunt needle | 5    | <b>NTSC19NTB205</b> |
| Custodion Needle Trap (NT) Syringe, 19 gauge blunt needle | 10   | <b>NTSC19NTB210</b> |

### Conventional Trap Sample Collection Tubes

Conventional Trap (CT) sample tubes allow for faster sampling of larger air volumes compared to direct sampling with the Needle Trap. The Custodion-CT accommodates a flow rate range of 5 – 100 mL/min. The Custodion-CT is used in conjunction with the Clairion pump for sample collection. Sample analysis requires the SPS-3 to transfer the sample onto a Needle Trap for analysis on the T-9.



| Description                                                | Part No.        |
|------------------------------------------------------------|-----------------|
| Air Toxics Pre-conditioned Sample Tube (pkg. 10)           | <b>N9307001</b> |
| Carbopack B 60/80 Pre-conditioned Sample Tubes (pkg. 10)   | <b>N9307002</b> |
| Carbotrap 349 Pre-conditioned Sample Tubes (pkg. 10)       | <b>N9307038</b> |
| Carbopack B/C/S-III Pre-Conditioned Sample Tubes (pkg. 10) | <b>N9307000</b> |

Visit [www.PerkinElmer.com](http://www.PerkinElmer.com) for additional sample collection tubes

## Needle Trap Kits

Our Custodion Needle Trap Kits enable users to collect air samples in the field, adsorbing analytes directly onto our novel Custodion Needle Trap devices. The Needle Trap then directly inject samples into our portable GC/MS, the Torion T-9, allowing users to collect, inject and analyze air samples right at the sample's source.

The Clairion pump can operate for up to 27 hours at 1 L/min on a single charge.



| Description                                                                                                                                                                                                                 | Part No.             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| <b>Clairion Needle Trap Basic Kit (No Pump)</b>                                                                                                                                                                             | <b>NTSSCL60705NP</b> |
| Custodion Needle Trap Syringe, 19 gauge blunt needle<br>Clairion NT-Pump Interface, basic<br>O-Ring/Seal Replacement Kit<br>Seal Removal Tool                                                                               |                      |
| <b>Clairion Needle Trap Basic Kit, 110 V</b>                                                                                                                                                                                | <b>NTSSCL60705</b>   |
| Clairion Basic Pump, 110 V<br>Clairion Transport Case with Foam Insert<br>Clairion NT-Pump Interface, Basic<br>Custodion Needle Trap<br>O-Ring/Seal Replacement Kit<br>Seal Removal Tool<br>USB Drive with Pump User Manual |                      |
| <b>Clairion Needle Trap Basic Kit, 220 V</b>                                                                                                                                                                                | <b>NTSSCL60705I</b>  |
| Clairion Basic Pump, 220 V<br>Clairion Transport Case with Foam Insert<br>Clairion NT-Pump Interface, Basic<br>Custodion Needle Trap<br>O-Ring/Seal Replacement Kit<br>Seal Removal Tool<br>USB Drive with Pump User Manual |                      |
| <b>Clairion Conventional Trap Basic Kit, 110 V</b>                                                                                                                                                                          | <b>NTSSCL60706</b>   |
| Clairion Basic Pump, 110 V<br>Clairion Transport Case with Foam Insert<br>Clairion CT to Pump Interface<br>CT to Pump Interface O-Ring Kit<br>USB Drive with Pump User Manual                                               |                      |
| <b>Clairion Conventional Trap Basic Kit, 220 V</b>                                                                                                                                                                          | <b>NTSSCL60706I</b>  |
| Clairion Basic Pump, 220 V<br>Clairion Transport Case with Foam Insert<br>Clairion CT-Pump Interface, Basic<br>Whatever O-Ring Kit is necessary<br>USB Drive with Pump User Manual                                          |                      |

## Accessory Kits

| Description                                                              | Qty. | Part No.          |
|--------------------------------------------------------------------------|------|-------------------|
| <b>T-9 Basic Consumable Kit<br/>Supplies for six (6) months</b>          |      | <b>NTSN090100</b> |
| Custodion SPME Syringe, PDMS/DVB Fiber, 19 gauge with pkg. 3 Replacement | 1    |                   |
| Merlin seal, 19 gauge SPME and Needle Trap Injector                      | 6    |                   |
| Single Bay Battery Charger                                               | 1    |                   |
| 32 GB Industrial SD Card, Formatted                                      | 1    |                   |
| GC Injector Liner, Deactivated, Removable, for SPME and Needle Trap      | 1    |                   |
| Cable Kit, T-9 Ion Trap                                                  | 1    |                   |
| O-Rings Kit, T-9 Ion Trap                                                | 1    |                   |
| Screws and Washers Kit, T-9 Ion Trap                                     | 1    |                   |
| <b>Advanced Consumable Kit<br/>Supplies for twelve (12) months</b>       |      | <b>NTSN090101</b> |
| Custodion SPME Syringe, PDMS/DVB Fiber, 19 gauge with pkg. 3 Replacement | 2    |                   |
| Merlin seal, 19 gauge SPME and Needle Trap Injector                      | 12   |                   |
| Single Bay Battery Charger                                               | 1    |                   |
| 32 GB Industrial SD Card, Formatted                                      | 2    |                   |
| GC Injector Liner, Deactivated, Removable, for SPME and Needle Trap      | 1    |                   |
| Cable Kit, T-9 Ion Trap                                                  | 2    |                   |
| O-Rings Kit, T-9 Ion Trap                                                | 2    |                   |
| Screws and Washers Kit, T-9 Ion Trap                                     | 2    |                   |
| Filament Assembly                                                        | 1    |                   |

## Carrier Gas Consumables

Disposable helium gas cylinder is a 98 mL stainless steel cylinder at ~2500 psi. Helium cylinders are used for both the T-9 GC/MS and SPS-3 during portable operation.

| Description                                            | Qty. | Purity % | Part No.           |
|--------------------------------------------------------|------|----------|--------------------|
| Ultra-high purity 98 mL disposable helium gas cylinder | 1    | 99.95%   | <b>NTSST090034</b> |
| Ultra-high purity 98 mL disposable helium gas cylinder | 2    | 99.95%   | <b>NTSST090035</b> |
| Ultra-high purity 98 mL disposable helium gas cylinder | 6    | 99.95%   | <b>NTSST090036</b> |
| Ultra-high purity 98 mL disposable helium gas cylinder | 12   | 99.95%   | <b>NTSST090037</b> |
| High purity 98 mL disposable helium gas cylinder       | 1    | 99.50%   | <b>NTSSG070034</b> |
| High purity 98 mL disposable helium gas cylinder       | 2    | 99.50%   | <b>NTSSG070035</b> |
| High purity 98 mL disposable helium gas cylinder       | 6    | 99.50%   | <b>NTSSG070036</b> |
| High purity 98 mL disposable helium gas cylinder       | 12   | 99.50%   | <b>NTSSG070037</b> |



## Calion Chemical Standards

Calion standards are premixed and adsorbed into a solid phase. These standards are ideal for in-field use because they contain no liquids. Calion® PV Mixes are used for Torion T-9 calibration, including both mass and GC retention time calibrations. The combination of Custodion SPME sampling with Calion standards provides robust and rapid capability for in-field calibration because they contain no liquids. Calion® PV Mixes are used for Torion T-9 calibration, including both mass and GC retention time calibrations. The combination of Custodion SPME sampling with Calion standards provides robust and rapid capability for in-field calibration.



### Mininert Vials used with Custodion SPME Syringe and T-9 Instrument

| Description                     | Qty. | Part No.             |
|---------------------------------|------|----------------------|
| Standard Calion PV Mix (pkg. 1) | 1    | <b>NTSSMIX011019</b> |
| Standard Calion PV Mix (pkg. 3) | 3    | <b>NTSSMIX031019</b> |

Calion IS internal standard mix is to be used with the SPS-3 and Needle Traps for semi-quantitative and quantitative analysis.



### Internal Standard Ampule used with the SPS-3

| Description | Qty. | Part No.           |
|-------------|------|--------------------|
| Calion IS   | 1    | <b>NTSSMIX0160</b> |

## Liners, Seals and Filaments



| Description                                                                     | Part No.             |
|---------------------------------------------------------------------------------|----------------------|
| GC Deactivated Injector Liner, removable 0.048 in. ID, for needle trap and SPME | <b>NTSS2000021CG</b> |
| Replacement Merlin seal, 19 gauge for SPME and needle trap injector             | <b>NTS25700012</b>   |
| Replacement Filament Assembly for the T-9 Ion Source                            | <b>NTSS0070034</b>   |

## Battery Options

| Description                                   | Part No.           |
|-----------------------------------------------|--------------------|
| Spare Li-Ion Rechargeable Battery for the T-9 | <b>NTS02750005</b> |
| T-9 Single Bay Battery Charger                | <b>NTS02890001</b> |

## Spare Parts

| Description                                                                                                                                        | Part No.            |
|----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| SPS Conventional Trap Assembly<br>Mounts a Conventional Trap in a holder for use in the SPS-3<br>( <b>NTSSPS30001</b> and <b>NTSSPS30002</b> )     | <b>NTSS0060016</b>  |
| Handle Assembly for SPS Conventional Trap/Needle Trap adapter                                                                                      | <b>NTSS0060015</b>  |
| Conventional Trap to Pump Interface for SPS-3                                                                                                      | <b>NTSS0060095</b>  |
| Needle Trap to Pump Interface for SPS-3                                                                                                            | <b>NTSS00600071</b> |
| Clairion™ Seal Replacement Kit for the Pump to Needle Trap interface                                                                               | <b>NTSSCL60711</b>  |
| Seal Removal Tool                                                                                                                                  | <b>NTSM0060124</b>  |
| Clairion CT to Pump INTFC O-Ring Kit for the conventional Trap to Pump interface                                                                   | <b>NTSSCL60708</b>  |
| Conventional Holder Seal and O-Rings for SPS-3 for the conventional Trap holder                                                                    | <b>NTSSPS30011</b>  |
| IS Gasket Seal O-Ring Kit for SPS-3                                                                                                                | <b>NTSSPS30013</b>  |
| Conventional Handle Seal with O-Ring Kit for SPS-3                                                                                                 | <b>NTSSPS30014</b>  |
| Clairion Seal Replacement Kit for the NT-to-Pump interface                                                                                         | <b>NTSSCL60713</b>  |
| SPS-3 Tool Kit                                                                                                                                     | <b>NTSSPS30020</b>  |
| T-9 Basic Tool Kit                                                                                                                                 | <b>NTSTG080022</b>  |
| Quick Disconnect External Gas Assembly. Quick connection adapter for use with regular gas cylinders. Not for use with the disposable He cartridges | <b>NTSSG080017</b>  |
| Clairion Basic Air Pump, 110 V                                                                                                                     | <b>NTSS00600041</b> |
| Clairion Basic Air Pump, 220 V                                                                                                                     | <b>NTSS00600043</b> |
| External Battery Cable, 'Pig Tail'                                                                                                                 | <b>NTSCBL80020</b>  |

## Gas Management

PerkinElmer offers a wide selection of superior quality products designed to work with your PerkinElmer instruments. Our precision designed products deliver the peace of mind that comes from knowing that you'll get the results you need.

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## NEW FID Gas Station

The FID gas station is a novel system that combines the reliability of the high purity PG or ultrahigh purity NM hydrogen generators with the superior performance of the zero air generators into a single compact instrument.



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## NEW Ultra Quiet Analytical Compressor

The Ultra Quiet Analytical compressor is the most dependable, trouble-free and quietest compressor for use with PerkinElmer instruments. This oil-free system incorporates features to provide years of reliability.



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## NEW Flowmeter Plus

The Flowmeter Plus is a valuable tool for troubleshooting detector problems, without needing to select gas type. Highly accurate in identifying leaks it offers a minimum detection limit of 0.0005 mL/min hydrogen and helium.



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## Ultra Clean Gas Filters

Gas purifiers remove contaminants from gas sources, thereby improving system performance. Cartridge systems make changing gas filters quick and easy. A base plate allows cartridges to be exchanged without introducing ambient air.



➤ [VIEW PAGE](#)



## Gas Generators – Simply a Smarter Choice

Analytical gas generators can remove the requirement for high-pressure cylinder gases and are typically placed next to the instrument they are servicing. This removes any need for extended gas lines and negates any associated problems impacting on purity, cost and convenience.

The latest gas generators from PerkinElmer utilise new technologies in adsorbents, catalysts, and specialist micro dryers to produce a continual supply of ultra-high purity gases to your instrumentation. This all but eliminates the introduction of impurities, which can be reduced further by the installation of in-line gas purifiers.

## Nitrogen Generators

### EVO Nitrogen Generators

The EVO N<sub>2</sub> nitrogen generators are designed as a full 'plug and play' solution with integral oil free, low noise compressors. The EVO Nitrogen hybrid gas model was specifically designed to meet the flow, purity and pressure requirements of the LC/MS /MS applications of AB SCIEX with appropriate pressures and flows of nitrogen. The simple and proven pressure swing adsorption (PSA) technology is employed to remove nitrogen from compressed air. Carbon molecular sieves (CMS) adsorb remaining oxygen and traces of humidity. These generators require minimal maintenance and operator attention. They are CE CSA certified.



### Technical Specifications for all Nitrogen Generators

| Description                 | Specification                                           |
|-----------------------------|---------------------------------------------------------|
| Purity                      | > 99.5% (less 2% O <sub>2</sub> )                       |
| Outlet Pressure             | 8 bar/120 psi                                           |
| Height                      | 64.1 cm (25.2 in.)                                      |
| Width                       | 48.2 cm (19 in.)                                        |
| Depth                       | 83.5 cm (32.9 in.)                                      |
| Weight                      | 121 kg (266 lbs)                                        |
| Operating Temperature       | +10 °C to +40 °C (+50 °F to +104 °F)                    |
| Operating Relative Humidity | 0 – 80 % rF, no condense/0 – 99% rF with condense drain |
| Power Consumption           | 1300 Watt                                               |
| Circuit Breaker             | 10 A for 230 V ; 15 A for 110 V                         |
| Heat Dissipation Approx     | 2700 Btu/h                                              |

| Nitrogen Model            | Flow Rate                                                                         | Voltage (V) | Part No.        |
|---------------------------|-----------------------------------------------------------------------------------|-------------|-----------------|
| EVO N <sub>2</sub>        | 25 L/min                                                                          | 115         | <b>N9308587</b> |
|                           | 25 L/min                                                                          | 220         | <b>N9308573</b> |
|                           | 35 L/min                                                                          | 115         | <b>N9308588</b> |
|                           | 35 L/min                                                                          | 220         | <b>N9308574</b> |
| EVO N <sub>2</sub> Hybrid | Up to 10 L/min +/- 1.5 L/min (at atmospheric pressure)<br>35 L/min of AIR@116 psi | 115         | <b>N9308590</b> |
|                           | Up to 10 L/min +/- 1.5 L/min (at atmospheric pressure)<br>35 L/min of AIR@116 psi | 220         | <b>N9308576</b> |

## N<sub>2</sub> Whisper Generators

The Whisper nitrogen generator has been developed to meet specific requirements in terms of flow, purity and pressure in LC/MS applications. It can also be used for the evaporation of solvents in samples being analyzed. The simple high efficiency membrane technology allows nitrogen separation from other components present within the supplied compressed air.

**Better results:** The constant purity of nitrogen improves system stability and ensures reproducible results.

**Saving you money:** Initial investment is typically paid back in less than a year. No plumbing is required to transfer gas from the storeroom to the lab.

**Better lab efficiency:** Constant supply of high quality nitrogen in line with your application demands. Gas cylinders are often insufficient to ensure the large nitrogen volumes needed in LC/MS techniques.

**Improved safety:** Nitrogen is produced at low pressure and room temperature eliminating the risks related to high pressure gas bottle use and the hazards associated with liquid nitrogen.

**Simple installation:** A plug and play approach. The wall-mounted installation saves precious bench space!

## N<sub>2</sub> Mini Whisper Generators

Based upon the Whisper generator, the Mini Whisper Nitrogen generator provides the same high purity nitrogen, but at a lower flow rate. It is ideally suited to ELSD applications as well as LC/MS analysis.

The simple yet high efficiency membrane technology allows the separation of nitrogen from the other components of the compressed air inlet.

The low pressure drop allows the unit to be connected to an existing dry and oil-free compressed air source in the lab.



N<sub>2</sub> Whisper Generator

## Technical Specifications

| Description                   | Whisper                                               | Mini Whisper                           |
|-------------------------------|-------------------------------------------------------|----------------------------------------|
| Purity (based on outlet flow) | > 98 – 99.5%                                          | > 98 – 99.5%                           |
| Outlet Pressure               | 7 bar                                                 | 7 bar                                  |
| Height                        | 115 cm (45.3 in.)                                     | 73.5 cm (28.9 in.)                     |
| Width                         | 48 cm (19 in.)                                        | 34.8 cm (13.7 in.)                     |
| Depth                         | 26 cm (10.2 in.)                                      | 35 cm (13.8 in.)                       |
| Weight                        | 15 kg (33 lbs) ;<br>18 kg (39 lbs);<br>21 kg (46 lbs) | 8 kg (18 lbs)                          |
| Operating Temperature         | +10 °C to +35 °C<br>(+50 °F to +95 °F)                | +10 °C to +35 °C<br>(+50 °F to +95 °F) |
| Air Compressor Supplied       | NO                                                    | NO                                     |
| Electrical Requirements       | None                                                  | None                                   |
| Background Noise              | None                                                  | None                                   |
| Connections                   | 1/4 G                                                 | 1/4 G                                  |

| Description  | Flow Rate | Part No.        |
|--------------|-----------|-----------------|
| Whisper      | 40 L/min  | <b>N9306285</b> |
|              | 80 L/min  | <b>N9306286</b> |
|              | 120 L/min | <b>N9306287</b> |
| Mini Whisper | 12 L/min  | <b>N9306288</b> |



N<sub>2</sub> Mini Whisper Generator

## Membrane Nitrogen Generators

PerkinElmer offers customers a new line of nitrogen generators to meet the growing need for cost effective and pure nitrogen. Membrane Nitrogen Generators are designed to supply single or multiple LC/MS instruments with dry nitrogen at purities of 98% to 99.5%. The generator can also be used for solvent evaporation as well as supplying dry nitrogen to analytical instruments.

Nitrogen is produced by utilizing a combination of filtration and membrane separation technologies. A high efficiency pre-filtration system pre-treats the compressed air to remove all contaminants down to 0.01 micron. Hollow fiber membranes subsequently separate the clean air into a concentrated nitrogen output stream and an oxygen enriched permeate stream, which is vented from the system. The combination of these technologies produces a continuous on demand supply of pure nitrogen.

## LC/MS Nitrogen Generators with Integrated Compressors

| Description                | Specification                         |
|----------------------------|---------------------------------------|
| Purity                     | >98%                                  |
| Min/Max Operating Pressure | 101.5 psi/g                           |
| Height                     | 70.1 cm (27.8 in.)                    |
| Width                      | 51.1 cm (20.1 in.)                    |
| Depth                      | 58.2 cm (22.9 in.)                    |
| Weight                     | 135.2 kg (298 lbs)                    |
| Operating Temperature      | +5 °C to +40 °C (+41 °F to +104 °F)   |
| Port Connection Outlet     | 1/4 in. Compression Fitting           |
| Electrical Requirements    | 120 V/60 Hz or 230 V/50 – 60 Hz ± 10% |
| Air Compressor             | Yes                                   |
| Flow Rates                 | 30 L/min                              |
| Part No.                   | N9303223 (120 V) ; N9303224 (230 V)   |



## Technical Specifications

| Description                | Low Flow NitroFlow Lab with built in compressor | N <sub>2</sub> -22 Mid Flow                       | N <sub>2</sub> -35 Mid Flow                       | N <sub>2</sub> -45 High Flow                      |
|----------------------------|-------------------------------------------------|---------------------------------------------------|---------------------------------------------------|---------------------------------------------------|
| Purity                     | 94.0 – 99.5%                                    | 95.0 – 99.5%                                      | 95.0 – 99.5%                                      | 95.0 – 99.5%                                      |
| Min/Max Operating Pressure | 8 bar (116 bar)                                 | 60/145 psig (4.0/10 barg)                         | 60/145 psig (4.0/10 barg)                         | 60/145 psig (4.0/10 barg)                         |
| Height                     | 70 cm (27.6 in.)                                | 13 cm (5.1 in.)                                   | 13 cm (5.1 in.)                                   | 140 cm (55.1 in.)                                 |
| Width                      | 31 cm (12.2 in.)                                | 45 cm (17.8 in.)                                  | 45 cm (17.8 in.)                                  | 61 cm (24.0 in.)                                  |
| Depth                      | 90 cm (35.4 in.)                                | 41 cm (16.1 in.)                                  | 41 cm (16.1 in.)                                  | 50 cm (20.0 in.)                                  |
| Weight                     | 127.4 kg (280 lbs)                              | 36 kg (80 lbs)                                    | 41 kg (90 lbs)                                    | 114 kg (250 lbs)                                  |
| Operating Temperature      | +10 °C to +35 °C<br>(+50 °F to +95 °F)          | +15 °C to +35 °C<br>(+60 °F to +95 °F)            | +15 °C to +35 °C<br>(+60 °F to +95 °F)            | +15 °C to +35 °C<br>(+60 °F to +95 °F)            |
| Electrical Requirements    | 120 V/60 Hz, 20 Amp Nema 5                      | None                                              | None                                              | None                                              |
| Air Compressor             | Yes                                             | No                                                | No                                                | No                                                |
| Flow Rates                 | 32 L/min                                        | 100 psi inlet – 20 L/min output<br>– 99.0% purity | 100 psi inlet – 30 L/min output<br>– 99.0% purity | 100 psi inlet – 53 L/min output<br>– 99.0% purity |
| Part No.                   | N9306213 (120 V)<br>N9306214 (230 V)            | N9306210                                          | N9306211                                          | N9306212                                          |

## NitroFlowLab; Integrated N<sub>2</sub> Generator and Compressor

### Features and Benefits

- Complete 'Plug and Play' system
- Phthalate-free, no organic vapors
- 8,000 hours compressor warranty or two years
- Special design ensures quiet operation
- Dual oil-less air compressors

|                               |                                                                                                                                  |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Ambient Temperature Range     | 50 °F – 95 °F (10 °C – 35 °C)                                                                                                    |
| Ambient Pressure Range        | 103 mbar                                                                                                                         |
| Electrical Requirements       | Standard with 115 V/60 Hz: 20 A/125 VAC; NEMA 5 – 20 straight blade. 230 V/50 Hz can be mounted locally as to local requirements |
| Power Conditioner             | 1400 Watts                                                                                                                       |
| Port Connections: Outlet Port | 1/4 in. NPT                                                                                                                      |



| Model                       | Part No.        | Flow Rate<br>L/min | Purity<br>% | Hydrocarbon<br>Content<br>(excluding<br>methane) ppm | Delivery<br>Pressure<br>psig | Height<br>(H)<br>ins/cm | Width<br>(W)<br>ins/cm | Depth<br>(D)<br>ins/cm | Weight<br>lbs/kg |
|-----------------------------|-----------------|--------------------|-------------|------------------------------------------------------|------------------------------|-------------------------|------------------------|------------------------|------------------|
| NitroFlowLab<br>120 V/60 Hz | <b>N9306213</b> | 10 – 30            | 94.0 – 99.5 | <2                                                   | 116                          | 27.6/70                 | 12.2/90                | 35.4/31                | 205/92.5         |
| NitroFlowLab<br>230 V/50 Hz | <b>N9306214</b> | 10 – 30            | 94.0 – 99.5 | <2                                                   | 116                          | 27.6/70                 | 12.2/90                | 35.4/31                | 205/92.5         |

## N<sub>2</sub>-45 High Flow

### Features and Benefits

- Eliminates the need for costly, dangerous, inconvenient nitrogen cylinders in the laboratory
- Requires no electricity
- Compact design frees up valuable laboratory floor space
- Phthalate-free, no organic vapors

|                                                |                               |
|------------------------------------------------|-------------------------------|
| Ambient Temperature Range                      | 72 °F (22 °C)                 |
| Max Recommended Inlet Air Temperature          | 110 °F (43 °C)                |
| Inlet Air Temperature Range                    | 60 °F – 95 °F (15 °C – 35 °C) |
| Electrical Requirements                        | None                          |
| Port Connections:<br>Outlet Port<br>Inlet Port | 1/4 in. NPT<br>1/4 in. NPT    |



| Model              | Part No.        | Flow Rate<br>L/min | Purity<br>% | Min/Max<br>Operating<br>Pressure | Atmospheric<br>Dewpoint | Height<br>(H)<br>ins/cm | Width<br>(W)<br>ins/cm | Depth<br>(D)<br>ins/cm | Weight<br>(Empty)<br>lbs/kg |
|--------------------|-----------------|--------------------|-------------|----------------------------------|-------------------------|-------------------------|------------------------|------------------------|-----------------------------|
| N <sub>2</sub> -45 | <b>N9306212</b> | 33 – 106           | 95.0 – 99.5 | 60 – 145                         | -58/-50                 | 67/140                  | 24/61                  | 20/50                  | 250/114                     |

## N<sub>2</sub>-22 Mid Flow

### Features and Benefits

- Eliminates the need for costly, dangerous, inconvenient nitrogen cylinders in the laboratory
- Requires no electricity
- Compact design frees up valuable laboratory floor space
- Phthalate-free, no organic vapors

|                                       |                               |
|---------------------------------------|-------------------------------|
| Ambient Temperature Range             | 60 °F – 95 °F (15 °C – 35 °C) |
| Max Recommended Inlet Air Temperature | 110 °F (43 °C)                |
| Inlet Air Temperature Range           | 60 °F – 95 °F (15 °C – 35 °C) |
| Electrical Requirements               | None                          |
| Port Connections:                     |                               |
| Outlet Port                           | 1/4 in. NPT                   |
| Inlet Port                            | 1/4 in. NPT                   |



| Model              | Part No.        | Flow Rate<br>L/min | Purity<br>% | Min/Max<br>Operating<br>Pressure psig | Atmospheric<br>Dewpoint<br>°F/°C | Height<br>(H)<br>ins/cm | Width<br>(W)<br>ins/cm | Depth<br>(D)<br>ins/cm | Weight<br>(Empty)<br>lbs/kg |
|--------------------|-----------------|--------------------|-------------|---------------------------------------|----------------------------------|-------------------------|------------------------|------------------------|-----------------------------|
| N <sub>2</sub> -22 | <b>N9306210</b> | 13 – 38            | 95.0 – 99.5 | 60 – 145                              | -58/-50                          | 51.5/130                | 18 / 45                | 16.2/41                | 80/36                       |

## N<sub>2</sub>-35 Mid Flow

### Features and Benefits

- Eliminates the need for costly, dangerous, inconvenient nitrogen cylinders in the laboratory
- Requires no electricity
- Compact design frees up valuable laboratory floor space
- Phthalate-free, no organic vapors

|                                       |                               |
|---------------------------------------|-------------------------------|
| Ambient Temperature Range             | 60 °F – 95 °F (15 °C – 35 °C) |
| Max Recommended Inlet Air Temperature | 110 °F (43 °C)                |
| Inlet Air Temperature Range           | 60 °F – 95 °F (15 °C – 35 °C) |
| Electrical Requirements               | None                          |
| Port Connections:                     |                               |
| Outlet Port                           | 1/4 in. NPT                   |
| Inlet Port                            | 1/4 in. NPT                   |



| Model              | Part No.        | Flow Rate<br>L/min | Purity<br>% | Min/Max<br>Operating<br>Pressure | Atmospheric<br>Dewpoint<br>°F/°C | Height<br>(H)<br>ins/cm | Width<br>(W)<br>ins/cm | Depth<br>(D)<br>ins/cm | Weight<br>(Empty)<br>lbs/kg |
|--------------------|-----------------|--------------------|-------------|----------------------------------|----------------------------------|-------------------------|------------------------|------------------------|-----------------------------|
| N <sub>2</sub> -35 | <b>N9306211</b> | 20 – 44            | 95.0 – 99.5 | 60 – 145                         | -58/-50                          | 51.5/130                | 18/45                  | 16.2/41                | 80/36                       |

## Ultra Clean Gas Filters for LC/MS

Wrenches to change filters is a thing of the past. There is no longer a need for loosening and tightening fittings every time a trap is changed, which may contaminate your system during the process. Cartridge systems make changing gas filters quick and easy. A base plate allows cartridges to be exchanged without introducing ambient air. Spring-loaded check valves seal when a filter is removed and open only when a new filter has been locked in place.

### Carrier Gas Purity

Carrier gas should contain less than 1 ppm of oxygen, moisture, or other trace contaminants to prevent column degradation, increase column lifetime, and decrease stationary phase bleed. The expense of using high purity gases in combination with carrier gas line purifiers will be offset by longer column lifetime and less GC maintenance.

Contaminants cause ghost peaks to appear during temperature programming and degrade the validity of analytical data. Make-up gas also should be contaminant-free, or baseline fluctuations and excessive detector noise can occur. Detector gases should be free of water and hydrocarbons, or excessive baseline noise can result. Gas purifiers remove these contaminants from gas sources, thereby improving system performance.

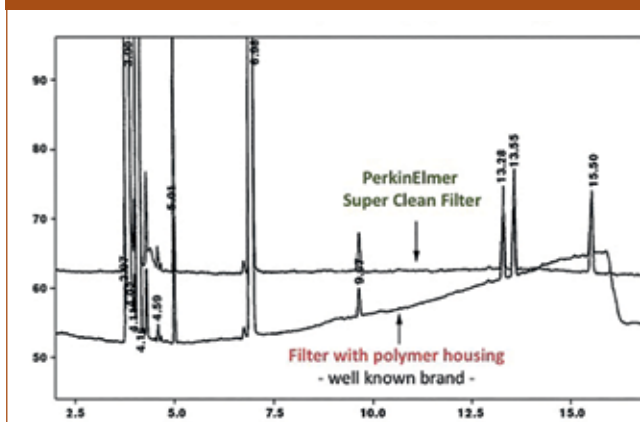
When the easy to read indicators change color it is a signal on a major gas carrier problem; a major leak upstream or downstream, a high concentration of contaminants or to late replacement or filter replacement is overdue. This is the time to swap a filter. To prevent contamination or saturation issues, the filter should be swapped every 12 months, as a minimum, regardless the indicator has changed color or not. Some high throughput applications may need the filter changing every 6 months.



### Features and Benefits

- High purity output insures 99.9999% pure gas
- No tool replacement of filter cartridges, no need to shut gas flow off with quick disconnect base plate
- Easy to read indicators to determine replacement interval
- Helium and Hydrogen specific cartridges available: operational with 15 minute purge after installation
- Safety shielding of glass filter with plastic cover
- Serial numbered for ease of tracking

**Figure 6: Comparing baseline performance with PerkinElmer SuperClean filters vs. a competitive polymer housed filter.**



# Ultra Clean Gas Filters and Kits for LC/MS

To meet the high flow needs of the LC/MS system, the hydrocarbon or moisture filled cartridges are positioned and placed in parallel. The incoming gas stream is split equally between the cartridges and the two streams are re-joined after purification but before the gas exits the base plate. Get up and running with speed and benefit from increased sensitivity by removing unwanted moisture and hydrocarbons.

## Ultra-High Capacity Hydrocarbon Filter Bundle

Up to 20 L/min of hydrocarbon-free nitrogen per minute.

| Capacity               |                            |
|------------------------|----------------------------|
| HC                     | 24 g (as <i>n</i> -butane) |
| Description            | Specification              |
| Outlet Gas Quality (%) | > 99.9999                  |
| Maximum Pressure       | 11 bar (160 psi)           |
| Maximum Flow           | 20 L/min                   |
| Usable For             | Nitrogen                   |
| Dimensions             | 24 cm x Ø 4.4 cm           |
| Weight                 | 0.26 Kg                    |
| Estimated Lifetime     | 3 to 6 months              |
| Part No.               | N9306823                   |



## Ultra-High Capacity Moisture Filter Bundle

High Flow moisture filters are ideal for central purifying solutions. Moisture in carrier gas lines will prematurely degrade oxygen and hydrocarbon traps and increase detector noise. As a precaution, we highly recommend installing a moisture trap before the hydrocarbon and oxygen traps on all carrier gas lines.

| Capacity               |                                                                  |
|------------------------|------------------------------------------------------------------|
| H <sub>2</sub> O       | 14.4 g                                                           |
| Description            | Specification                                                    |
| Outlet Gas Quality (%) | > 99.9999                                                        |
| Maximum Pressure       | 11 bar (160 psi)                                                 |
| Maximum Flow           | 20 L/min                                                         |
| Usable For             | Inert carrier gas, He, H <sub>2</sub> , N <sub>2</sub> , Ar, Air |
| Dimensions             | 24 cm x Ø 4.4 cm                                                 |
| Weight                 | 0.26 Kg                                                          |
| Estimated Lifetime     | 3 to 6 months                                                    |
| Part No.               | N9306824                                                         |



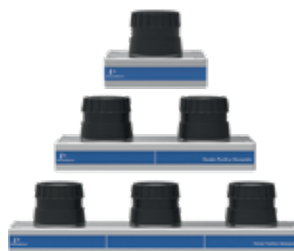
## Ultra Clean Filter Kits for LC/MS

| Description                                                                                                                                                                                                                                     | Qty. | Part No. |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------|
| Ultra Clean 2 High Flow Hydrocarbon Filter Kit – 1/4 in. Brass: Includes (1) 2 position high flow base plate with 1/4 in. Brass inlet/outlet fittings, (2) High Flow Hydrocarbon Traps, and a 1/4 in. Brass Particle Filter                     | Kit  | N9306840 |
| Ultra Clean 2 High Flow Hydrocarbon Filter Kit – 1/4 in. Stainless Steel: Includes (1) 2 position high flow base plate with 1/4 in. Stainless Steel inlet/outlet fittings, (2) High Flow Hydrocarbon Traps, and a 1/4 in. Brass Particle Filter | Kit  | N9306841 |



## Ultra Clean Filter Base Plates for GC/MS

| Description                                                 | Qty. | Part No.        |
|-------------------------------------------------------------|------|-----------------|
| Ultra Clean Base plate 1 Position – 1/4 in. Brass           | 1    | <b>N9306800</b> |
| Ultra Clean Base plate 1 Position – 1/8 in. Brass           | 1    | <b>N9306801</b> |
| Ultra Clean Base plate 1 Position – 1/4 in. Stainless Steel | 1    | <b>N9306802</b> |
| Ultra Clean Base plate 1 Position – 1/8 in. Stainless Steel | 1    | <b>N9306803</b> |
| Ultra Clean Base plate 2 Position – 1/4 in. Brass           | 1    | <b>N9306804</b> |
| Ultra Clean Base plate 2 Position – 1/8 in. Brass           | 1    | <b>N9306805</b> |
| Ultra Clean Base plate 2 Position – 1/4 in. Stainless Steel | 1    | <b>N9306806</b> |
| Ultra Clean Base plate 2 Position – 1/8 in. Stainless Steel | 1    | <b>N9306807</b> |
| Ultra Clean Base plate 3 Position – 1/4 in. Brass           | 1    | <b>N9306810</b> |
| Ultra Clean Base plate 3 Position – 1/8 in. Brass           | 1    | <b>N9306811</b> |
| Ultra Clean Base plate 3 Position – 1/4 in. Stainless Steel | 1    | <b>N9306812</b> |
| Ultra Clean Base plate 3 Position – 1/8 in. Stainless Steel | 1    | <b>N9306813</b> |



## Replacement Filter Bundles for LC/MS

| Description                                                                                    | Qty.                           | Part No.        |
|------------------------------------------------------------------------------------------------|--------------------------------|-----------------|
| Ultra Clean High Flow Hydrocarbon Filter Bundle:<br>Includes (2) High Flow Hydrocarbon Filters | 1 bundle<br>of 2<br>cartridges | <b>N9306823</b> |
| Ultra Clean High Flow Moisture Filter Bundle:<br>Includes (2) High Flow Moisture Filters       | 1 bundle<br>of 2<br>cartridges | <b>N9306824</b> |



## Ultra Clean Replacement Individual Cartridge Filters for GC and GC/MS

| Description                                                               | Qty. | Part No.        |
|---------------------------------------------------------------------------|------|-----------------|
| Ultra Clean Moisture Filter                                               | 1    | <b>N9306814</b> |
| Ultra Clean Oxygen Filter                                                 | 1    | <b>N9306815</b> |
| Ultra Clean Hydrocarbon Filter                                            | 1    | <b>N9306816</b> |
| Ultra Clean Combi (Hydrocarbon/Moisture) Filter                           | 1    | <b>N9306818</b> |
| Ultra Clean Triple (Oxygen/Moisture/Hydrocarbon) Filter                   | 1    | <b>N9306819</b> |
| Ultra Clean Triple (Oxygen/Moisture/Hydrocarbon) Helium-specific Filter   | 1    | <b>N9306820</b> |
| Ultra Clean Triple (Oxygen/Moisture/Hydrocarbon) Hydrogen-specific Filter | 1    | <b>N9306822</b> |





## Base Plates

### Ultra Clean High Flow Base Plates for LC/MS

| Description                                                                                                   | Qty. | Part No. |
|---------------------------------------------------------------------------------------------------------------|------|----------|
| Ultra Clean High Flow base plate 2 position – 1/4 in. Brass: Includes 1/4 in. Stainless Steel particle filter | 1    | N9306808 |
| Ultra Clean High Flow base plate 2 position – 1/4 in. Brass: Includes 1/4 in. Stainless Steel particle filter | 1    | N9306809 |



## Accessories

### Particle Filter for LC/MS

| Description                                                 | Qty. | Part No. |
|-------------------------------------------------------------|------|----------|
| Ultra Clean 0.5 Micron Particle Filter – 1/4 in. Brass      | 1    | N9306856 |
| Ultra Clean 0.5 Micron Particle Filter Cup Replacement Pack | 12   | N9306857 |



### Ultra Clean Base Plate Fittings for LC/MS

| Description                                                   | Qty. | Part No. |
|---------------------------------------------------------------|------|----------|
| Ultra Clean High Flow Connector Set – 1/4 in. Brass           | 6    | N9306850 |
| Ultra Clean High Flow Connector Set – 1/4 in. Stainless steel | 6    | N9306851 |



### Ultra Clean Base Plate Flush Cap Replacement Set for LC/MS

| Description                                     | Qty. | Part No. |
|-------------------------------------------------|------|----------|
| Ultra Clean High Flow Flush Cap Replacement Set | 2    | N9306853 |



### Wall Mounting Bracket for All Cartridge Base Plates

| Description                           | Qty. | Part No. |
|---------------------------------------|------|----------|
| Ultra Clean Wall-mounting Bracket Set | 1    | N9306855 |



### Replacement O-Rings for All Cartridge Base Plates

| Description                                   | Qty. | Part No. |
|-----------------------------------------------|------|----------|
| Ultra Clean Base plate O-Ring Replacement Set | 20   | N9306854 |



## Advanced Filter System

The Advanced Filter System has high-capacity and efficiency levels for oxygen, water and hydrocarbons. The recommended maximum flow rate is 2 L/min with 200 psi maximum operating pressure.

A polycarbonate shield surrounding the glass indicator section of the filter is sealed, unlike other gas filters, the gas flow is secure even if the glass should break. This redundant sealing system and robust construction provides a new level of security in gas filtration.



### Features and Benefits

- Two indicators – for oxygen and moisture
- High capacity and efficiency in a single, easy to replace, cartridge
- Double-seal construction for safety
- Check valves protect gas lines during replacement
- Includes mounting hardware for bench or wall

| Description                                              | Part No.        |
|----------------------------------------------------------|-----------------|
| Advanced Filter System                                   | <b>N9303963</b> |
| Replacement Cartridge for Oxygen, Water and Hydrocarbons | <b>N9303964</b> |
| Manifold and Mounting Hardware                           | <b>N9303139</b> |

| Description  | Capacity | Efficiency |
|--------------|----------|------------|
| Oxygen       | 850 cc   | <5 ppb     |
| Water        | 12 g     | <20 ppb    |
| Hydrocarbons | 8 g      | <5 ppb     |

### Features and Benefits

- High purity output insures 99.9999% pure gas
- No tool replacement of filter cartridges, no need to shut gas flow off with quick disconnect base plate
- Easy to read indicators to determine replacement interval
- Helium and Hydrogen specific cartridges available: operational with 15 minute purge after installation
- Safety shielding of glass filter with plastic cover
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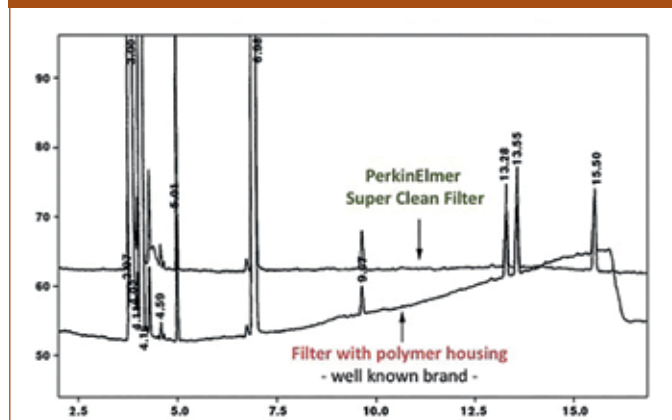
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Figure 5: Comparing baseline performance with PerkinElmer SuperClean filters vs. a competitive polymer housed filter.



# Ultra Clean Gas Filter Kits for GC and GC/MS

Available with different sized fittings, (1/8 in. or 1/4 in.) in brass or stainless steel, these complete filter kits contain everything you need to quickly and easily install into your analytical system; instantly assuring you of a continual high purity gas supply. A full listing of individual replacement cartridges is listed from page 162.

## Triple Filter Kit for MS/ECD/NPD

The triple combination filter kit is ideal for purifying GC/MS carrier gases. It contains oxygen, moisture and hydrocarbon scrubbers in one easy to change economical cartridge. There is a range of brass and stainless steel base plate fittings and options for hydrocarbon trap to be helium or hydrogen specific, in addition to the general carrier gas.

| Description                                                                                                                                                                                                               | Qty. | Part No.        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----------------|
| PerkinElmer Triple (Oxygen/Moisture/Hydrocarbon) Filter Kit – 1/4 in. Brass Kit: Includes (1) 1 position base plate with 1/4 in. Brass inlet/outlet fittings and (1) Oxygen/Moisture/Hydrocarbon Trap                     | Kit  | <b>N9306828</b> |
| PerkinElmer Triple (Oxygen/Moisture/Hydrocarbon) Filter Kit – 1/8 in. Brass kit: Includes (1) 1 position base plate with 1/8 in. Brass inlet/outlet fittings and (1) Oxygen/Moisture/Hydrocarbon Trap                     | Kit  | <b>N9306829</b> |
| PerkinElmer Triple (Oxygen/Moisture/Hydrocarbon) Filter Kit – 1/4 in. Stainless Steel kit: Includes (1) 1 position base plate with 1/4 in. Stainless Steel inlet/outlet fittings and (1) Oxygen/Moisture/Hydrocarbon Trap | Kit  | <b>N9306830</b> |
| PerkinElmer Triple (Oxygen/Moisture/Hydrocarbon) Filter Kit – 1/8 in. Stainless Steel kit: Includes (1) 1 position base plate with 1/8 in. Stainless Steel inlet/outlet fittings and (1) Oxygen/Moisture/Hydrocarbon Trap | Kit  | <b>N9306831</b> |
| PerkinElmer Triple filter (Oxygen/Moisture/Hydrocarbon)                                                                                                                                                                   | 1    | <b>N9306819</b> |
| PerkinElmer Triple filter (Oxygen/Moisture/Hydrocarbon): Helium specific filter                                                                                                                                           | 1    | <b>N9306820</b> |
| PerkinElmer Triple filter (Oxygen/Moisture/Hydrocarbon): Hydrogen specific filter                                                                                                                                         | 1    | <b>N9306822</b> |



| Configuration | Benefit                                   |
|---------------|-------------------------------------------|
| GC/MS         | Higher data accuracy and less maintenance |
| GC/ECD        | Greater sensitivity                       |
| GC/TCD        | Greater sensitivity and less maintenance  |

## Complete Triple Filter Bundle Kit for FID

This complete filter kit is the perfect all-in-one solution for purifying Flame Ionization Detector (FID) fuel gases together with the carrier gas. The triple filter simultaneously hydrocarbons, moisture and oxygen are removed from the carrier gas and combi filter removes both moisture and hydrocarbons from the hydrogen and air fuel gases. The kit consists of one triple filter and two combi filters (hydrogen and air) together with one three position base plate. There are a range of base plate fittings options available.

| Description                                                                                                                                                                                                              | Qty. | Part No.        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----------------|
| PerkinElmer 3 Filters Kit – 1/4 in. Brass: Includes (1) 3 position base plate with 1/4 in. Brass inlet/outlet fittings and (1) Oxygen/Moisture/Hydrocarbon Trap and (2) Hydrocarbon/Moisture Traps                       | Kit  | <b>N9306842</b> |
| PerkinElmer 3 Filters Kit – 1/8 in. Brass: Includes (1) 3 position base plate with 1/8 in. Brass inlet/outlet fittings and (1) Oxygen/Moisture/Hydrocarbon Trap and (2) Hydrocarbon/Moisture Traps                       | Kit  | <b>N9306843</b> |
| PerkinElmer 3 Filters Kit – 1/4 in. stainless steel: Includes (1) 3 position base plate with 1/4 in. stainless steel inlet/outlet fittings and (1) Oxygen/ Moisture/ Hydrocarbon Trap and (2) Hydrocarbon/Moisture Traps | Kit  | <b>N9306844</b> |
| PerkinElmer 3 Filters Kit – 1/8 in. stainless steel: Includes (1) 3 position base plate with 1/8 in. stainless steel inlet/outlet fittings and (1) Oxygen/Moisture/Hydrocarbon Trap and (2) Hydrocarbon/Moisture Traps   | Kit  | <b>N9306845</b> |
| PerkinElmer triple filter – (Oxygen/Moisture/Hydrocarbon)                                                                                                                                                                | 1    | <b>N9306819</b> |
| PerkinElmer Combi (Hydrocarbon/Moisture) Filter                                                                                                                                                                          | 1    | <b>N9306818</b> |
| PerkinElmer Filter Bundles: Includes (1) Oxygen/Moisture/Hydrocarbon Trap and (2) Hydrocarbon/Moisture Traps                                                                                                             | 3    | <b>N9306826</b> |



| Configuration | Benefit                                  |
|---------------|------------------------------------------|
| GC/FID        | Improved reproducibility and sensitivity |

# Ultra Clean Gas Filters for GC and GC/MS

The easy to use leak-tight cartridge system enables rapid change of exhausted cartridges without interrupting supply or system operation. A wide range of individual cartridges or combination cartridges are available to suit a variety of applications.

## Ultra-High Capacity Moisture Filter

Moisture in carrier gas lines will prematurely degrade oxygen and hydrocarbon traps and increase detector noise. As a precaution, we highly recommend installing a moisture trap before the hydrocarbon and oxygen traps on all carrier gas lines.

| Capacity               |                                                                  |
|------------------------|------------------------------------------------------------------|
| H <sub>2</sub> O       | 7.2 g                                                            |
| Description            | Specification                                                    |
| Outlet Gas Quality (%) | > 99.9999                                                        |
| Maximum Pressure       | 11 bar (160 psi)                                                 |
| Maximum Flow           | 7 L/min                                                          |
| Usable For             | Inert carrier gas, He, H <sub>2</sub> , N <sub>2</sub> , Ar, Air |
| Dimensions             | 24 cm x Ø 4.4 cm                                                 |
| Weight                 | 0.26 Kg                                                          |
| Part No.               | N9306814                                                         |



## Ultra-High Capacity Oxygen Filter

Oxygen is a column killer – it is present even in UHP gases. Because oxygen can enter a gas line at any fitting or during gas bottle exchange, the oxygen trap should be the last connection before the gas line enters the chromatograph.

| Capacity               |                                                             |
|------------------------|-------------------------------------------------------------|
| O <sub>2</sub>         | 150 mL                                                      |
| Description            | Specification                                               |
| Outlet Gas Quality (%) | > 99.9999                                                   |
| Maximum Pressure       | 11 bar (160 psi)                                            |
| Maximum Flow           | 7 L/min                                                     |
| Usable For             | Inert carrier gas, He, H <sub>2</sub> , N <sub>2</sub> , Ar |
| Dimensions             | 24 cm x Ø 4.4 cm                                            |
| Weight                 | 0.26 Kg                                                     |
| Part No.               | N9306815                                                    |



## Ultra-High Capacity Hydrocarbon Filter

Use a hydrocarbon trap if your gas has a potential source of hydrocarbon contaminants or if you suspect you are observing carrier gas ghost peaks. Install the hydrocarbon trap after the moisture trap, to prevent moisture from degrading the hydrocarbon-trapping ability of the activated carbon in the hydrocarbon trap.

| Capacity               |                                                                  |
|------------------------|------------------------------------------------------------------|
| HC                     | 12 g (as <i>n</i> -butane)                                       |
| Description            | Specification                                                    |
| Outlet Gas Quality (%) | > 99.9999                                                        |
| Maximum Pressure       | 11 bar (160 psi)                                                 |
| Maximum Flow           | 7 L/min                                                          |
| Usable For             | Inert carrier gas, He, H <sub>2</sub> , N <sub>2</sub> , Ar, Air |
| Dimensions             | 24 cm x Ø 4.4 cm                                                 |
| Weight                 | 0.26 Kg                                                          |
| Part No.               | N9306816                                                         |



### High Capacity Combi Filter

This filter is perfect for purifying Flame Ionization Detector (FID) fuel gases, removing both moisture and hydrocarbons. Using this filter for FID hydrogen and air will produce a stable baseline, improving overall reproducibility and sensitivity. Ideal for use in combination with a zero air generator.

| Capacity               |                                                                  |
|------------------------|------------------------------------------------------------------|
| H <sub>2</sub> O       | 3.5 g                                                            |
| HC                     | 6 g (as <i>n</i> -butane)                                        |
| Description            | Specification                                                    |
| Outlet Gas Quality (%) | > 99.9999                                                        |
| Maximum Pressure       | 11 bar (160 psi)                                                 |
| Maximum Flow           | 7 L/min                                                          |
| Usable For             | Inert carrier gas, He, H <sub>2</sub> , N <sub>2</sub> , Ar, Air |
| Dimensions             | 24 cm x Ø 4.4 cm                                                 |
| Weight                 | 0.26 Kg                                                          |
| Part No.               | N9306818                                                         |



### High Capacity Triple Filter

The triple trap is ideal for purifying carrier gas. It contains oxygen, moisture and hydrocarbon scrubbers in one easy to change economical cartridge.

| Capacity               |                                                             |
|------------------------|-------------------------------------------------------------|
| H <sub>2</sub> O       | 1.8 g                                                       |
| O <sub>2</sub>         | 75 mL                                                       |
| HC                     | 4 g (as <i>n</i> -butane)                                   |
| Description            | Specification                                               |
| Outlet Gas Quality (%) | > 99.9999                                                   |
| Maximum Pressure       | 11 bar (160 psi)                                            |
| Maximum Flow           | 7 L/min                                                     |
| Usable For             | Inert carrier gas, He, H <sub>2</sub> , N <sub>2</sub> , Ar |
| Dimensions             | 24 cm x Ø 4.4 cm                                            |
| Weight                 | 0.26 Kg                                                     |
| Part No.               | N9306819                                                    |



### High Capacity Triple Filter Helium Specific

The helium-specific triple trap is ideal for purifying helium in GC/MS systems. This trap is packed and purged under helium and contains oxygen, moisture and hydrocarbon scrubbers in one cartridge.

| Capacity               |                           |
|------------------------|---------------------------|
| H <sub>2</sub> O       | 1.8 g                     |
| O <sub>2</sub>         | 75 mL                     |
| HC                     | 4 g (as <i>n</i> -butane) |
| Description            | Specification             |
| Outlet Gas Quality (%) | > 99.9999                 |
| Maximum Pressure       | 11 bar (160 psi)          |
| Maximum Flow           | 7 L/min                   |
| Usable For             | He                        |
| Dimensions             | 24 cm x Ø 4.4 cm          |
| Weight                 | 0.26 Kg                   |
| Part No.               | N9306820                  |



## High Capacity Triple Filter Hydrogen Specific

The hydrogen-specific triple trap is ideal for purifying hydrogen in GC/MS systems. This trap is packed and purged under hydrogen and contains oxygen, moisture and hydrocarbon scrubbers in one cartridge.

| Capacity               |                           |
|------------------------|---------------------------|
| H <sub>2</sub> O       | 1.8 g                     |
| O <sub>2</sub>         | 75 mL                     |
| HC                     | 4 g (as <i>n</i> -butane) |
| Description            | Specification             |
| Outlet Gas Quality (%) | > 99.9999                 |
| Maximum Pressure       | 11 bar (160 psi)          |
| Maximum Flow           | 7 L/min                   |
| Usable For             | H <sub>2</sub>            |
| Dimensions             | 24 cm x Ø 4.4 cm          |
| Weight                 | 0.26 Kg                   |
| Part No.               | N9306822                  |



## Ultra Clean Replacement Individual Cartridge Filters for GC and GC/MS

| Description                                                               | Qty. | Part No. |
|---------------------------------------------------------------------------|------|----------|
| Ultra Clean Moisture Filter                                               | 1    | N9306814 |
| Ultra Clean Oxygen Filter                                                 | 1    | N9306815 |
| Ultra Clean Hydrocarbon Filter                                            | 1    | N9306816 |
| Ultra Clean Combi (Hydrocarbon/Moisture) Filter                           | 1    | N9306818 |
| Ultra Clean Triple (Oxygen/Moisture/Hydrocarbon) Filter                   | 1    | N9306819 |
| Ultra Clean Triple (Oxygen/Moisture/Hydrocarbon) Helium-Specific Filter   | 1    | N9306820 |
| Ultra Clean Triple (Oxygen/Moisture/Hydrocarbon) Hydrogen-Specific Filter | 1    | N9306822 |



## Accessories

### Ultra Clean Base Plate Flush Cap Replacement Set for GC/MS

| Description                           | Qty. | Part No. |
|---------------------------------------|------|----------|
| Ultra Clean Flush Cap Replacement Set | 2    | N9306852 |



### Wall Mounting Bracket for All Cartridge Base Plates

| Description                           | Qty. | Part No. |
|---------------------------------------|------|----------|
| Ultra Clean Wall-Mounting Bracket Set | 1    | N9306855 |



### Replacement O-Rings for All Cartridge Base Plates

| Description                                   | Qty. | Part No. |
|-----------------------------------------------|------|----------|
| Ultra Clean Base Plate O-Ring Replacement Set | 20   | N9306854 |



### Ultra Clean Base Plate Fittings for LC/MS

| Description                                         | Qty. | Part No. |
|-----------------------------------------------------|------|----------|
| Ultra Clean Connector Set – 1/4 in. Brass           | 6    | N9306846 |
| Ultra Clean Connector Set – 1/8 in. Brass           | 6    | N9306847 |
| Ultra Clean Connector Set – 1/4 in. Stainless Steel | 6    | N9306848 |
| Ultra Clean Connector Set – 1/8 in. Stainless Steel | 6    | N9306849 |



# Click-On Inline Super Clean Purifiers

Using the Click-On Connectors lets you change the trap without introducing contaminants into your system. Click-On connectors can replace a trap, without introducing impurities into the system. This in turn eliminates the need to flush the system.

The ability to add a Click-On Inline Super Clean™ Indicator after the stainless steel trap gives the user a clear visual indication of when to change the filter. This indicator may also be used as a standalone trap.

## Features and Benefits

- Reduce system downtime with Click-On fast connectors
- No open gas line when changing the trap
- Helium Specific Glass Indicating Triple Trap is ideal for GC/MS



## Stainless Steel Traps

| Description                                            | Part No.        |
|--------------------------------------------------------|-----------------|
| Moisture Trap                                          | <b>N9306100</b> |
| Oxygen Trap                                            | <b>N9306101</b> |
| Hydrocarbons Trap                                      | <b>N9306102</b> |
| Combination: Oxygen/Moisture Trap                      | <b>N9306103</b> |
| Combination: Moisture/Hydrocarbons Trap                | <b>N9306105</b> |
| Triple: Oxygen/Moisture/Hydrocarbons Trap              | <b>N9306104</b> |
| Triple Gas Specific (He): Oxygen/Moisture/Hydrocarbons | <b>N9306106</b> |

## Stainless Steel Trap Kits

| Description                                            | Connector (Qty.)            | Part No.        |
|--------------------------------------------------------|-----------------------------|-----------------|
| Combination: Oxygen/Moisture Trap                      | 1/8 in. Brass (2)           | <b>N9306108</b> |
| Combination: Oxygen/Moisture Trap                      | 1/8 in. Stainless Steel (2) | <b>N9306109</b> |
| Combination: Moisture/Hydrocarbons Trap                | 1/8 in. Brass (2)           | <b>N9306117</b> |
| Combination: Moisture/Hydrocarbons Trap                | 1/8 in. Stainless Steel (2) | <b>N9306118</b> |
| Triple: Oxygen/Moisture/Hydrocarbons Trap              | 1/8 in. Brass (2)           | <b>N9306110</b> |
| Triple: Oxygen/Moisture/Hydrocarbons Trap              | 1/8 in. Stainless Steel (2) | <b>N9306111</b> |
| Triple Gas Specific (He): Oxygen/Moisture/Hydrocarbons | 1/8 in. Brass (2)           | <b>N9306112</b> |
| Triple Gas Specific (He): Oxygen/Moisture/Hydrocarbons | 1/8 in. Stainless Steel (2) | <b>N9306113</b> |

## Helium Specific Glass Indicating Triple Trap for your PerkinElmer Clarus GC/MS

This trap contains oxygen, moisture and hydrocarbons adsorbents in one trap and is packed and purged under helium.

The glass indicating trap clearly shows when the filter needs to be replaced with the use of color changes. The packing material is a silica-based environmentally friendly substitute for cobalt dioxide (blue) in the moisture indicator.

Available as a kit with the necessary 1/8 in. brass connectors, and as a replacement trap. This system is easy to install.

| Description                                                             | Connector (Qty.)            | Part No.        |
|-------------------------------------------------------------------------|-----------------------------|-----------------|
| Indicating Glass Triple Gas Specific (He): Oxygen/Moisture/Hydrocarbons | Not Included                | <b>N9306107</b> |
| Indicating Glass Triple Gas Specific (He): Oxygen/Moisture/Hydrocarbons | 1/8 in. Brass (2)           | <b>N9306114</b> |
| Indicating Glass Triple Gas Specific (He): Oxygen/Moisture/Hydrocarbons | 1/8 in. Stainless Steel (2) | <b>N9306116</b> |

## Product Specifications

| Purifier Type                                  | Gas Quality* | Max Pressure    | Max Flow | Use For                                      | H <sub>2</sub> O | Capacity O <sub>2</sub> | Hydrocarbons               | Est. Lifetime |
|------------------------------------------------|--------------|-----------------|----------|----------------------------------------------|------------------|-------------------------|----------------------------|---------------|
| Moisture                                       | 100.00%      | 11 bar, 160 psi | 25 L/min | Inert carrier gas<br>He, Air, H <sub>2</sub> | 21 g             | —                       | —                          | > 3 years     |
| Oxygen                                         | 100.00%      | 11 bar, 160 psi | 25 L/min | Inert carrier gas                            | —                | 3,000 mL                | —                          | > 3 years     |
| Hydrocarbons                                   | 100.00%      | 11 bar, 160 psi | 25 L/min | Inert carrier gas<br>Air, H <sub>2</sub>     | —                | —                       | 36 g (as <i>n</i> -butane) | > 3 years     |
| Combination Moisture/Hydrocarbons              | 100.00%      | 11 bar, 160 psi | 25 L/min | Inert carrier gas<br>He, Air, H <sub>2</sub> | 10 g             | —                       | 18 g (as <i>n</i> -butane) | > 2 years     |
| Indicating Triple Moisture/Oxygen/Hydrocarbons | 100.00%      | 11 bar, 160 psi | 25 L/min | Inert carrier gas<br>He                      | 3 g              | 400 mL                  | 5 g (as <i>n</i> -butane)  | > 1 year      |
| Triple Moisture/ Oxygen/ Hydrocarbons          | 100.00%      | 11 bar, 160 psi | 25 L/min | Inert carrier gas                            | 6 g              | 1,000 mL                | 12 g (as <i>n</i> -butane) | > 2 years     |

\* Results @ 2 L/min



### Hydrocarbon Trap



| Description      | Part No. |
|------------------|----------|
| Hydrocarbon Trap | N9301192 |

Use our activated charcoal in-line trap to remove gaseous hydrocarbons (C5 and heavier) from nitrogen, hydrogen and inert carrier gas supplies. Recommended for use with purge and trap apparatuses, high-sensitivity FID operations and with GC carrier gases for trace analyses. Frits in each end prevent particulates from entering the gas stream. Trap is shipped filled with helium. Maximum pressure is 1000 psi (69 bar). Dimensions are 5 x 37 cm including fittings. Weight is 1.0 kg.

### High Capacity Hydrocarbon Trap



| Description                    | Part No. |
|--------------------------------|----------|
| High Capacity Hydrocarbon Trap | N9301208 |

- Eliminates potential hydrocarbon background to insure best LC/MS results
- Contains 750 cc of preconditioned activated charcoal
- Stainless steel body. 1/4 in. brass compression fittings with ferrules for installation
- Maximum pressure 200 psi
- Recommended flow rate up to 2 Liters/minute
- Will remove hydrocarbon impurities (50 ppm or less) from inert gases, nitrogen and hydrogen at room temperature to low ppb range
- Capacity of 67 g. of hydrocarbons C5 and heavier
- 10 µm stainless steel porous frits protect gas stream from particulates
- Individually helium leak tested. Shipped filled with helium
- 2 in. OD x 20 in. L (including fittings)
- Weight 3.5 lb/1.6 kg

### Indicating Oxygen Trap



| Description            | Part No. |
|------------------------|----------|
| Indicating Oxygen Trap | N9301191 |

This high-efficiency indicator trap reduces oxygen to less than 0.1 ppm. Changes color from bright green to gray when adsorption capacity is depleted. Oxygen capacity for this compact unit is 0.05 g at STP. The non-contaminating, heavy-wall inner glass tube of adsorbent is protected from breakage by the outer plastic tube. Maximum pressure is 100 psi (6.9 bar). Dimensions are 3.2 x 26 cm including fittings. Weight is 0.2 kg.

### Oxygen Trap



| Description | Part No. |
|-------------|----------|
| Oxygen Trap | N9301179 |

This high-capacity, high-efficiency trap is used for long-term protection of capillary column stationary phases against oxidation at GC operating temperatures. Can remove 3.5 g of oxygen and has an output efficiency of less than 10 ppb oxygen concentration at the outlet. Effective at removing sulfur compounds, such as hydrogen sulfide and mercaptans. Intended for use with non-oxidizing gases such as He, Ar, N<sub>2</sub>, H<sub>2</sub> or CH<sub>4</sub>, containing less than 1% oxygen. The trap is filled with 500 cc of active oxygen adsorbent that binds covalently with oxygen; no gas is generated from this reaction. Maximum pressure is 1000 psi (69 bar). Dimensions are 5 x 37 cm including fittings, weight is 1.2 kg.

### Safe Glass Moisture Trap



| Description              | Part No. |
|--------------------------|----------|
| Safe Glass Moisture Trap | N9301193 |

Gas contacts only glass, metal and the adsorbents for purity. The Drierite® indicator and molecular sieve 5A are packed in glass protected by an outer plastic tube in the event that the glass breaks. Unique loading design allows operation in any orientation without channeling. Designed for GC detectors that require high purity gases and recommended for ELCD and ECD systems where moisture and contamination are a problem. Maximum pressure is 100 psi (6.9 bar). Dimensions are 3.2 x 26 cm including fittings. Weight is 0.3 kg.

### Gas In-line Filter



| Description        | Part No. |
|--------------------|----------|
| Gas In-line Filter | N9301178 |

The Gas In-line Filter Trap removes moisture, oil and dust from nitrogen or inert supply gases. It has 400 cc total volume of molecular sieve 5A and an indicator in a clear acrylic tube. The indicating Drierite® changes color at low relative humidity indicating that the packing must be changed. Base-plate version is available for free-standing orientation. Maximum pressure is 100 psi (6.9 bar). Dimensions are 6 x 43 cm including fittings. Weight is 1.0 kg.

## Gas Generators – Simply a Smarter Choice

Analytical gas generators can remove the requirement for high-pressure cylinder gases and are typically placed next to the instrument they are servicing. This removes any need for extended gas lines and negates any associated problems impacting on purity, cost and convenience.

The latest gas generators from PerkinElmer utilise new technologies in adsorbents, catalysts, and specialist micro dryers to produce a continual supply of ultra-high purity gases to your instrumentation. This all but eliminates the introduction of impurities, which can be reduced further by the installation of in-line gas purifiers.

## Hydrogen Generators

PerkinElmer offer a range of hydrogen generators to cater for the varying configurations of gas supply required across different laboratories and applications.

### Hydrogen Generator Options and Capabilities

| Model                | GC Detector Gas Applications | GC, GC/MS Carrier Gas Applications | Zero Air | Automatic Cascading Capability | Desiccant Cartridge to Replace |
|----------------------|------------------------------|------------------------------------|----------|--------------------------------|--------------------------------|
| PG Plus              | ■                            |                                    |          | ■                              |                                |
| NM Plus              | ■                            | ■                                  |          | ■                              |                                |
| FID Gas station Plus | ■                            | ■                                  | ■        |                                |                                |
| High Purity          | ■                            |                                    |          |                                | ■                              |
| Ultra High Purity    | ■                            | ■                                  |          |                                |                                |

## PG-H<sub>2</sub> Plus Hydrogen Generators

The PG (Pure Gas) hydrogen generators employ the newest membrane technology available for the safe production of pure hydrogen gas. This patented design is ideal for operation with gas analyzers, as fuel gas for flame tools, or as a source for pure hydrogen in plasma chambers and other isolated environments. Electrolytic membrane technology is preferred over alternative hydrogen generating techniques because it is clean, requires less maintenance and there is no need to store chemicals to maintain operation. The generators offer silent operation and require only deionized or distilled water with no caustic solutions which can affect the purity of the hydrogen.



### A Safe Source of Hydrogen

The PG-H<sub>2</sub> generators have an auto shutoff procedure that places the units in standby in the event of an internal error and selectable alarms allow the user to be informed whenever operating conditions vary from the set point. They are CE CSA FCC certified.

### Applications

This series of generators are ideal for use with GC detectors such as FID, NPD, TCD and FPD.

### Technical Specifications for PG-H<sub>2</sub> Plus Models

| Description               | Specification                                |
|---------------------------|----------------------------------------------|
| Purity                    | 99.999%/hydrocarbon free < 0.1 ppm           |
| Delivery Pressure         | 20 – 160 psig/1.4-11 barg                    |
| Height                    | 43 cm (16.9 in.)                             |
| Width                     | 23 cm (9.1 in.)                              |
| Depth                     | 36 cm (14.2 in.)                             |
| Weight                    | 20 kg (44 lbs)                               |
| Ambient Temperature Range | -20 °C to + 60 °C (-4 °F to + 140 °F)        |
| Water Quality             | Deionized or distilled <10 uS conductivity   |
| Supply Voltage Range      | 230 V/50 – 60 Hz – 110 V/60 Hz – 100 V/60 Hz |
| Fitting                   | 1/8 in. for the H <sub>2</sub> outlet        |

### PG-H<sub>2</sub> Plus Generator Models

| Flow Rate  | Part No.        |
|------------|-----------------|
| 100 mL/min | <b>N9308577</b> |
| 160 mL/min | <b>N9308578</b> |
| 250 mL/min | <b>N9308579</b> |
| 500 mL/min | <b>N9308580</b> |

### PG-H<sub>2</sub> Plus Generator Replacement Parts

| Description   | Part No.        |
|---------------|-----------------|
| Deionizer Bag | <b>N9307097</b> |

# NM-H<sub>2</sub> Plus Hydrogen Generators

The NM (No Maintenance) series of hydrogen generators employ the newest membrane technology available for the safe production of pure hydrogen gas. This patented design is ideal for operation with gas analyzers, as fuel gas for flame tools, or as a source for pure hydrogen in plasma chambers and other isolated environments.

Electrolytic membrane technology is preferred over alternative hydrogen generating techniques. The generators offer silent operation and require only deionized or distilled water with no caustic solutions which can affect the purity of the hydrogen.

## No Maintenance

The proprietary auto drying technology has facilitated a design that does not require a desiccant cartridge, yet produces a constant supply of dry, ultra-high purity hydrogen. As the PG-H<sub>2</sub> and the NM hydrogen generators have an auto shutoff procedure that places the units in standby in the event of an internal error and selectable alarms allow the user to be informed whenever operating conditions vary from the set point.

## Applications

The NM-H<sub>2</sub> Hydrogen Pure Gas Generators enhances the high performance of the PG Plus series, with the addition of a unique no maintenance purification system. It provides a stream of ultra-high purity hydrogen for both carrier gas and detector gas applications, including MS.

## Robust Supply – 100% Up Time

Multiple generators can be set up in parallel to spread the load of gas generation, known as cascading. Building in a level of spare capacity with a master/slave set up ensures that there is no interruption in supply.

The NM-H<sub>2</sub> generators are the only generators on the market that automatically cascade, no lab personal intervention is required ensuring the smooth running of your laboratory around the clock.



## Technical Specifications for NM-H<sub>2</sub> Plus Models

| Description               | Specification                                |
|---------------------------|----------------------------------------------|
| Purity                    | 99.9999%/hydrocarbon free < 0.1 ppm          |
| Delivery Pressure         | 20 – 160 psig/1.4 – 11 barg                  |
| Height                    | 43 cm (16.9 in.)                             |
| Width                     | 23 cm (9.1 in.)                              |
| Depth                     | 36 cm (14.2 in.)                             |
| Weight                    | 20 kg (44 lbs)                               |
| Ambient Temperature Range | -20 °C to + 60 °C (-4 °F to + 140 °F)        |
| Water Quality             | Deionized or distilled <10 uS conductivity   |
| Supply Voltage Range      | 230 V/50 – 60 Hz – 110 V/60 Hz – 100 V/60 Hz |
| Fitting                   | 1/8 in. for the H <sub>2</sub> outlet        |

## NM-H<sub>2</sub> Plus Generator Models

| Flow Rate   | Part No. |
|-------------|----------|
| 100 mL/min  | N9308581 |
| 160 mL/min  | N9308582 |
| 250 mL/min  | N9308583 |
| 500 mL/min  | N9308584 |
| 1000 mL/min | N9308585 |

## PG-H<sub>2</sub> Plus NM-H<sub>2</sub> Plus Generator Accessories

| Description                                                         | Part No. |
|---------------------------------------------------------------------|----------|
| I/O Board                                                           | N9307094 |
| Cable for Cascading*                                                | N9307093 |
| Remote Control RS-232<br>(includes converter, cables and software)* | N9307095 |
| Auto Refill *                                                       | N9307096 |

\* Requires I/O Board

## NM-H<sub>2</sub> Plus Generator Replacement Parts

| Description   | Part No. |
|---------------|----------|
| Deionizer Bag | N9307097 |

## High Purity Hydrogen Generators

Our high purity hydrogen gas generators offer the optimum combination of safe operation, reliability and performance. Utilizing field proven PEM cell technology, hydrogen is produced on demand from deionized water and electricity at low pressure and with minimal stored volume. Innovative control software allows unrivalled operational safety and reliability. These models ideally supply fuel gas to all known GC combustion detectors used in today's laboratory workflows.

### Features and Benefits

- Ultra safe operation
- >99.999% purity
- High purity guaranteed, 24/7
- Class leading PEM cell featuring 2-year warranty as standard
- CE, UL and CSA approved
- Low life cycle cost, excellent return on investment
- Large capacity water tank with optional Auto Water Fill



### Technical Specifications

| Description               | Specification                                                                              |
|---------------------------|--------------------------------------------------------------------------------------------|
| Purity                    | 99.999%                                                                                    |
| Delivery Pressure         | 5 – 100 psi/g                                                                              |
| Height                    | 46 cm (17.9 in.)                                                                           |
| Width                     | 35 cm (13.5 in.)                                                                           |
| Depth                     | 44 cm (17.2 in.)                                                                           |
| Weight                    | 20 kg (44.1 lbs)                                                                           |
| Ambient Temperature Range | +5 °C to +40 °C (+41 °F to +104 °F)                                                        |
| Water Quality             | Deionized, ASTM® II, >1MΩ, <1 μS, filtered to <100 μm                                      |
| Supply Voltage Range      | Universal 120/230 V ± 10% (60/50 Hz)                                                       |
| Fitting                   | Hydrogen Outlet: 1/8 in. compression fitting<br>Water Drain: quick release push in fitting |

### High Purity Generator Models

| Flow Rate              | Part No.      |
|------------------------|---------------|
| 160 mL/min (20H Model) | N9303225      |
| 250 mL/min (40H Model) | N9303226      |
| 500 mL/min (60H Model) | N9303227      |
| 1000 mL/min            | Not Available |

# Ultra High Purity Hydrogen Generators

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- High purity guaranteed, 24/7
- Class leading PEM cell featuring 2-year warranty as standard
- CE, UL and CSA approved
- Low life cycle cost, excellent return on investment
- Large capacity water tank with optional Auto Water Fill



## Technical Specifications

| Description               | Specification                                                                              |
|---------------------------|--------------------------------------------------------------------------------------------|
| Purity                    | 99.99995%                                                                                  |
| Delivery Pressure         | 10 – 100 psi/g                                                                             |
| Height                    | 46 cm (17.9 in.)                                                                           |
| Width                     | 35 cm (13.5 in.)                                                                           |
| Depth                     | 47 cm (18.5 in.)                                                                           |
| Weight                    | 21 kg (45.2 lbs)*                                                                          |
| Ambient Temperature Range | +5 °C to +40 °C (+41 °F to +104 °F)                                                        |
| Water Quality             | Deionized, ASTM® II, >1MΩ, <1 μS, filtered to <100 μm                                      |
| Supply Voltage Range      | Universal 120/230 V ± 10% (60/50 Hz)                                                       |
| Fitting                   | Hydrogen Outlet: 1/8 in. compression fitting<br>Water Drain: quick release push in fitting |

\* 1100 mL/min model is 24 kg (51.8 lbs)

## Ultra High Purity Generator Models

| Flow Rate                   | Part No. |
|-----------------------------|----------|
| 160 mL/min (20H-MD Model)   | N9303201 |
| 250 mL/min (40H-MD Model)   | N9303202 |
| 500 mL/min (60H-MD Model)   | N9303203 |
| 1100 mL/min (110H-MD Model) | N9303204 |

## FID Gas Station

The FID gas station is a novel system that combines the reliability of the high purity PG or ultrahigh purity NM hydrogen generators with the superior performance of the zero air generators into a single compact instrument. Designed with space saving in mind, it sits directly under the GC to conserve bench space. You can also apply the FID gas station to GCMS systems with the simple addition of a drawer tray for the MS to rest on. If you want to benefit from the space saving design, but only require a H<sub>2</sub> generator than that is also an option.

**NEW**



### Features and Benefits

- H<sub>2</sub> flow rate from 100-1000 mL/min
- H<sub>2</sub> pressure up to 11 bar
- Zero air flow rates 5 L/min
- Zero air purity <0.1 ppm
- Minimal maintenance
- CE, CSA, FCC certified

### Technical Specifications

| Description                          | Capability             | Flow Rate                       | Part No.        |
|--------------------------------------|------------------------|---------------------------------|-----------------|
| FID Station PG Plus                  | H <sub>2</sub>         | 150 mL/min                      | <b>N9300023</b> |
| FID Station PG Plus                  | H <sub>2</sub>         | 260 mL/min                      | <b>N9300024</b> |
| FID Station NM Plus                  | H <sub>2</sub>         | 150 mL/min                      | <b>N9300020</b> |
| FID Station NM Plus                  | H <sub>2</sub>         | 350 mL/min                      | <b>N9300021</b> |
| FID Station NM Plus                  | H <sub>2</sub>         | 650 mL/min                      | <b>N9300022</b> |
| FID Station PG Plus                  | H <sub>2</sub> and Air | 150 mL/min + Air<br>1500 mL/min | <b>N9300018</b> |
| FID Station PG Plus                  | H <sub>2</sub> and Air | 260 mL/min + Air<br>1500 mL/min | <b>N9300019</b> |
| FID Station NM Plus                  | H <sub>2</sub> and Air | 150 mL/min + Air<br>1500 mL/min | <b>N9300015</b> |
| FID Station NM Plus                  | H <sub>2</sub> and Air | 350 mL/min + Air<br>1500 mL/min | <b>N9300016</b> |
| FID Station NM Plus                  | H <sub>2</sub> and Air | 650 mL/min + Air<br>1500 mL/min | <b>N9300017</b> |
| FID station NM Plus extension drawer |                        |                                 | <b>N9308567</b> |

## Zero and Ultra Air Generators

The Zero and Ultra Zero Air Generators produce laboratory grade purified air for FID (flame ionization detectors) and other detectors. Designed with safety and convenience in mind, this system will generate purified and hydrocarbon free air from an existing in-house oil-free compressed air supply, eliminating the need for inconvenient high-pressure gas cylinders. Eliminating gas cylinders reduces annual operating costs associated with materials, labor, and down-time.

The Zero/Ultra Zero Air Generator series removes hydrocarbon pollutants to less than 0.1 ppm, and all forms of particles. Operation of the generator requires low levels of electrical power consumption. This complete turnkey system is engineered with the highest quality components, is easy to install, and requires minimal annual maintenance. The Ultra Zero Air Generators will remove CO and hydrocarbon pollutants to less than 0.1 ppm, and NOx contaminants to 1 ppm. Carbon dioxide is also removed to about 1 ppm levels. They are CE CSA FCC certified.

### Specifications for Zero and Ultra Zero Air

| Description                               | Specification  |
|-------------------------------------------|----------------|
| Outlet Hydrocarbon Concentration          | < 0.1 ppm      |
| Outlet Carbon Monoxide Concentration      | < 0.1 ppm      |
| Outlet Particles < 0.5 Microns Removed    | 99.99%         |
| Outlet Air Temperature                    | Ambient +15 °C |
| Max Inlet Hydrocarbon Concentration       | 100 ppm        |
| Maximum Outlet Pressure                   | 6.5 bar        |
| Max Inlet Carbon Monoxide Concentration   | 50 ppm         |
| Max Inlet Temperature                     | 40 °C          |
| Inlet Pressure Range (regulated to 7 bar) | 4.5 – 10 bar   |
| Inlet Port                                | 1/4 in. NPT    |
| Outlet Port                               | 1/8 in. NPT    |

### Specifications for Zero Air

| Outlet Zero Air | Maximum Continuous Output Flow Rate | Electrical Requirements | Temperature/ Pressure Control Board | Part No.        |
|-----------------|-------------------------------------|-------------------------|-------------------------------------|-----------------|
| 1.5 L/min       | 1.5 L/min                           | 230/115 VAC 250 W max   | Included                            | <b>N9307075</b> |
| 3.0 L/min       | 3.0 L/min                           | 230/115 VAC 250 W max   | Included                            | <b>N9307076</b> |
| 6.0 L/min       | 6.0 L/min                           | 230/115 VAC 250 W max   | Included                            | <b>N9307077</b> |
| 15.0 L/min      | 15.0 L/min                          | 230/115 VAC 480 W max   | Included                            | <b>N9307078</b> |
| 30.0 L/min      | 30.0 L/min                          | 230/115 VAC 480 W max   | Included                            | <b>N9307079</b> |



Wall Mountable

### Ultra Zero Air Generators

#### Features and Benefits

- Purity: < 0.1 ppm hydrocarbon; < 0.1 ppm CO; < 1 ppm NOx; < 5 ppm CO<sub>2</sub>
- Produce laboratory-grade purified air for the most accurate and convenient calibration of testing equipment
- Designed with safety and convenience in mind, this system will generate purified air from an existing in-house oil-free compressed air supply, eliminating the need for inconvenient high-pressure gas cylinders
- Eliminate gas cylinders reducing annual operating costs associated with materials, labor and downtime, and reduces risk of injury to workers
- Will remove CO and HC pollutants to less than 0.1 ppm and NOx contaminants to 1 ppm. Carbon dioxide is also removed to about 1 ppm levels. Operation of the generator requires low levels of air consumption and electrical power
- Fully supported by PerkinElmer Service Organization
- All models come without a compressor. An oil free compressor is required
- CE, CSA certified

### Specifications for Ultra Zero Air

| Outlet Ultra Zero Air | Outlet Carbon Dioxide Concentration | Outlet Nitrogen Oxides Concentration | Outlet Dewpoint (°C) | Electrical Requirements | Part No.        |
|-----------------------|-------------------------------------|--------------------------------------|----------------------|-------------------------|-----------------|
| 1.5 L/min             | < 5 ppm                             | < 0.1 ppm                            | < -70                | 230/115 VAC 270 W max   | <b>N9307081</b> |
| 3.0 L/min             | < 10 ppm                            | < 1 ppm                              | < -50                | 230/115 VAC 270 W max   | <b>N9307082</b> |
| 6.0 L/min             | < 10 ppm                            | < 1 ppm                              | < -50                | 230/115 VAC 270 W max   | <b>N9307083</b> |
| 15.0 L/min            | < 10 ppm                            | < 1 ppm                              | < -50                | 230/115 VAC 500 W max   | <b>N9307080</b> |



## Zero Air Generators

Our Zero Air Gas Generators produce zero grade air from compressed air through catalytic oxidation. This zero air is used as an oxidant supply to GC-FIDs and as a zero-grade gas supply/zero reference gas for process analytical instruments. These generators produce zero-grade air with less than 0.05 ppm hydrocarbon content, measured as methane, enabling a more stable baseline as compared to conventional sources of fuel air.

### Features and Benefits

- High performance heated platinum catalyst
- High efficiency filtration
- Modular and stackable with all PerkinElmer hydrogen generators
- CE, UL and CSA approved
- Low life cycle cost, excellent return on investment
- Superior resolution and lower limits of detection
- Safe and sustainable



### Technical Specifications

| Description                    | Specification                                       |
|--------------------------------|-----------------------------------------------------|
| Size                           | 17.9 in. H x 13.4 in. W x 16.7 in. D                |
| Weight                         | 31.3 lbs.                                           |
| Organic Purity (ppm)           | <0.1                                                |
| Delivery Pressure (psi/g)      | 58–145                                              |
| Ambient Temperature Range      | 41–104 °F                                           |
| Required Inlet Air Quality     | Clean dry compressed air ISO8573-1:2001 Class 3.2.1 |
| Supply Voltage Range           | 120 V/60 Hz or 230 V/50 – 60 Hz ±10%                |
| Port Connections               |                                                     |
| Outlet (N9303205 and N9303206) | 1/8 in. Compression Fitting                         |
| Inlet (N9303205 and N9303206)  | 1/8 in. Compression Fitting                         |
| Outlet (N9303207 – N9303212)   | 1/4 in. Compression Fitting                         |
| Inlet (N9303207 – N9303212)    | 1/4 in. Compression Fitting                         |

| Model      | Flow Rate (L/min) | Air Inlet @ 58–145 psig (L/m) | Voltage | Part No. |
|------------|-------------------|-------------------------------|---------|----------|
| UHP-35ZA-S | 3.5               | 4.2                           | 120     | N9303206 |
| UHP-35ZA-S | 3.5               | 4.2                           | 230     | N9303205 |
| UHP-35ZA-S | 5                 | 6                             | 120     | N9303208 |
| UHP-35ZA-S | 5                 | 6                             | 230     | N9303207 |
| UHP-35ZA-S | 15                | 18                            | 120     | N9303210 |
| UHP-35ZA-S | 15                | 18                            | 230     | N9303209 |
| UHP-35ZA-S | 30                | 35                            | 120     | N9303212 |
| UHP-35ZA-S | 30                | 35                            | 230     | N9303211 |



# Ultra Quiet Analytical Compressor

## NEW

Compressors are typically used in conjunction with a gas or zero air generator. A durable standalone compressor system provides on point supply of air of known quality, good quality. Be sure to eliminate any moisture or oil in the air to protect your analytical instrumentation and ensure results are not impacted.

We have expanded our product offering in order to provide our customers the most dependable, trouble-free and quietest system for use with our instruments. This oil-free compressor system is capable of continuous use and incorporates features to provide years of reliability required in laboratory applications.

### Features and Benefits

- Market leading 2 year warranty with premium component construction and JUN-AIR quality
- Automatic drain system and pressure switch control for trouble free operation
- High pressure (8 bar/120 psi) for continuous operation regardless of variable voltage supply
- Electrostatically powder coated receiver and plated fittings for maximum corrosion resistance
- Dual air filtration for clean air every time
- Optimized compressor seal and bearing design capable of up to 10 times the life of comparable competitive compressor systems
- 2 year system warranty/5 year tank warranty
- 100% oil-free and 5 µm filter regulator ensure clean air



### Technical Specifications

| Description                   | Specification                     |
|-------------------------------|-----------------------------------|
| Horse Power                   | 0.50                              |
| Power Requirements            | 230/50 Hz 120/60 Hz               |
| (VAC)                         | 230/60 Hz                         |
| Output (CFM)                  | 2.9 (50 Hz) 3.2 (60 Hz)           |
| Output                        | 82 L/min (50 Hz) 91 L/min (60 Hz) |
| Max Pressure                  | 120 psi, 8 bar                    |
| Operating Pressure            | 87-116 psi                        |
| Operating Pressure            | 6-8 bar                           |
| Noise Level                   | 55-63 dB(A)                       |
| Tank Size (Gallon)            | 6.6                               |
| Tank Size                     | 25 L                              |
| Dimensions (L x W x H)        | 15 x 17 x 24 in.                  |
| Weight                        | 59 lbs, (50 Hz) 70 lbs (60 Hz)    |
| Packed Dimensions (L x W x H) | 16 x 16 x 25 in.                  |
| Packed Weight                 | 64 lbs (50 Hz) 75 lbs (60 Hz)     |

| Flow Rate                                                                                                                                                                | Part No.        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| 120 V/60 Hz – UL approved and US cord                                                                                                                                    | <b>N9306243</b> |
| 230 V/50 Hz – CE approved and EU cord                                                                                                                                    | <b>N9306244</b> |
| 230 V/60 Hz – UL approved and US cord                                                                                                                                    | <b>N9306245</b> |
| Basic Service Kit<br>Should be performed annually or 2000 hours, whichever comes first Includes filters, spacers, springs and O-Rings                                    | <b>N9306341</b> |
| Comprehensive Service Kit<br>Should be performed every two years or 8000 hours, whichever comes first Includes the same as basic plus cups, valves, cylinders and screws | <b>N9306342</b> |
| Replacement Drain Bottle<br>Replace as needed, includes the bottle and mounting hardware                                                                                 | <b>N9306343</b> |

## Compressors

### PerkinElmer's GC Quiet Oil Free Compressor

This industrial ultra quiet compact oil free 6 gallon compressor that can be utilized in the immediate laboratory area for the supply of clean air.



#### Technical Specifications

| Description            | Specification          |
|------------------------|------------------------|
| Horse Power            | 0.6                    |
| Power Requirements     | 115 V/220 V/50 – 60 Hz |
| Output                 | 2.5 CFM, 67 L/min      |
| Max Pressure           | 120 psi, 8 bar         |
| Operating Pressure psi | 80 – 100               |
| Operating Pressure Bar | 6 – 8                  |
| Noise Level            | 62 db/A                |
| Tank Size              | 24 L, 6.0 Gal.         |
| Weight                 | 54 lbs., 25 kg         |
| Packed Weight          | 58 lbs., 26 kg         |
| Packed Dimensions      | 19 x 18 x 23           |
| Dimensions             | 16 x 16 x 20 in.       |

#### Features and Benefits

- Ultra quiet for use in the laboratory area
- Compact size and light weight
- Industrial grade, durable long life design
- 2 Year warranty on workmanship
- 5.0 micron pre-filter and regulator prevents moisture in the gas line
- Internally powder coated air tank to prevent rust
- Automatic condensate tank drain ensures continuous operation

| Flow Rate           | Part No.        |
|---------------------|-----------------|
| 115 V 60 Hz         | <b>N9306291</b> |
| 220 V 50 Hz – 60 Hz | <b>N9306293</b> |

### Ultra Quiet Compact Oil-free Compressor

PerkinElmer is expanding its product portfolio in response to customer requests for an industrial ultra quiet compact oil-free compressor that can be utilized in the immediate laboratory area for the supply of clean dry air. As with all PerkinElmer products, this 110 liter per minute air compressor has been rigorously tested to meet or exceed our industry leading standards.



#### Technical Specifications

| Description            | Specification          |
|------------------------|------------------------|
| Horse Power            | 0.75                   |
| Power Requirements     | 115 V/220 V/50 – 60 Hz |
| Output                 | 4.4 CFM, 110 L/min     |
| Max Pressure           | 100 psi, 7 bar         |
| Operating Pressure psi | 80 – 100               |
| Operating Pressure Bar | 6 – 7                  |
| Noise Level            | 57 db/A                |
| Tank Size              | 6 L, 1.57 Gal.         |
| Weight                 | 103 lbs., 46.7 kg      |
| Packed Weight          | 125 lbs., 56.7 kg      |
| Packed Dimensions      | 38 x 15 x 25           |
| Dimensions             | 34.7 x 13.4 x 22.4 in. |

#### Features and Benefits

- Features a built-in desiccant dryer providing clean, dry, and particle free air at -40° F dew point
- Excellent for Gas Chromatography instrument applications with air generators applications
- Ultra quiet for use in the laboratory area
- Ease-of-use with built-in rolling casters and convenient handle
- Commercial/Industrial Grade
- 1 year warranty on workmanship

| Flow Rate   | Part No.        |
|-------------|-----------------|
| 115 V/60 Hz | <b>N9306350</b> |
| 220 V/50 Hz | <b>N9306351</b> |
| 220 V/60 Hz | <b>N9306352</b> |

## GC Startup Kits

| Description                                             | Part No.        |
|---------------------------------------------------------|-----------------|
| GC Startup Kit 1/8 in. Tubing and Fitting for (3) Gases | <b>N9306304</b> |
| Description                                             | Qty.            |
| 1/8 in. Tubing x 50 foot coil Copper Special Cleaning   | 1               |
| 1/8 in. Compression Brass Tee Two Piece Ferrule Brass   | 3               |
| Tee 1/8 in. Com x 1/8 in. Comp x 1/4 in. fnpt Brass     | 3               |
| Adjustable Safety Relief Valve Brass 50 – 150 psi       | 3               |
| 1/4 in. fnpt x 1/8 in. Comp Fitting Brass               | 3               |
| 1/8 in. Port Connector Brass                            | 3               |
| 1/8 in. Ferrule Brass                                   | 3               |
| 1/8 in. Compression Brass Nut                           | 3               |
| 1/8 in. Compression Brass Fitting Cap                   | 3               |
| Tubing Cutter 1/8 in. Tubing                            | 1               |
| PTFE Tape                                               | 1               |

| Description                                                                                         | Part No.        |
|-----------------------------------------------------------------------------------------------------|-----------------|
| GC Startup Kit 1/8 in. Tubing and Fitting with One Single Stage Regulator                           | <b>N9306305</b> |
| Description                                                                                         | Qty.            |
| 1/8 in. Tubing x 50 foot coil Copper Special Cleaning                                               | 1               |
| 1/8 in. Compression Brass Tee Two Piece Ferrule Brass                                               | 3               |
| Tee 1/8 in. Com x 1/8 in. Comp x 1/4 in. fnpt Brass                                                 | 3               |
| Adjustable Safety Relief Valve Brass 50 – 150 psi                                                   | 3               |
| 1/4 in. fnpt x 1/8 in. Comp Fitting Brass                                                           | 3               |
| 1/8 in. Port Connector Brass                                                                        | 3               |
| 1/8 in. Ferrule Brass                                                                               | 3               |
| 1/8 in. Compression Brass Nut                                                                       | 3               |
| 1/8 in. Compression Brass Fitting Cap                                                               | 3               |
| Tubing Cutter 1/8 in. Tubing                                                                        | 1               |
| PTFE Tape                                                                                           | 1               |
| Single Stage Analytical 0 – 100 psig delivery, CGA 350 (H <sub>2</sub> , Carbon Monoxide, Ethylene) | 1               |

| Description                                                                       | Part No.        |
|-----------------------------------------------------------------------------------|-----------------|
| GC Startup Kit 1/8 in. Tubing and Fitting With One Dual Stage Regulator           | <b>N9306306</b> |
| Description                                                                       | Qty.            |
| 1/8 in. Tubing x 50 foot coil Copper Special Cleaning                             | 1               |
| 1/8 in. Compression Brass Tee Two Piece Ferrule Brass                             | 3               |
| Tee 1/8 in. Com x 1/8 in. Comp x 1/4 in. fnpt Brass                               | 3               |
| 50 – 150 psi                                                                      | 3               |
| 1/4 in. fnpt x 1/8 in. Comp Fitting Brass                                         | 3               |
| 1/8 in. Port Connector Brass                                                      | 3               |
| 1/8 in. Ferrule Brass                                                             | 3               |
| 1/8 in. Compression Brass Nut                                                     | 3               |
| 1/8 in. Compression Brass Fitting Cap                                             | 3               |
| Tubing Cutter 1/8 in. Tubing                                                      | 1               |
| PTFE Tape                                                                         | 1               |
| Dual Stage Analytical 0 – 100 psig delivery, CGA 580 (N <sub>2</sub> , Argon, He) | 1               |

# Regulators

## Pressure Regulators

Ideally suited for chromatographic carrier gas applications including FID, TCD, ECD, HID, and non-corrosive gas mixtures for analytical instrumentation.



## Technical Specifications

| Specifications                 | Single Stage<br>– Stainless Steel<br>(Thread-less Seat)<br>Part No. N9306353 | Single Stage<br>– Brass Nickel-plated<br>(Thread-less Seat)<br>Part No. N9306354 |
|--------------------------------|------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Max Rated Inlet Pressure       | 1,250 psig                                                                   | 1,200 psig                                                                       |
| Outlet Pressure Ranges         | 0– 30, 0– 60, 0– 100,<br>0– 250 psig                                         | 0– 25, 0– 50, 0– 100,<br>0– 250 psig                                             |
| Flow capacity                  | Cv=0.066                                                                     | Cv=0.15                                                                          |
| Ambient Operating Temp         | -40° F to +165° F                                                            | -40° F to +165° F                                                                |
| Designed Leak Rate             | 2 x10-8 ccs (helium)                                                         | Bubble-tight (helium)                                                            |
| Weight                         | 2 lbs                                                                        | 2.4 lbs                                                                          |
| Ports (4)                      | ¼ in. FNPT                                                                   | ¼ in. FNPT                                                                       |
| Fittings                       | 1/8 in.                                                                      | 1/8 in.                                                                          |
| Inlet                          | 1/8 in. FNPT                                                                 | 1/8 in. FNPT                                                                     |
| Outlet                         | 1/8 in. FNPT                                                                 | 1/8 in. FNPT                                                                     |
| Decay Inlet Characteristic     | –                                                                            | 0.23/100 psi                                                                     |
| <b>Materials</b>               |                                                                              |                                                                                  |
| Body                           | 316 Stainless Steel                                                          | Nickel-Plated Brass                                                              |
| Bonnet                         | Nickel Plated Brass                                                          | Nickel Plated Brass                                                              |
| Seat                           | PCTFE®                                                                       | PTFE                                                                             |
| Diaphragm                      | Hastelloy C-22                                                               | 316 Stainless Steel                                                              |
| Diaphragm Hastelloy C-22 Gauge | 2½ in. Stainless Steel                                                       | –                                                                                |
| Filter                         | 316 Stainless Steel                                                          | 316 Stainless Steel                                                              |
| Trim                           | 316 Stainless Steel                                                          | Nickel Plated Brass                                                              |
| Gauges                         | –                                                                            | 2½ in. Stainless Steel                                                           |
| Valve Stem                     | –                                                                            | 316 Stainless Steel                                                              |
| Valve Spring                   | –                                                                            | 316 Stainless Steel                                                              |

## High Purity Brass Regulators

PerkinElmer regulators are constructed of high purity brass barstock and have stainless steel diaphragms and metal-to-metal seals. They are suitable for use with high purity (>99.995% pure) non-corrosive gases. Regulators terminate in a 1/4 in. NPT Swagelock fitting.



### Features and Benefits

- Barstock body construction
- Stainless steel diaphragms
- Metal-to-metal seals
- Use with high purity carrier gas

## High Purity Brass Regulators (Dual Stage)

| CGA Fitting | Delivery Pressure Use                 | Delivery Pressure Range (psig) | Cylinder Pressure Gauge (psig) | Gauge (psig) | Part No.        |
|-------------|---------------------------------------|--------------------------------|--------------------------------|--------------|-----------------|
| CGA-350     | H <sub>2</sub> and Ar/CH <sub>4</sub> | 4 – 100                        | 0 – 200                        | 0 – 4,000    | <b>09907128</b> |
| CGA-580     | He, Ar, N <sub>2</sub>                | 4 – 100                        | 0 – 200                        | 0 – 3,000    | <b>09907127</b> |

## High Purity Brass Regulators (Single Stage)

| CGA Fitting | Delivery Pressure Use                           | Delivery Pressure Range (psig) | Cylinder Pressure Gauge (psig) | Gauge (psig) | Part No.        |
|-------------|-------------------------------------------------|--------------------------------|--------------------------------|--------------|-----------------|
| CGA-350     | CO, H <sub>2</sub> and Ar/CH <sub>4</sub> Mixes | 4 – 100                        | 0 – 150                        | 0 – 4,000    | <b>00230091</b> |
| CGA-350     | CO, H <sub>2</sub>                              | 10 – 200                       | 0 – 400                        | 0 – 4,000    | <b>00230253</b> |
| CGA-590*    | Air                                             | 10 – 200                       | 0 – 400                        | 0 – 4,000    | <b>00230090</b> |

\*Supplied with 590-580 Adapter

## Portable Gas Leak Detector

The new PerkinElmer compact handheld electronic gas leak detector is the ideal solution for detecting gas leaks in your Gas Chromatography systems. Leaks in your system waste gas and can cause detector noise, baseline instability, and shorter column life. This portable unit detects minute leaks of any gas with thermal conductivity different from air. The reference gas inlet draws in ambient air for comparison to air drawn into the sample probe. A leak is detected by both LED bar graph display and audible alarm.



### Detectable Gases

| Gas Type       | Minimum Detectable Leak Rate (atm cc/sec) | Indicating LED Light Color |
|----------------|-------------------------------------------|----------------------------|
| Helium         | $1.0 \times 10^{-5}$                      | Red                        |
| Hydrogen*      | $1.0 \times 10^{-5}$                      | Red                        |
| Nitrogen       | $1.4 \times 10^{-3}$                      | Yellow                     |
| Argon          | $1.0 \times 10^{-4}$                      | Yellow                     |
| Carbon Dioxide | $1.0 \times 10^{-4}$                      | Yellow                     |

| Description                 | Specification                                                       |
|-----------------------------|---------------------------------------------------------------------|
| Battery                     | Rechargeable Ni-MH internal battery pack (6 hours normal operation) |
| Universal Power Adapter Set | US, UK, European, Australian plugs included                         |
| Temperature Range           | 32 – 120 °F (0 – 48 °C)                                             |
| Humidity Range              | 0 – 97%                                                             |
| Warranty                    | 1 Year                                                              |
| Certifications              | CE, Japan                                                           |
| Compliance                  | WEEE, ROHS                                                          |

### Features and Benefits

- Sleek ergonomic, hand-held design with rugged side grips
- Automatic shut-off capabilities
- Optimized sample flow path
- LED readout and audible alarm

| Description                       | Part No.        |
|-----------------------------------|-----------------|
| Portable Electronic Leak Detector | <b>N9306089</b> |
| Soft Carrying Case                | <b>N9306142</b> |
| Probe (Fine Tip)                  | <b>N9306063</b> |

\* Caution: The PerkinElmer leak detector is not designed for determining leaks in a combustible environment. This unit may be used for determining trace amounts of hydrogen in a GC environment only

## MiniTemp MT4 Non-contact Temperature Measurement with Laser Sighting

### Features and Benefits

- Displays thermal measurement readings in °C or °F
- Easy point and shot infrared technology in a pocket size configuration
- Great for instrument thermal test confirmation, including GC injector port and detector measurements, thermostatted LC vials, and enzymatic hydrolysis baths



### MiniTemp MT4 Technical Specifications

| Description                       | Specification                              |
|-----------------------------------|--------------------------------------------|
| Temperature Range                 | -18 to 400 °C (0 to 750 °F)                |
| Distance to Spot Size (D:S)       | 08:01                                      |
| Response time                     | 500 m/sec                                  |
| Emissivity                        | Pre-set at 0.95                            |
| Accuracy                          | ±2%, or ±2 °C (±3 °F) whichever is greater |
| Typical Distance to Target (Spot) | Up to 1.5 m (4 ft)                         |
| Laser Sighting                    | Yes                                        |

The popular MiniTemp MT4 also includes single dot laser sighting to assist with aiming. 9 volt battery included. Recalibration is not available.

| Description  | Part No.        |
|--------------|-----------------|
| MiniTemp MT4 | <b>N9306074</b> |

## Digital Bubble Flow Meter

The PerkinElmer Model 520 is a volumetric flow meter. It can measure the flow rate of any gas or combination of gases, such as air, without adjustment. The flow meter has a digital display and a single push-button input. It is made of stainless steel and anodized aluminum. It comes with a certificate of calibration, and is accurate to  $\pm 3\%$ . The Model 520 can measure flow rates of 0.5 to 500 mL/min.



### Features and Benefits

- B 0.5 to 500 mL/min flow rate with digital display
- Volumetric flow measurement
- Accurate to  $\pm 3\%$  of measured flow rate

| Description                                     | Part No. |
|-------------------------------------------------|----------|
| Digital Bubble Flow Meter                       | N9302974 |
| Replacement Glass for Digital Bubble Flow Meter | N9303429 |

## Soap Bubble Flow Meters

The glass soap bubble flow meters are calibrated in 1 and 10 mL two-stage or 1, 10 and 100 mL three-stage for easy flow reading. Bubble meters come complete with liquid soap, rubber squeeze bulb, miscellaneous-sized plastic tube pieces to adapt to various fittings, and instructions.

| Description | Part No. |
|-------------|----------|
| Two-stage   | 00230522 |
| Three-stage | N9300081 |

## PerkinElmer FlowMark Electronic Flowmeter



PerkinElmer's FlowMark™ flowmeter is specifically designed for use with gas chromatography (GC) instruments. The probe is applied directly to the gas flow stream and the measured flow rate is presented on the LCD screen. Units of flow are measured in mL/min. This unit provides continuous real-time measurements of gas streams ranging from 0.50 mL/min to 500 mL/min. Because the technology uses volumetric flow measurement, the unit is compatible with all laboratory gases. The flowmeter is designed to measure clean, dry, non-corrosive gases.

### Features and Benefits

- Measures volumetric flow for all gases across a range of 0.5–500 mL/min
- NIST traceable calibration
- Explosion-proof rating for flammable and explosive gas atmospheres
- Accuracy of  $\pm 2\%$  of flow or  $\pm 0.2$  mL/min, whichever is greater
- Over range indicator
- Auto shut-off feature
- Ergonomic design and side grips for comfort
- Measures most gas types
- Convenient storage case included
- CE, Ex (Compliance: WEEE, RoHS) certified
- Uses 2-AA batteries
- Data output via USB port
- Re-calibration service available
- Designed to measure clean, dry, non-corrosive gases
- 1 year warranty

| Description                                  | Part No. |
|----------------------------------------------|----------|
| FlowMark Electronic Flowmeter                | N9307086 |
| Recalibration Service for FlowMark Flowmeter | N9307085 |
| Soft Carrying Case                           | N9306142 |

## PerkinElmer Flowmeter Plus

The PerkinElmer Flowmeter Plus is a valuable tool for troubleshooting detector problems. Measuring gas volumetrically eliminates the need to select gas type. Highly accurate, identifying leaks by differences in thermal conductivity, it offers a minimum detection limit of 0.0005 mL/min hydrogen and helium.

### Hassle Free Recalibration

Offering a much simpler and more efficient work flow, the annual recalibration is simply replacing a NIST certified calibration cartridge. Each flowmeter cartridge is individually factory calibrated and can easily be replaced directly by customers. There is no need to return the flowmeter to us; saving you time and money.

The cartridge calibration is valid for a period of one year from its first use. A new, calibrated cartridge can be ordered in advance, and then installed when necessary.

# NEW



### Features and Benefits

- Simply replace a NIST certified cartridge for revalidation, no need to return the flowmeter
- Flow range 0.5 to 750 mL/min (auto-ranging)
- Operating temperature range 0 °C to 45°C
- Accurate to  $\pm 2\%$  of reading or  $\pm 0.2$  mL/min, whichever is greater
- Compact size (201 mm x 88 mm x 48 mm)
- Portable operation, uses 3 AA batteries (or USB power)

| Description                                      | Part No. |
|--------------------------------------------------|----------|
| Flowmeter Plus                                   | N9307088 |
| Replacement NIST certified calibration cartridge | N9307084 |

## Basic Tool Kit

Kit Includes: Open-end Wrench Set (6 pc), Screwdriver Set (6 pc.), Adjustable Wrench (6 in.), Chain Nose Pliers (narrow), Wire Cutters, and Wire Strippers.

| Description                                       | Part No. |
|---------------------------------------------------|----------|
| Tools Come in a Tool Box for Easy Storage and Use | N9301327 |

## Deluxe Tool Kit

Kit Includes: Open-end Wrench Set (6 pc.), Screwdriver Set (6 pc.), Adjustable Wrench (6 in.), Chain Nose Pliers (narrow), Wire Cutters, Wire Strippers, Slip-joint Pliers (6 in.), Long Nose No. 5 Stainless Steel Tweezers (4-3/8 inches), Needle File Set (6 pc.), Allen Key Set (11 pc. imperial sizes), and Allen Key Set (9 pc. metric sizes).

| Description                                          | Part No. |
|------------------------------------------------------|----------|
| Shipped in a Plastic Tool Box for Convenient Storage | N9301328 |





## BETTER GC FOR THE MOST CRITICAL APPLICATIONS – YOURS

### Superior sensitivity, capacity, and throughput – with flexibility to handle more applications

Our new Clarus® 590 and 690 systems are making GC more productive, more consistent – and more flexible than ever. Productive, because our proprietary autosampler technology, superfast oven cool-down, and programmable temperature injectors make it much more efficient. Consistent, because it delivers precise, repeatable sample introduction and fewer reruns. And flexible, because we integrate best-in-class TurboMatrix® headspace, thermal desorption, and hands-free liquid or SPME sample prep. Highly capable Clarus systems are simply better for the most important applications of all – those most important to you.

Learn more at [www.perkinelmer.com/gc](http://www.perkinelmer.com/gc)

  
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*For the Better*



# Standards

PerkinElmer offers a wide selection of superior quality products designed to work with your PerkinElmer instruments. Our precision designed products deliver the peace of mind that comes from knowing that you'll get the results you need.

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## Method 8260B for Water and Solid Waste Matrices

Method 8260B is an analytical method that uses a GC/MS equipped with a capillary column to perform the separation of the volatile organic compounds found in water and a variety of solid waste matrices.

Method 524.2 is an analytical method that uses a purge and trap device for sample preparation and a GC/MS equipped with a capillary column to perform the separation of volatile organic compounds.



➤ [VIEW PAGE](#)

## 8000 Series Solid and Hazardous Waste Methods

Method 8080A contains detailed operating procedures to be followed by laboratories analyzing solid and liquid matrices. It is a method that uses a GC/ECD to perform the separation of the selected pesticides following concentration and clean-up of an extract for aqueous or solid samples. Method 8082 is used to determine the concentrations of PCBs, either as individual congeners or Aroclors by GC/ECD.

➤ [VIEW PAGE](#)



PerkinElmer offers a wide selection of GC and GC/MS standards. Each solution is supplied with a comprehensive Certificate of Analysis that documents quality and assurance to the highest level obtainable by a Calibration Standard.

Organic Certified Reference Materials from PerkinElmer are a new addition to an already extensive organic product line designed to enhance your one-stop shopping experience. Each new standard is provided in convenient 1.2 mL ampoules to minimize waste and comes with a pre-labeled amber glass storage vial with cap for easy use.

To ensure customer satisfaction, our Organic Mixes are prepared at concentration levels that take into consideration a number of factors including: vapor pressure, evaporation, breakdown rates and dilution schemes. PerkinElmer goes the extra step by analyzing each organic standard on the Clarus 600 GC and GC/MS state-of-the-art instrumentation to ensure that the standard conforms to the customer's exact needs.

For customer ease, all Organic Standards are prepared with a precision of  $\pm 0.5\%$  and accompanied with a comprehensive Certificate of Analysis (lot specified by part number). Data packs are also available upon request. These include a chromatogram of the standard and quantitative report listing the values for each analyte.

## Standards Solutions

| Description                                       | Part No.        |
|---------------------------------------------------|-----------------|
| <b>Test Mix</b>                                   |                 |
| LC Gradient Test Mix                              | <b>N9334010</b> |
| Universal Test Mix for Reversed-phase (5 mL/pkg.) | <b>00890893</b> |
| <b>Standards</b>                                  |                 |
| HPLC SV Calibration Mix No.5/610 PAH              | <b>00891542</b> |
| HPLC 610 Calibration Mix A                        | <b>00891543</b> |
| HPLC 610 Calibration Mix B                        | <b>00891544</b> |

## Method 8260B for Water and Solid Waste Matrices

Method 8260B is an analytical method that uses a GC/MS equipped with a capillary column to perform the separation of the volatile organic compounds found in water and a variety of solid waste matrices.

Method 524.2 is an analytical method that uses a purge and trap device for sample preparation and a GC/MS equipped with a capillary column to perform the separation of volatile organic compounds.

### Volatile Organics Combination Blend

Contains all analytes in Mixes A, C and D.

Method SW-846 is an analytical method which utilizes a Clarus 600 GC to perform the separation of the volatile organic components found in a variety of solid waste matrices. To detect the GC eluant a Clarus 600 GC/MS is used.

| Description                              | Part No.        |
|------------------------------------------|-----------------|
| 1.2 mL @ 2,000 µg/mL in P and T Methanol | <b>N9331047</b> |

### Method 8260B Standards

| Description                                                                                              | Part No.        |
|----------------------------------------------------------------------------------------------------------|-----------------|
| Alternate Four-Component Surrogate Standard for Method 8260B<br>1.2 mL @ 2,000 µg/mL in P and T Methanol | <b>N9331042</b> |
| Internal Standard for Method 8260B<br>1.2 mL @ 2,000 µg/mL in P and T Methanol                           | <b>N9331041</b> |

### Ketones for Method 8260B

| Description                              | Part No.        |
|------------------------------------------|-----------------|
| 1.2 mL @ 2,000 µg/mL in P and T Methanol | <b>N9331043</b> |

### Mix B Purgeable Gases for Methods 8260B/524.2

| Description                              | Part No.        |
|------------------------------------------|-----------------|
| 1.2 mL @ 2,000 µg/mL in P and T Methanol | <b>N9331048</b> |

# 8000 Series Solid and Hazardous Waste Methods

**Resource Conservation and Recover Act (Rcra) Under Sw-846, 'Test Methods For Evaluating Solid Waste'**

## Features and Benefits

- Method 8080A contains detailed operating procedures to be followed by laboratories analyzing solid and liquid matrices. It is a method that uses a GC/ECD to perform the separation of the selected pesticides following concentration and clean up of an extract for aqueous or solid samples
- Method 8082 is used to determine the concentrations of PCBs, either as individual congeners or Aroclors by GC/ECD

## Method 8082 PCBs (polychlorinated biphenyls) Standards Kit

Method 8082 is used to determine the concentration of PCBs either as individual congeners or Aroclors. A Clarus 600 GC with a capillary column is used to perform the separation. To detect the eluent, an ECD (electron capture detector) or ELCD (electrolytic conductivity detector) is used.

| Description                    | Part No.        |
|--------------------------------|-----------------|
| 1.2 mL @ 1,000 µg/mL in Hexane | <b>N9331028</b> |

## Method 8270C Standards

Method 8270C is an analytical method which utilizes a Methylene Chloride extraction of aqueous sample or Methylene Chloride: Acetone extraction of solid sample and a Clarus 600 GC equipped with a capillary column to perform the separation of the compounds. To detect the GC eluant a Clarus 600 GC/MS is used.

| Description                                                                              | Part No.        |
|------------------------------------------------------------------------------------------|-----------------|
| Semi-Volatile Calibration Standard for Method 8270C<br>1.2 mL @ 1,000 µg/mL in Hexane    | <b>N9331030</b> |
| Internal Standard for Method 8270C<br>1.2 mL @ 2,000 µg/mL in Methylene Chloride/Benzene | <b>N9331036</b> |

## Method 8270C Mixes

| Description                                                                    | Part No.        |
|--------------------------------------------------------------------------------|-----------------|
| HICAL-Acids Mix for Method 8270C<br>1.2 mL @ 2,000 µg/mL in Methylene Chloride | <b>N9331031</b> |
| Analyte Mix for Method 8270C<br>1.2 mL @ 2,000 µg/mL in Methanol               | <b>N9331032</b> |
| Balance Mix for Method 8270C<br>1.2 mL @ 2,000 µg/mL in Methylene Chloride     | <b>N9331033</b> |

## Method 8270C Surrogates

| Description                                                                                   | Part No.        |
|-----------------------------------------------------------------------------------------------|-----------------|
| Acid Surrogate for Method 8270C<br>1.2 mL @ 2,000 µg/mL in Methanol                           | <b>N9331037</b> |
| Base Neutral Surrogate for Method 8270C<br>1.2 mL @ 2,000 µg/mL in Methylene Chloride/Acetone | <b>N9331038</b> |

## 600 Series Wastewater Methods Clean Water Act 'Wastewaters'

### Method 624 Standards Kit for Volatile Organic Compounds

Contains: **N9331060, N9331061, N9331062, N9331063.**

The U.S. EPA Method 624 is an analytical method which utilizes a TurboMatrix Headspace Purge and Trap instrument for sample prep and a Clarus 600 GC equipped with a packed column to perform the separation of the volatile organic compounds found in a 5 mL sample of municipal or industrial wastewater. To detect the eluant a Clarus 60 GC/MS is used.

| Description                                                                      | Part No.        |
|----------------------------------------------------------------------------------|-----------------|
| 1.2 mL @ 2,000 µg/mL in P and T Methanol                                         | <b>N9331064</b> |
| Mix A for Method 624<br>1.2 mL @ 2,000 µg/mL in P and T Methanol                 | <b>N9331060</b> |
| Purgeable Gases Mix B for Method 624<br>1.2 mL @ 2,000 µg/mL in P and T Methanol | <b>N9331061</b> |
| Mix C for Method 624<br>1.2 mL @ 2,000 µg/mL in P and T Methanol                 | <b>N9331062</b> |
| Mix D for Method 624<br>1.2 mL @ 2,000 µg/mL in P and T Methanol                 | <b>N9331063</b> |

## Method 8100

Method 8100 is a method for the analysis of polynuclear aromatic hydrocarbons. A Clarus 600 GC is used to perform the separation of compounds with an FID (flame ionization detector) to detect the eluent.

## Method 625

Method 625 is an analytical method that uses a methylene chloride extraction of municipal or industrial wastewater, concentrated to 1 mL and a GC/MS equipped to perform the separation of acid and base neutral extractable fractions.

| Description                                                                                                   | Part No.        |
|---------------------------------------------------------------------------------------------------------------|-----------------|
| Polynuclear Aromatic Hydrocarbons for Method 8100/625<br>1.2 mL @ 2,000 µg/mL in Methylene Chloride/Benzene   | <b>N9331044</b> |
| Polynuclear Aromatic Hydrocarbons Mix B for Method 8100<br>1.2 mL @ 1,000 µg/mL in Methylene Chloride/Benzene | <b>N9331045</b> |
| Surrogate Standard for Method 8100 1.2 mL @ 2,000 µg/mL in Methylene Chloride                                 | <b>N9331046</b> |

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