

# What if you could raise the bar?

Let's create value from every drop of oil. **Together.**

Analytical Solutions for Petrochemical & Petroleum Products

**Supelco**<sup>®</sup>  
Analytical Products

**Sigma-Aldrich**<sup>®</sup>  
Lab & Production Materials

**Millipore**<sup>®</sup>  
Preparation, Separation,  
Filtration & Monitoring Products

**Milli-Q**<sup>®</sup>  
Lab Water Solutions



The Life Science business of Merck operates as MilliporeSigma in the U.S. and Canada.



Merck has brought together the world's leading Life Science brands, so whatever your life science problem, you can benefit from our expert products and services.



**Supelco**<sup>®</sup>

Analytical Products

The Supelco<sup>®</sup> portfolio of analytical solutions of Merck is developed by analytical chemists for analytical chemists to ensure your results are accurate, precise and reproducible. Every product is meticulously quality-controlled to maintain the integrity of your testing protocols and, with our dedicated scientists, the expertise you need is always on hand.

**Sigma-Aldrich**<sup>®</sup>

Lab & Production Materials

The Sigma-Aldrich<sup>®</sup> portfolio of Merck offers a strong and ever-expanding offering of lab and production materials. Through our technical support and scientific partnerships, we help connect our customers with a whole world of progress.

**Millipore**<sup>®</sup>

Preparation, Separation,  
Filtration & Monitoring Products

The Millipore<sup>®</sup> portfolio of Merck offers an ecosystem of industry-leading products and services, spanning preparation, separation, filtration and monitoring – all of which are deeply rooted in quality, reliability and timetested processes. Our proven products, regulatory and application expertise are a strong foundation you can rely on to consistently perform at the highest level.

**Milli-Q**<sup>®</sup>

Lab Water Solutions

The Milli-Q<sup>®</sup> portfolio of lab water solutions from Merck takes care of all your water quality and purity needs. Our solutions are backed by consistent quality and full compliance, and work seamlessly together to let you focus on your vital work.



# Analytical Testing

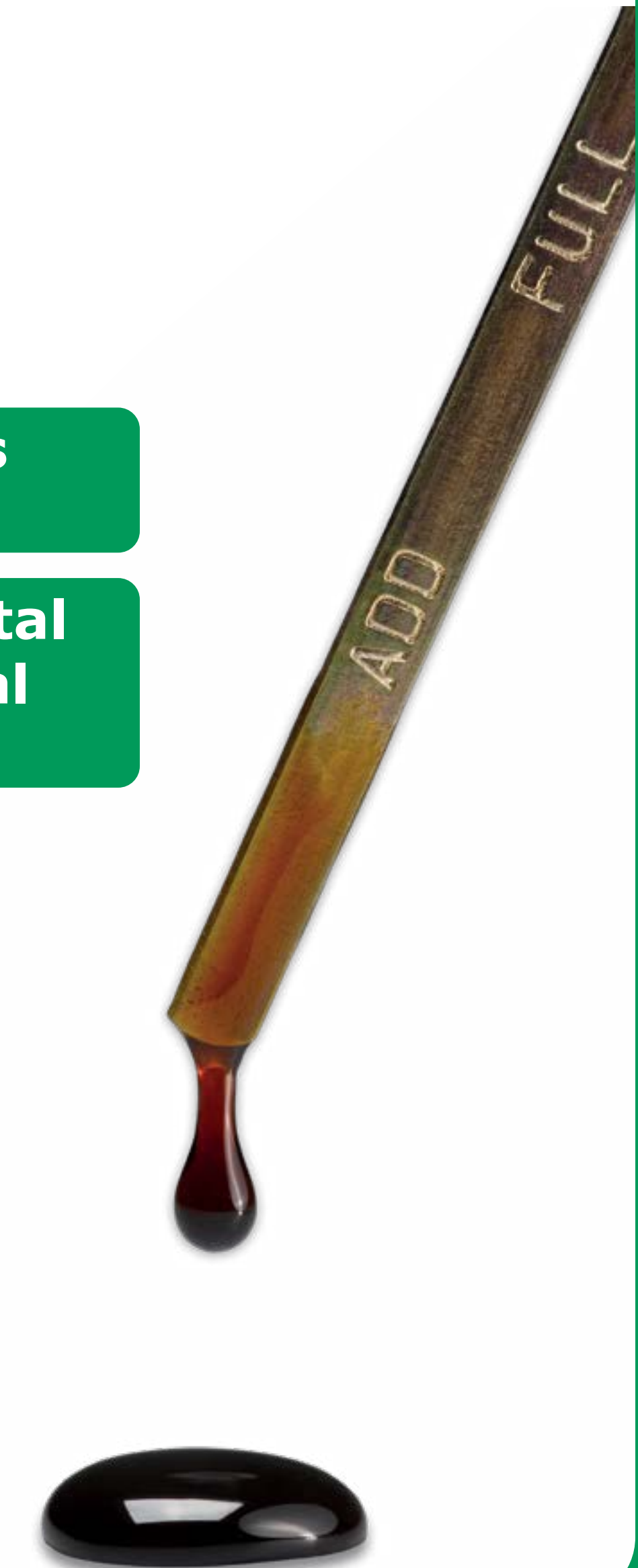
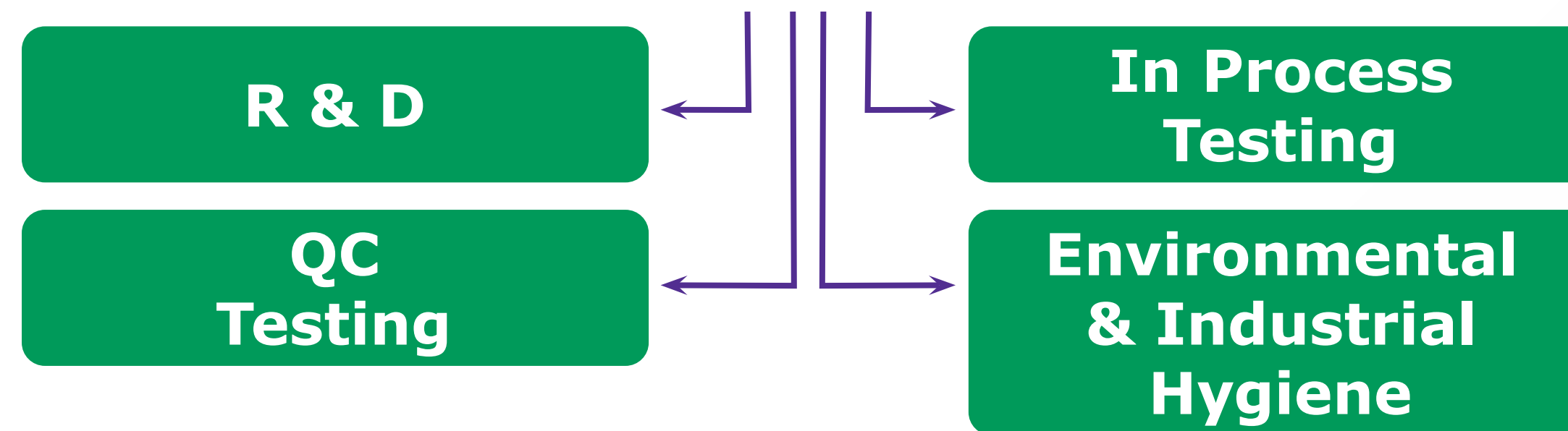
How can we help you?

This brochure provides a summary of proven and reliable tools and consumables for the analytical lab supporting the petrochemical process.

Our solutions and tools for petrochemical analysis include sample preparation devices, moisture determination, special and dedicated gas chromatography (GC) columns, analytical standards & certified reference material (CRMs) as well as classical and high purity solvents and reagents to enable accurate and reliable analysis of your samples.

**Accurate.**  
**Precise.**  
**Consistent.**

## ANALYTICAL TESTING





### Sample Preparation

- SPE & SPME
- Solvent Extraction
- Digestion
- Filtration

### Analysis

- Gas Chromatography
- HPLC
- TLC
- Titration & Karl Fischer
- Spectroscopy (AAS & ICP) - Inorganic Trace Analysis - Metals
- Physical Property Testing
- Effluent and Waste Water Testing
- Process Water and Mobile Analysis

### Calibration - Reference Materials

- Organics & Inorganics
- Titration (Karl-Fischer)
- Physical Properties
- Metrological Institute Standards

### Environmental & Industrial Hygiene Monitoring

- Air Monitoring & Air Sampling
- Environmental Water Analysis

### Solvents

- GC Solvents
- HPLC, UHPLC & LC-MS Solvents and Reagents
- Solvents for Classical Analysis
- NMR Solvents

### Lab Water

- Pure (Type 2) Water
- Ultrapure (Type 1) Water
- Application Pak Polishers

### Lab Safety

- Absorbents
- Detergents
- Lab Safety Products



### For a change, let's talk water

- Water as the Analyte (Karl Fischer Titration)
- Water as the Sample Matrix (e.g. Process & Effluent Water)
- Water as the Solvent: Lab Water





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### Solid Phase Extraction (SPE) ◀

Solid Phase Extraction (SPE) is one of the most common sample preparation methods in today's labs to cleanup or concentrate samples. We carry a full portfolio of phases and configurations.

Visit [SigmaAldrich.com/SPE](https://SigmaAldrich.com/SPE)

### Solid Phase Microextraction (SPME) ◀

Solid Phase Microextraction (SPME) is an innovative, solvent-free, one step sample preparation technology that is fast, economic, versatile and can be easily automated. The coated fiber extracts analytes of interest that are then desorbed directly into the GC. SPME is suitable for analysis of sensitive oxygenates in gasoline using the PEG fiber and for VOC determination in water.

Visit [SigmaAldrich.com/SPME](https://SigmaAldrich.com/SPME)

### Solvent extraction ◀▶

Classical, high purity, consistent quality solvents in sample prep are the foundation of reliable and efficient extraction methods. Our portfolio covers every solvent needed for accurate and reproducible analytical results with low background.

See the **solvents page** in this brochure and our complete offer on

[SigmaAldrich.com/solvents](https://SigmaAldrich.com/solvents)

### Digestion ◀

For spectroscopic techniques like AAS and ICP, digestion or solvatization of samples is often necessary. For standard applications, EMSURE® Acids and Bases should be used for sample preparation. High purity acids and bases from our Suprapur® and Ultrapur line will ensure the lowest background and consequently, highest sensitivity of your most critical inorganic trace and ultra-trace analysis.

**See our Acids, Bases & Salts**

### Filtration ◆

Sample filtration protects HPLC columns and instruments by removing particulates prior to analysis. Due to their broad chemical compatibility, hydrophobic and hydrophilic Millex® PTFE syringe filters are an ideal choice for sample preparation in petrochemical analysis.

Learn More about this Millex® syringe filters [here](#).





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**Gas Chromatography** | HPLC | TLC | Titration & Karl Fischer | Related Testing | Process Water and Mobile Analysis

## Gas Chromatography ◀

### GC - Columns, reagents, consumables for use in Gas Chromatography

Our Supelco® brand started in gas chromatography in the early 1960s and therefore has a long history and broad expertise in column technologies & production. We started by offering packed GC columns and have since developed a vast range of capillary columns for the petrochemical industry to support classical GC, GC-MS, Fast GC and GCxGC. Innovations continue with our line of columns using ionic liquids as stationary phases. We regularly introduce columns for specific applications and instrumentation, including a recently added line for the Agilent® Intuvo system.



*Agilent® Intuvo system with Supelco® GC column*

**See the Intuvo portfolio**

### Column Innovations

Ionic Liquid capillary columns enabling unique applications and selectivities

- **Watercol™ 1910** – allows the convenient measurement of water by GC e.g. in gasoline or Liquefied Petroleum Gas (LPG), by producing a sharp peak for water and being stable against water
- **SLB®-IL60i, SLB®-IL76i, and SLB®- IL111i** – combines high selectivity and high inertness towards polar analytes enabling separations not possible before and is ideal as the 2nd dimension in GCxGC
- **SLB®-ILD3606** – allows determination of oxygenates and benzene in petroleum products, such as gasoline, in relation to ASTM D3606 but with one column
- **SLB®-ILPAH** – provides for unsurpassed resolution of polyaromatic hydrocarbons (PAHs)

Visit [SigmaAldrich.com/il-gc](https://www.sigmaaldrich.com/il-gc)





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## Gas Chromatography ◀

### Capillary Columns

This family of columns can be used for methods to measure purity, determine composition, and identify impurities in petroleum products.

- **SLB®-ms MS-grade (SLB®-1ms, -5ms, -35ms)** – low bleed, inert, durable, and consistent columns for sensitive and reliable mass spectral identification
- **Petrocol® series** – non-polar columns with considerable theoretical plate numbers (incl. 150 m column) for detailed analyses of petroleum products like PIANO, PONA, and PNA
- **SPB®-1 SULFUR** – for analyses of sulfur gases and other volatile sulfur compounds



- **PLOT** – one of the broadest offerings; choose from different adsorbent types for separations of permanent gases, light hydrocarbons, and volatile sulfur compounds
- **SCOT** – efficiency of capillary GC combined with the extensive stationary phase library of packed GC (e.g. Bentone 34/DNDP, TCEP, BMEA, Squalane)
- **MET** - rugged metal columns designed for simulated distillation (SimDis) and biodiesel
- **PTA-5** and **Carbowax® Amine** – base-deactivated columns for analyses of amines and other volatile basic compounds
- **Intuvo columns** for the Agilent® Intuvo GC system

### Petrochemical Columns Overview

[See our overview by industry/application](#)

### Packed Columns

Our extensive line of Supelco® packed GC columns are configured to fit most commercially available GC instruments. We are also catering for process GCs using metal or glass columns. The in-house glass shop and GC manufacturing enables us to offer custom-made columns and packings.



### Prepacked GC columns

[Request a Custom GC Column](#)



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## Gas Chromatography ◀

### GC Accessories

In addition to high-quality and innovative GC columns, we also offer a comprehensive line of GC accessories, ensuring reliable performance of your GC instrument. This includes low bleed GC septa, inlet liners, inlet seals, ferrules, nuts, guard columns, connectors, flowmeters, hand tools, syringes, vials, and PID lamps. Some highlights include:

- **Molded Thermogreen® LB-2 GC septa** – the perfect combination of low bleed, thermal stability, and easy puncturability
- **FocusLiner™ inlet liners** – enhance sample vaporization and increase precision, accuracy, and reliability
- **Inlet liner O-ring** and **inlet seals** – commonly replaced items in Agilent capillary injection ports
- **CapSeal Bullet® ferrules (for capillary columns)** – design keeps the graphite from adhering to the fitting, making them easy to remove and reusable
- **Supeltex® ferrules** – form leak tight seals without sticking to columns
- **Flowmeters** – four models of digital flowmeters, including choices for volumetric or mass measurement
- **Low Adsorption (LA) vials** – maintain sample integrity during storage by minimizing pH shifts and metal contamination

**See our GC Accessories brochure**

### Solvents for GC-ECD & FID / GC-MS

Our GC solvent qualities are ideal for all gas chromatography applications. These solvents are specially developed and tested for ECD, FID and MS detection and show minimal signal-to-noise ratio in the largest specified retention time range. See also the **solvent section** of this brochure.

Visit [SigmaAldrich.com/solvents](https://www.sigmaaldrich.com/solvents)

Visit [SigmaAldrich.com/GC](https://www.sigmaaldrich.com/GC)



*GC Accessories*





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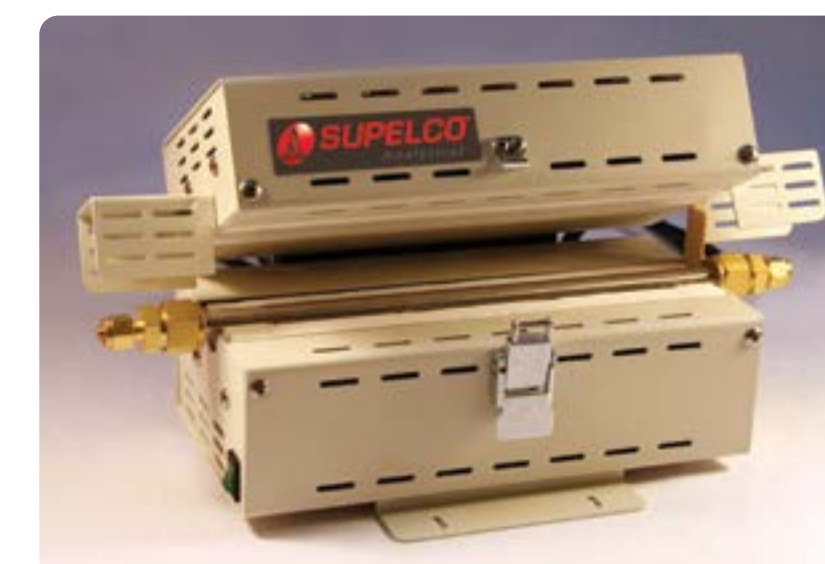
## Gas Chromatography ◀

### Gas Purification/Management

It is critical that a gas delivery system provides gas at the proper purity level, and at the correct pressure, based on its intended use. We offer many products that enable purification and management of the gas supply reaching from gas generators, over tubing and valves to gas purifiers to ensure the correct gas quality at the instrument.

- **Supelcarb® HC hydrocarbon trap** – greatest capacity for hydrocarbons per gram of adsorbent
- **High capacity gas purifiers** – best purifier choice for removing moisture and oxygen from carrier gas streams
- **OMI® (oxygen moisture indicating) polishing purifiers** – removes remaining contaminants that other upstream purifiers miss and indicates/ensures gas quality at the instrument
- **SGT Super Clean Gas Purifier** – including triple purifier (hydrocarbons, moisture, oxygen)
- **Tubing** – specially cleaned to ensure purity and inertness
- **Swagelok® tubing fittings** – reliable connections for GC carrier gas plumbing

### Purifiers Overview





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Gas Chromatography | **HPLC** | TLC | Titration & Karl Fischer | Related Testing | Process Water and Mobile Analysis

## HPLC ◀

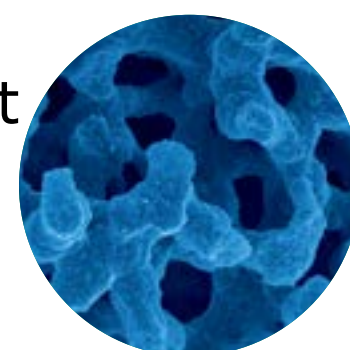
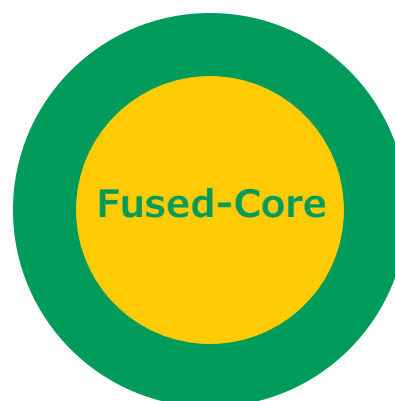
### Columns, reagents, consumables for use in High Performance Liquid Chromatography (HPLC)

HPLC is most commonly used for analytes that are either thermally unstable or non-volatile, neither of which can be analyzed using GC. We offer a broad range of HPLC columns, solvents, reagents and accessories.

#### Columns

High resolution, efficiency, and robustness against matrix-rich samples are key properties that U/HPLC columns demand in Petrochemical analysis and our products satisfy. Column lines in our offer being most suitable for the petrochemical industry are:

- **Ascentis® Express** – for small molecule analysis by HPLC & UHPLC providing highest efficiency and resolution. These superficially porous particle (SPP) or Fused-Core® columns are available with the widest range of phases/selectivities for optimized method development.
- **Chromolith® columns** – monolithic silica rod columns provide lowest back pressure and highest robustness against matrix-rich samples providing flexibility in choice of column lengths (column stacking), mobile phase solvent options & flow rate, and degree of sample preparation needed.



- **Purospher™ STAR** – highest purity, fully porous silica particle (FPP) columns provide outstanding reproducibility, peak symmetry and loading capacity for pH ranges from 1.5 to 10.5.
- **TSKgel®** – SEC columns for industrial polymers (size exclusion, gel permeation, and gel filtration techniques).

#### Accessories

To achieve faster analyses and increased resolution, systems are pushed toward higher operating pressures by using smaller particle columns and/or higher flowrates. With these trends, it is important to choose the correct accessories when replacing fittings, tubing, and other similar parts to maximize performance and reliability. Our extensive portfolio of tubing, high-performance fittings, filters and other accessories enable you to properly maintain your system and minimize downtime.

Visit [SigmaAldrich.com/HPLC](https://www.sigmaaldrich.com/HPLC)





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## HPLC

### Solvents

We are the renowned manufacturer of U/HPLC and LC-MS solvents and reagents. The newest addition, the UHPLC-MS LiChrosolv<sup>®</sup> solvent line, sets new standards with regards to solvent purity and resulting sensitivity. See also the **solvent section** of this brochure.



### UHPLC-MS solvents offer

Mobile phase filtration is critical to protect HPLC columns and instruments from particle impurities and gases. In addition to traditional glass vacuum filtration equipment and cut disc membranes, our polypropylene-based, solvent-resistant Millicup<sup>™</sup>-FLEX filtration device offers the convenience and compatibility of glassware with improved durability.



### Millicup<sup>™</sup>-FLEX offer

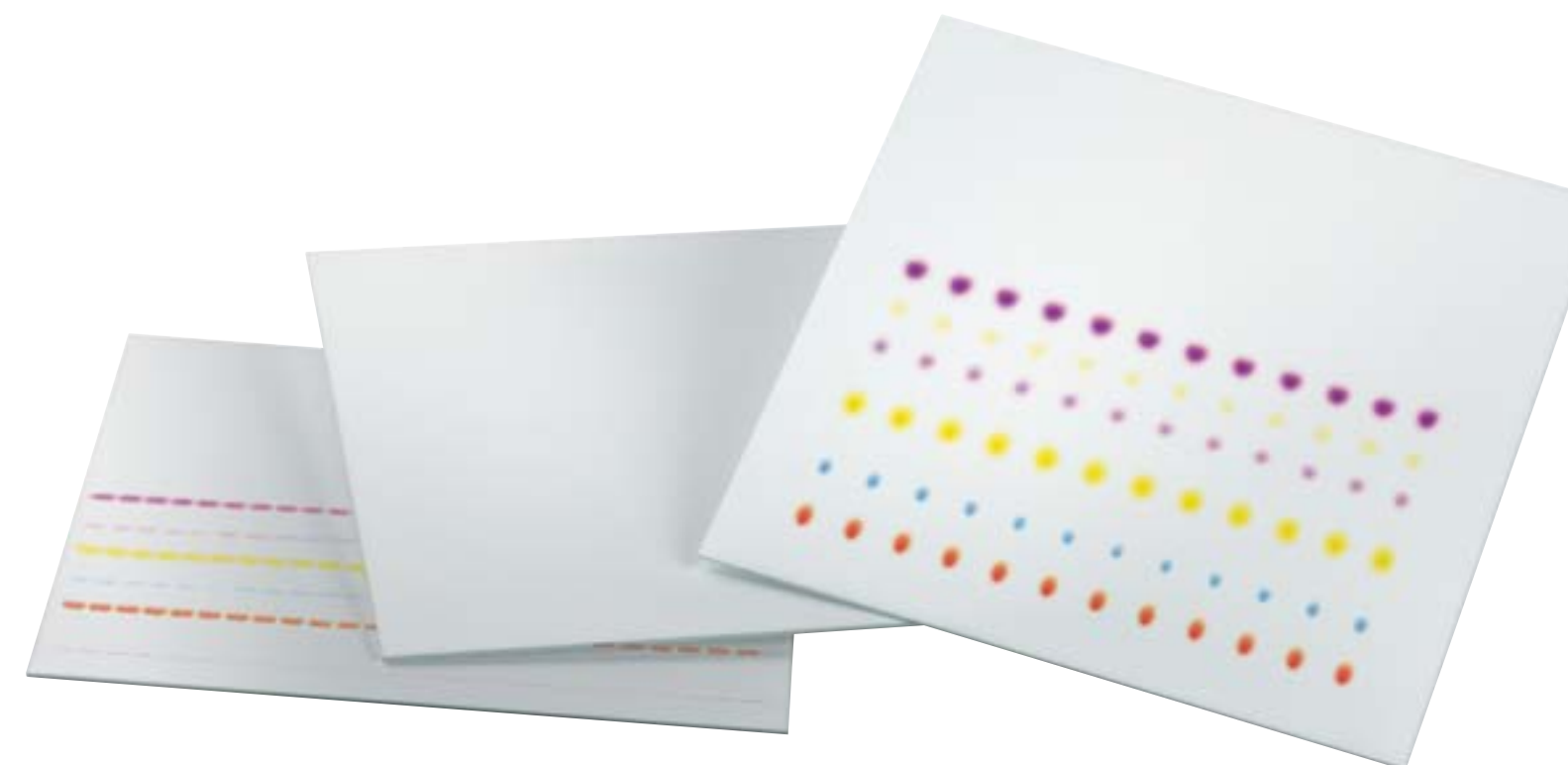
Visit [SigmaAldrich.com/HPLC](https://www.sigmaaldrich.com/HPLC)

## TLC

### TLC

We are the undisputed leader in manufacturing reliable and high quality TLC, HPTLC, and TLC-MS plates; tools you can rely on in reaction, monitoring, and screening applications.

Visit [SigmaAldrich.com/TLC](https://www.sigmaaldrich.com/TLC)







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## Titration and Karl Fischer

### Determination of water content by Karl Fischer

The significance of water determination with Karl Fischer titration is emphasized by the fact that it has been included in ASTM (American Society for Testing and Materials) methods, ISO guidelines and other industrial norms.



### Aquastar® Reagents

Our Aquastar® Karl Fischer **reagents** and **Certified Reference Materials (CRMs)** always provide reliable, rapid, and accurate results and are globally available to facilitate international method transfer. The product lines include specific solvents for oils and fats ensuring a reliable Karl Fischer performance for these matrices.

See our **Reagents**, **Standards** and **Applications**

### Volumetric Titration

Our volumetric titration product line comprises a wide range of titration solutions & standards including

- **Titripur®** ready-to-use volumetric solutions - traceable to reference materials from NIST and certified under ISO 17025 accreditation.
- **Titripac®** unique packaging – for reliable solutions from the first to the last drop
- **Titrisol®** concentrates – easy to use and simplifies daily work if you need different types of concentrations
- **Certipur®** Volumetric Standards & pH buffer CRMs – reliable reference materials produced under the double accreditation of ISO/IEC 17025 and ISO 17034

Visit [SigmaAldrich.com/Titration](https://SigmaAldrich.com/Titration)



**Water as the analyte**

*Did you know that reliable water determination e.g. in LPG is possible with GC?*

**Read more**

### Titration goes Digital



*Connect your titrator with our SmartChemicals!*

*Look for the new RFID labels to transfer reagent data with a brief touch on the bottle. Saves time, ensures correct data integrity and prevents transcription errors.*

**Read more Here**





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## Related Testing

### Spectroscopy (AAS & ICP)

When analysing raw materials, intermediates and finished products for metal content (e.g. from catalysts or wear metal), the analytical reagents need to be reliably low in background. Suprapur<sup>®</sup> and Ultrapur high purity acids and bases are designed specifically for instrumental analytical applications to ensure your results are accurate. They are complemented by a range of auxiliary reagents including buffers and matrix modifiers for AAS, and an extensive line of TraceCERT<sup>®</sup> and Certipur<sup>®</sup> standards. See our complete offering for metal trace analysis including certified reference materials and reagents for x-ray fluorescence (XRF) at

### ICP & AAS Standards

### Ultrapur and Suprapur<sup>®</sup> High Purity Acids and Bases

### Spectromelt Reagents for XRF

### Physical Property Testing

We carry a vast range of **viscometers from Paragon**.

We also offer as **melting point accessories** in our labware range. See Labware product categories at [SigmaAldrich.com/labware](https://www.sigmaaldrich.com/labware)

Please also refer to the **reference materials** section

### Environmental Water Analysis



For analysis of effluent or wastewater, visit our environmental analysis page [SigmaAldrich.com/environmental](https://www.sigmaaldrich.com/environmental)

For determination of VOCs in water according to ISO 17943 using SPME HS-GC-MS, read more [here](#)





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## Mobile Analysis ◀

Mobile analysis of key chemical parameters is essential for on the spot in-process control and water monitoring. For example, optimizing chlorine levels prevents microbiological fouling, silicate contamination in boiler feedwater could accelerate scale buildup, and elevated iron levels indicate corrosion.

Different levels of analysis can be achieved based on various mobile testing systems. The three major testing approaches are:

- **MQuant® test strips** and liquid colorimetric tests provide visual, semiquantitative readout. Some are now available for digitalized readout with the smartphone app **MQuant® StripScan**.
- Instrument-based test strip readout with **Reflectoquant® reflectometer** provides quantitative results.
- Handheld **Spectroquant® Move colorimeters** and ready-to-use photometric test kits allow precise on the spot analyses.

There are tailor-made solutions for quick and easy on the spot analysis in various applications to test a wide range of parameters e.g. residual or total hardness, iron, sulfite, or nitrite.

### Test Strips, Papers & Readers

### Colorimetric & Titrimetric Kits



## Process Water ◀

### Photometric Analysis

Analyzing cooling and boiler water is essential for industrial plants and silicate, calcium and magnesium contents are particularly important as they can cause deposit formation and scaling, leading to higher maintenance costs and downtime. To test ultra-low levels of different parameters in process water, the **Spectroquant® Prove 600** with a 100 mm cuvette allows ultra-sensitive measurements of silicate, chloride and iron to protect your system. It is complemented by a large range of Spectroquant® test kits e.g. for chloride, iron, silicate, sulphate and others.

Visit [SigmaAldrich.com/spectroquant](https://SigmaAldrich.com/spectroquant)



*Water as the sample matrix*





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Organic and Inorganic Reference Materials | Water (Karl-Fischer) CRMs | Physical Property CRMs | Metrological Institute Standards

## Organic and Inorganic Reference Materials ◀

### For Petrochemical Applications

The Supelco® analytical product range offers a comprehensive line of pure standards (neats), along with single and multi-component petrochemical solutions which are suitable for most analytical methods. Many of our standards are formulated to meet the prescribed recommendations of ASTM, or international bodies (including DIN, EN and ISO), as well as other international organizations.

See our **Petrochemical Standards** Portfolio

The quality and consistency of our products are supported by our ISO Certifications and Accreditations. In addition to ISO 9001:2000 certification, we are proud to offer CRMs produced under double accreditation according to ISO/IEC 17025 and ISO 17034 (formerly ISO Guide 34). This represents the highest achievable quality standard for the production of Certified Reference Materials (CRMs)



See our full range of analytical standards and certified reference materials at

[SigmaAldrich.com/standards](https://www.sigmaaldrich.com/standards)

### Selected areas:

#### Organic Reference Materials

- ASTM Standard Solutions
- Hydrocarbons – fuels, e.g. jet fuel, biodiesel, reformates and oils, PIANO, PONA, PNS
- Sulfur compounds
- Volatile Organic Compounds (VOCs) – Environmental testing: e.g. Underground storage Tank (UST) GRO & DRO or VOCs in water by ISO17943
- FAMES
- UV/Vis calibration verification from **Jaytee** and **Hellma**

#### Inorganic Reference Materials

- Trace metals by ICP and AAS with double Accreditation (ISO 17034 and ISO/IEC 17025) **TraceCERT®**, **Certipur®** & **Titrisol®**
- Cations and Anions **TraceCERT® for IC**
- **Sulfur Matrix CRMs**



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Organic and Inorganic Reference Materials | Water (Karl-Fischer) CRMs | Physical Property CRMs | Metrological Institute Standards

## Water (Karl-Fischer) CRMs

Aquastar® Certified Reference Materials (CRMs) are available as neat powders, or convenient single-use ampouled solutions. An innovative oil matrix water standard is also available, specifically designed for petrochemistry and produced under double accreditation (ISO/IEC 17025 and ISO 17034).

[See our Karl Fischer Standards](#)



## Physical Property CRMs

Paragon Scientific is a UKAS accredited CRM manufacturer with 20 years of experience in the production and certification of quality reference materials. The products are certified in accordance with the requirements of ISO/IEC 17025 and ISO 17034 (ISO Guide 34). Areas covered are

- Viscosity
- Color
- Density
- Flash point
- Freezing point
- Refractive index
- Smoke point

Paragon also offers CRMs for applications such as aniline point, distillation, FIA (fluorescent indicator adsorption), aromatics, sulfur, and total acidity, as well as viscometers, viscosity bath media and synthetic seawater.

[See the Paragon Physical Property CRMs](#)

## Metrological Institute Standards

NIST Standard Reference Materials® (SRMs), we are a NIST authorized distributor. We do also offer BAM, NMI Australia and IRMM/BRC standards. Explore our complete [portfolio](#).

For the full range of reference materials, visit [SigmaAldrich.com/standards](https://www.sigmaaldrich.com/standards)





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[Air Monitoring & Air Sampling](#) | Environmental Water Analysis

## Air Monitoring & Air Sampling ◀

Our broad portfolio of air monitoring products includes samplers and tools for emission & gas monitoring. To see the full range of products for whole air sampling, solvent desorption (ORBO™ line) and thermal desorption (Carbotrap® tubes and adsorbents), visit our [Air Monitoring Devices & Tubes page](#)

Specialized tools for air:

### FLM™ Carbotrap™ X Thermal Desorption Tube

for Fenceline Monitoring acc. to US EPA 325B Method “VOC from Fugitive and Area Sources”

EPA Method 325 requires refineries to monitor VOCs at the fenceline of their facilities, using passive sampling by a thermal desorption tube with diffusion cap. Our FLM™ Carbotrap™ X Thermal Desorption Tube meets the requirements of method 325B for passive sampling and provides the widest range of compound uptake rates mentioned in the method.

[Read more](#) on the FLM Tube or watch our [webinar](#)

The FLM™ tubes are barcoded. To see our range of barcoded thermal desorption glass tubes (fritted for improved bed integrity) and SS tubes, download our [Thermal Desorption Tubes with Unique Barcodes](#) Brochure







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Air Monitoring & Air Sampling | Environmental Water Analysis

## Air Monitoring & Air Sampling

### Radiello Passive Samplers

Radiello passive/diffusive samplers are for environmental monitoring, ambient and outdoor air monitoring, industrial hygiene, indoor air quality (IAQ), personal sampling and breathing zone assessment. The radial design offers higher capacity and faster uptake/sampling rates than traditional passive monitors. Applications include BTEX, VOCs, NO<sub>2</sub>, SO<sub>2</sub>, HF, aldehydes, ozone, H<sub>2</sub>S, ammonia, HCl, phenols, anesthetic gases/vapors and 1,3-butadiene & Isoprene.

**Read more** in our Passive/Diffusive Air Sampling brochure



### ASSET™ EZ4-NCO Sampler for Isocyanates

ASSET™ EZ4 Dry Samplers are easy-to-use and offer the ultimate sensitivity for collection and measurement of vapor phase and particulate isocyanates. The ASSET™ EZ4-NCO Dry Sampler collects the full range of isocyanate monomers and oligomers, while the ASSET™ EZ-ICA sampler is designed to collect isocyanic acid (ICA) and methyl isocyanate (MIC) at low levels.



#### Key Features & Benefits:

- Easy to use and safe to wear
- Able to sample up to 12 h (EZ4-NCO), increasing work place productivity during sampling as work shifts are not interrupted for sampler exchange
- Ability to achieve reliable, low detection limits, only device to measure vapor phase and particulate isocyanates
- No interferences, no field extraction or sample refrigeration needed, reduces shipping and handling charges
- Fully supported by Certified Reference Materials (CRMs) for LC-MS detection
- 2 year shelf life
- Complies with ISO 17734-1:2013

For more Information see the **ASSET™ EZ4 Brochure**



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Air monitoring & Air sampling | **Environmental Water Analysis**

## Environmental Water Analysis ◀

We offer a portfolio of tools and solutions for sample preparation of water samples including SPE (tubes and disks) & SPME products. For more details, visit our [sample preparation page](#).

For an overview of our full offer for environmental analysis, visit

[SigmaAldrich.com/environmental](https://www.sigmaaldrich.com/environmental)



See also our application for VOCs in water according to ISO 17943 using SPME HS-GC-MS

### Ready-to-use test kits for key wastewater parameters

For swift, secure and precise analysis, our Spectroquant® test kits are easy to use and are supplied with validated standard-compliant reagents.

Choose from over 180 kits including the following critical water testing parameters:

- Ammonium
- BOD
- Phosphate
- Chlorine
- COD
- Silicate
- Metals
- Nitrate

Visit [SigmaAldrich.com/photometry](https://www.sigmaaldrich.com/photometry)

[See our Wastewater & Process Water Testing page](#)





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GC Solvents | HPLC & UHPLC Solvents and Reagents | Solvents for Classical Analysis | NMR Solvents

## GC Solvents ◀

**SupraSolv®** for GC applications, catering for Headspace (HS), FID, ECD and MS Applications.

- Accurate, reliable and reproducible results due to minimal signal-to-noise ratio.
- Time and cost savings due to the best possible batch consistency, thus avoiding analysis repetition.
- The most comprehensive application area due to the largest retention time range.



## HPLC & UHPLC Solvents and Reagents ◀

- **LiChrosolv® solvents**, ensuring optimal HPLC & LC-MS performance, complemented by **LiChropur® reagents** for LC-MS.
- **UHPLC-MS LiChrosolv® solvents** provide lowest background and particle freeness, setting a new standard for HPLC solvents.

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Sample Preparation

Analysis

Calibration - Reference Materials

Environmental & Industrial Hygiene Monitoring

Solvents

Lab Water

Lab Safety



GC Solvents | HPLC & UHPLC Solvents and Reagents | **Solvents for Classical Analysis** | NMR Solvents

## Solvents for Classical Analysis ▼

**EMSURE**® premium grade solvents offer the highest quality and unmatched scope of specifications. EMSURE® products are fully compliant with ACS, Reag. Ph Eur and ISO guidelines. As a result, they can be used for almost all applications, including pharmacopoeia analysis.

**EMPARTA**® standard grade solvents offer fewer test parameters than EMSURE® products. Still, EMPARTA® product specifications are fully compliant with ACS requirements and cover all important parameters, thus ensuring reliable and reproducible results.

**EMPLURA**® basic grade solvents are ideal for basic lab work and production applications. EMPLURA® products offer adequate specifications with the most common parameters and are available in small pack sizes as well as in bulk quantities.



## NMR Solvents ▼

NMR is an excellent analytical tool which provides detailed information on the chemical structure, purity, and reaction states of petrochemicals.

More, NMR is not limited in the final stage of the process; it can be used from early exploration to the final products characterization.



To see our complete offering of solvents, visit our solvent center at [SigmaAldrich.com/solvents](https://www.sigmaaldrich.com/solvents)



Learn how to smart up your lab with EMSURE® products: [SigmaAldrich.com/smartup](https://www.sigmaaldrich.com/smartup)



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## Milli-Q® Lab Water Solutions

### Delivering quality to meet all your water purity needs

As one of the most commonly used reagents, purified water holds a significant role in laboratories everywhere. It may be used for simple tasks, such as rinsing glassware, but it also plays a critical role in many analytical techniques such as AAS, ICP-MS, HPLC, IC, titration, as well as UV/Vis spectroscopy. The selection of the optimal water purification solution will ensure reliable experimental results and high-quality data.



Discover the **Milli-Q® IQ 7003/05/10/15 integrated ultrapure and pure water system**, designed to provide consistently high-quality purified water for your sensitive applications, while improving your lab's productivity and reducing its environmental impact:

- A full range of Application-Pak polishers lets you tailor water quality to your specific application needs. The LC-Pak® polisher, containing reversed-phase C18 silica, purifies ultrapure water for your critical LC-MS analyses
- Connects to the **Milli-Q® IQ Element purification and dispensing unit** to deliver water suitable for the most stringent trace elemental analyses
- An intuitive touchscreen and ergonomic dispensers increase lab efficiency
- Mercury-free lamps, optimized water and energy consumption, reduced plastic waste and paperless data management contribute to an environmentally sustainable solution

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Lab Safety | Absorbents | Detergents

## Lab Safety, Absorbents and Detergents ◀

### Chemizorb® absorbents for spilled liquids

With Chemizorb® absorbents, you can clear away aggressive or unpleasant liquids quickly and safely. Our fast-acting absorbents consist of porous mineral or synthetic copolymers that are chemically inert, and capable of absorbing up to 400% of their own weight. Key features:

- Various types available to cover nearly all liquids:
  - Allrounders: Granular & Powder
  - Specialists for: Acids, Alkalis, Hydrofluoric Acid & Mercury
- Bottle designed with emergencies in mind with a wide neck allowing faster dispensing and an easy-to-find bright red colour to make it stand out among other HDPE bottles
- Clear process monitoring as the pH indicator keeps track of the neutralization process
- Specific usage instructions provided on each label



### Extran® reliable all-purpose detergents

Thorough, residue-free cleaning is essential for reliable processes. Everything that comes in contact with petrochemicals, chemicals or biological substances must be free of impurities, both before and after use. Put your trust in many years of Extran® experience and use our detergents for manual cleaning (MA) or machine cleaning in lab washing machines (AP). Benefit from:

- No toxic ingredients - Extran® detergents protect the health of your lab staff
- Biodegradable - protects the environment
- Concentrates - distinctive cleaning power
- Flexibility - wide range of pack sizes and materials available



For more information about our safety and essentials portfolio, visit [SigmaAldrich.com/lab-safety](https://www.sigmaaldrich.com/lab-safety)





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