



News On Air Special Edition

Petrochemical Industry

Welcome to our first Special Edition of News on Air. This volume features Air Monitoring products that are used in your industry to ensure worker and community safety. Supelco offers a range of products for air monitoring of industrial conditions to assure worker and community safety.

Supelco's air monitoring products are useful for sampling of indoor (workplace) air and ambient air for a wide variety of analytes, such as aldehydes, volatile organic chemicals (VOC), benzene, toluene, ethyl benzene and xylene (BTEX) and other polyaromatic compounds (PAC).

Supel™-Inert Gas Sampling Bags

Supel-Inert Foil for permanent gases, and low molecular weight compounds such as carbon monoxide (CO); or Supel Inert Film for sampling VOCs and sulfur compounds.

We have expanded our gas sampling bag line to include our Supel-Inert film (a proprietary fluoropolymer) as an economic alternative for Tedlar®, and now also offer Supel-Inert Foil bags that are aluminium lined.

Both are available with two valve fitting options: Push-Lock Valve (PLV) and Screw Cap Valve (SCV); both include a septum for spiking or aliquot retrieval by a syringe. The septa are made of the Thermogreen polymer which has the industry's lowest bleed, thus preventing any sample contamination from the septum.



For more information, visit

sigma-aldrich.com/gassamplingbags

Supelco® Thermal Desorption Tubes in TDS³™ Container

For VOC applications, including BTEX via our wide range of sorbents.

Fits DANI, Markes (MI™), Shimadzu™, OI Analytical® and PerkinElmer® instruments. They're available in both Stainless Steel and Glass (fritted) styles. ¼ in. (6.35 mm) O.D x 3.5 in. (89 mm) long, conditioned and unconditioned tubes.

- All Carbotrap™ products are supplied with Supelco's adsorbent technology inside
- These fritted tubes ensure better adsorbent bed integrity
- Fritted glass tubes are supplied with a barcode
- Stainless steel tube markings are easy to read
- Conditioned tubes come sealed in TDS³™ storage container, for preservation and protection of the tube during use and transport



For more information, visit

sigma-aldrich.com/thermaldesorption

radiello™ H₂S Starter Kit

An ideal passive sampler for lower molecular weight contaminants such as H₂S and BTEX.

To make the first steps with the radiello passive sampler easier we have introduced a new starter kit for the analysis of hydrogen sulfide (H₂S). The kit contains one complete sampler with an additional adsorbent cartridge; no additional parts are needed. Using this kit, analysts that would like to try the radiello sampler will have a handy pack size for their first tryout.

The Kit (Cat. No. RAD170S) Contains:

- Two adsorbent cartridges and barcode labels
- One diffusive body
- One vertical adapter
- One triangular base plate
- An instruction sheet

Other Starter Kits are Available for:

- VOC/BTEX (chemical desorption – RAD130S, or thermal desorption RAD145S)
- 1,3-Butadiene (thermal desorption) – RAD141S

To read more about the radiello samplers, visit

sigma-aldrich.com/radiello



Orbo-555 LpDNPH Glass Sampling Tube for Carbonyl Sampling

Ideal for compounds found in methods 2532 and 2016 per NIOSH; D5197 per ASTM, and US EPA methods TO-11A, IP-6A and 100.

The ORBO-555 is a 6 mm O.D. x 110 mm length dual-bed LpDNPH glass sampling tube, containing 300 mg of LpDNPH in the front section, and 150 mg in the back section. The back section functions as a back-up bed for incidences of breakthrough that are sometimes associated with single bed DNPH cartridges in higher concentration environments, or when you are not certain of the concentration. The tube has a low pressure drop which enables use at high sampling rates of 1.5 – 2.0 L/min, even with personal sampling pumps.

To read more about DNPH products, visit



sigma-aldrich.com/air-monitoring

BPE-DNPH – Carbonyl Sampling with Built in Ozone Scrubber, for Humid Conditions

Suitable for 2016 per NIOSH; D5197 per ASTM; IP-6A per US EPA; and TO-11A per US EPA where the BPE layer acts as a built-in ozone scrubber and is not affected by moisture or high humidity conditions.

The BPE-DNPH cartridge is dual-layered and is comprised of silica gels impregnated with trans-1,2-bis (2-pyridyl), ethylene (BPE) as the top layer and the bottom layer of DNPH coated silica gel. The BPE converts the ozone into a DNPH derivative for either analysis, or simply for scrubbing ozone from your sample, depending on your choice of extraction method. The DNPH layer collects carbonyls for analysis. This sampler is not affected by high humidity.



To read more about DNPH, visit
sigma-aldrich.com/air-monitoring

For a listing of DNPH standards, visit
sigma-aldrich.com/dnph

Improve Your Laboratory Calibration Practices with the Innovative ATIS (Adsorbent Tube Injector System) System

The ATIS provides a quick and efficient way to transfer calibration standards or samples onto an adsorbent tube or into a gas sampling bag. The ATIS employs the technique of flash vaporization to vaporize the sample in a continuous flow of inert gas; the inert gas carries the

sample to the tube. After enough time has elapsed, typically less than five minutes, the tube is removed from the ATIS and analyzed using the appropriate analytical technique for that adsorbent tube.



Request the ATIS Flyer (PGH) more information or to read more about ATIS, visit sigma-aldrich.com/atis

Air and Emissions Proficiency Testing Samples

RTC's PT studies are ACLASS (certificate# AP-1469) accredited, producing accredited NELAC Proficiency Tests to the relevant sections of ISO 17025 and ISO 17043. RTC also has a registered ISO9001:2008 quality system.

RTC have been producing environmental LPTP for more than 20 years and regularly sends out more than 20,000 PT samples a year to over 2,500 participants throughout the world. We are now also offering Proficiency Testing for Air Monitoring applications.

Our Air and Emissions proficiency testing samples have been designed for use with approved methods for air testing and are available in a variety of sampling matrices including:

- Impinger solutions
- Filter paper
- PUF cartridges
- Air Canisters
- Absorbent tubes

For more information, visit
sigma-aldrich.com/crm

Air Sampling Application Selection

Air monitoring has various industry applications where the air quality is a concern or a health hazard. A few examples include vapor intrusion in residential/commercial settings, contamination resulting from petrochemical industry efforts and by-products and agricultural industry pollution.

Supelco and Sigma-Aldrich offer a range of active and passive air sampling products, in addition to various analytical chemistry tools (reference standards, reagents, solvents, GC columns, HPLC columns, sample preparation products) for the accurate and reliable determination of air-borne contamination. Below are links to chromatograms for a few typical air monitoring applications, as well as detailed supporting information on air sampling techniques and products for specific industries:

- Petrochemical Industry
- Welding Processes

For more information on petrochemical applications, visit
sigma-aldrich.com/petrochemical

Petrochemical Analytical Standards

P-I-A-N-O (Paraffins-Isoparaffins-Aromatics-Napthenes-Olefins) standards are complex mixtures of known quantities of hydrocarbons, accurately prepared by weight to three decimal places. Use these mixes to determine retention times and indices, and to monitor response factors for components of complex mixtures of hydrocarbons. Formulations are weight percent. Each mix includes a detailed data sheet listing components by weight percent, mole percent and liquid volume percent, retention indices for each component and other information. A chromatogram from a 100-meter capillary column (including conditions) is provided. Products are supplied in a crimp-top vial with hole-caps and septa.

ASTM Petroleum Standards	Aliphatic Hydrocarbons Kit, ASTM D2887, ASTM D3710, ASTM D4815, ASTM D5134, ASTM D5134 Qualitative Reference Materials, ASTM D5307, ASTM D5441, ASTM D5442, ASTM D5580, ASTM D5769, ASTM D6584, California Oxygenate Standard, High Molecular Weight Hydrocarbon Standards, Highly Characterized Reference Materials, Qualitative n-Paraffin Mixes, WSPA RM-1 Gasoline Reference Material
BTEX	
DIN Standards	
Fuels	Fuel Oil, Jet Fuel, Petroleum Refinery Reformates
GRO/DRO/UST	
PNA / PONA / P-I-A-N-O	
Substance classes	Neats, Olefins, Paraffins, U.S. State Specific
Sulfur Standards	

For more information about the composition of these and other analytical standards, visit the analytical standards search engine at sigma-aldrich.com/standards-search

For more information on petrochemical analytical standards, visit sigma-aldrich.com/petrochemical-standards

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Solid Phase Microextraction (SPME)

SPME has gained wide spread acceptance as the technique of preference for many applications including flavours and fragrances, forensics and toxicology, in environmental and biological matrices.

To request a copy of the applications CD, visit sigma-aldrich.com/spme

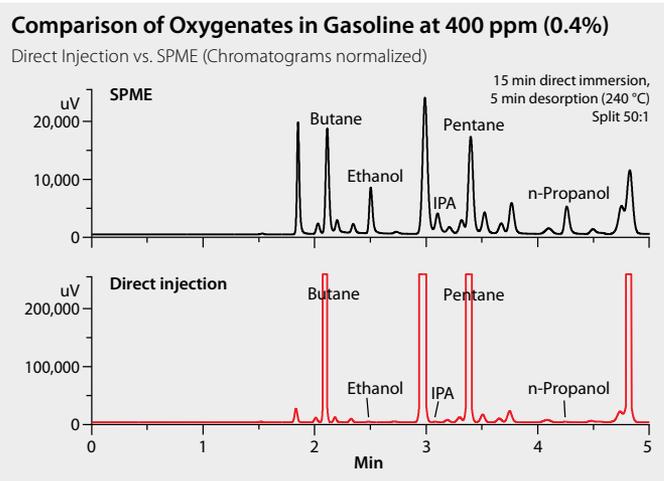
SPME Fast Fit Fiber Assemblies (FFA)

The SPME Fast Fit Assemblies (FFA) are a new configuration of SPME fibers that allow the automated exchange of SPME fibers by the Multi Fiber EXchange (MFX) System* on a CTC CombIPAL type autosampler. This enables:

- Automatic screening for optimal SPME phase selectivity in method development
- Extract the sample with various different SPME phase chemistries for analyte polarity range enhancement
- Allow for unattended desorption of multiple fibers loaded with samples from field sampling and air monitoring campaigns

The SPME-FFAs are complemented by new holders for field sampling, passive air sampling and new storage devices for shipping and storing the FFAs.

*available through Gerstel GmbH & Co KG



To learn more about SPME-FFAs and accessories, visit sigma-aldrich.com/spme-ffa

NEW – Petrochemical Industry Certified Reference Materials from Paragon Scientific now available.

- Gas Oil Certified for Cold Filter Plugging Point (CFPP)
- Cloud Point
- Distillation using ASTM / IP and EN test method protocols
- Freezing Point
- Flash Point Standard ASTM D92/D93
- Fuels Testing
- Pour Point

For more information on these new standards and to sign up for our new Petrochemical brochure, request via emeaappliedmarkets@sial.com

GC Columns

Supelco® offers a full-line of capillary gas chromatography (GC and GC-MS) columns that include ionic liquid, MS-grade, Fast GC, GCxGC, chiral and PLOT columns. The table below groups them conveniently by industry (including petroleum) and also by phase polarity. Sigma-Aldrich provides the most complete line of packed GC columns and components.

To maximize performance, check out Supelco's comprehensive line of GC accessories (including molded GC septa, deactivated inlet liners, syringes and vials), standards, solvents and gas purification/management products (including purifiers, gas generators, tubing, fittings and pressure regulators). These are conveniently grouped by instruments in the GC accessories brochure.

	Petrocol® DH Octyl	Petrocol DH 50.2	Petrocol DH	Petrocol DH 150	Petrocol 2887	Petrocol EX2887	SPB®-1 SULFUR	Equity-1	MET-Biodiesel	HT-5	Omegawax®	SP™-2380	TCEP	Alumina sulfate PLOT	Alumina chloride PLOT	Carboxen®-1010 PLOT	Carboxen-1006 PLOT	Mol Sieve 5A PLOT	Supel-Q™ PLOT	Bentone 34/DNDP SCOT	BMEA SCOT	Squalane SCOT	TCEP SCOT	Fluorcol™ and Krytox® Packed Columns	GPA Packed Columns	Micropacked Columns	
Detailed Hydrocarbon Analyses [DHA]	●	●	●	●																							
Simulated Distillation [Sim Dis]					●	●				●																	
Aromatics											●	●							●	●							
H ₂ /O ₂ /N ₂ /CO/CH ₄ /CO ₂																●											
H ₂ /N ₂ /CO/CH ₄ /CO ₂																●	●										
H ₂ /O ₂ /N ₂ /CO/CH ₄																●		●									
O ₂ /Argon																		●									
C1-C3 Hydrocarbons														●	●	●	●	●	●	●							
C1-C5 Alkanes, Alkenes and Alkynes														●	●												
C1-C12 Hydrocarbons																			●								
Fluorocarbons															●				●					●			
Sulfur Compounds							●												●								
Process Analyzers																				●	●	●	●			●	
Natural Gas Liquids/Natural Gas		●	●	●																						●	
Biodiesel-Glycerin Impurity									●																		
Biodiesel-Methanol Impurity								●																			
Biodiesel-FAME Profile											●																
E85-Ethanol Content				●																							

For more specific application information and to request a copy of the GC Column Selection Guide or the Maximise Performance GC accessories brochure, visit sigma-aldrich.com/gc

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