SIGMA-ALDRICH®

Selecting a GC Column for Specific Industries/Applications

Accurate. Precise. Consistent. GC Capillary Columns by Industry

We know that only the most accurate analytical products will do.

That's why we offer the Supelco portfolio of analytical GC columns, providing you the accuracy, precision and consistency you need.

Gas chromatography, first established in the 1950's, is a mature analytical technique with many established applications. Therefore, it is probable that documented methods or journal articles exist stating which stationary phases have successfully been used for a given application. Today, GC is the preferred chromatographic technique in the environmental, petroleum, chemical, flavor & fragrance, and forensic industries. In the biofuel, agriculture, food & beverage, cosmetic and personal care/cleaning product, and clinical industries, its frequency of use is equal to other chromatographic techniques. It is used for specific chromatographic applications in the industrial hygiene, pharmaceutical, and life science industries.

We have identified the GC columns that are routinely used in the various industries. These are conveniently arranged by industry, and then application within that industry, to simplify the process of selecting the proper phase.

Environmental Industry

The environmental columns offered here can be used with many specific methods for the analyses of volatiles, semivolatiles, pesticides, PCBs, herbicides, PAHs, and dioxins.

- For volatiles by GC-MS, choose **SPB®-624** and **VOCOL®**
- For volatiles by GC, choose **SPB®-624** and **VOCOL®**
- For semivolatiles by GC-MS, choose **SLB®-5ms**
- For semivolatiles by GC*, choose **SLB®-5ms**, **SLB®-35ms**, **Equity®-5**, **Equity®-1701**, **SPB®-608**, **Sup-Herb™**, **SPB®-35**, **SPB®-50**, and **chiral**
- For fuels (GRO, DRO, TPH), choose **SLB®-5ms**, **Equity®-5**, **SPB®-624**, and **VOCOL®**
- For dioxins by GC-HRMS, choose **SLB®-5ms**, **SPB®-225**, and **SP®-2331**
- For PCBs by GC-HRMS, choose **SPB®-Octyl**, **SLB®-5ms**, **SLB®-IL59**, **SLB®-IL82**, and **SLB®-IL111i**
- For PBDEs by GC-MS, choose **SLB®-5ms**
- For PAHs by GC or GC-MS, choose **SLB®-ILPAH** or **SLB®-PAHms**
- For oil spill dispersants, choose **SPB®-1000**
- For odor compounds (geosmin, 2-MIB), choose **SLB®-5ms**

* Includes: organochlorine pesticides, PCBs as Aroclors, herbicides, organophosporus pesticides, nitrosamines, phenols, phthalate esters, haloacetic acids, disinfection by-products and solvents, and PAHs.

Industrial Hygiene

These columns can be used with methodologies designed to monitor workplace air quality.

- For US EPA Method IP-8, choose **SLB®-5ms**
- For NIOSH Method 1003, choose **VOCOL®**
- For NIOSH Method 1403, choose **Equity®-1**
- For NIOSH Method 1500/1501, choose **Equity®-1**
- For NIOSH Method 2530, choose **SLB®-5ms**
- For NIOSH Method 2542, choose **Equity®-1**
- For NIOSH Method 5503, choose **SLB®-5ms**
- For OSHA Method 52, choose **SUPELCOWAX® 10**
- For OSHA Method 53, choose **Equity®-1**
- For OSHA Method 56, choose **Equity®-1**
- For OSHA Method 62, choose **SLB®-5ms**
- For OSHA Method 80, choose **SUPELCOWAX® 10**

Petroleum Industry

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

- For detailed hydrocarbon analyses (DHA), choose **Petrocol® DH Octyl**, **Petrocol® DH 50.2**, **Petrocol® DH**, and **Petrocol® DH 150**
- For simulated distillation (Sim Dis), choose **MET-SimDis**, **Petrocol® 2887**, **Petrocol® EX2887**, and **HT-5 (aluminum clad)**
- For fuels by pattern recognition, choose **SLB®-1ms**, **Equity®-1**, and **SLB®-5ms**
- For aromatics in fuel, choose **SLB®-ILD3606** and **SLB®-IL111i**
- For oxygenates in fuel, choose **Petrocol® DH Octyl**, **Petrocol® DH 50.2**, **Petrocol® DH**, **Petrocol® DH 150**, and **SLB®-ILD3606**
- For sulfur compounds in fuel, choose **SPB®-1 SULFUR**, **SLB®-IL59**, **SLB®-IL60i**, and **Supel-Q™ PLOT**
- For impurities in fuel, choose **Petrocol® DH 150**, **SUPELCOWAX® 10**, and **Supel-Q™ PLOT**
- For natural gas and natural gas liquids, choose **SLB®-1ms** and **Equity®-1**
- For hopanes (triterpenes), choose **SLB®-5ms**
- For water/mositure determination, **choose Watercol™**

Biofuels

These columns can be used to measure purity and to monitor for impurities in biofuels.

- For bioethanol (ethanol content), choose **Petrocol® DH 150**
- For biodiesel (FAME profile), choose **Omegawax®**, **SLB®-IL60i**, and **SLB®-IL111i**
- For biodiesel (glycerin impurity), choose **MET-Biodiesel** and **SPB®-Biodiesel**
- For biodiesel (methanol impurity), choose **Equity®-1**

Chemical Industry

These special purpose columns can be selected for analyses such as solvents, aromatics, light hydrocarbons, fluorocarbons, sulfur-containing compounds, glycols, basic compounds, and much more.

- For solvents, choose **SLB®-5ms**, **SUPELCOWAX® 10**, and **SLB®-IL60i**
- For C1-C5 alkanes, alkenes, and alkynes, choose **Alumina sulfate PLOT**, **Alumina KCl PLOT**, and **Silica PLOT**
- For impurities in ethylene, choose **Alumina sulfate PLOT**
- For impurities in propylene, choose **Alumina sulfate PLOT**
- For aromatics, choose **SUPELCOWAX® 10**, **SLB®-IL59**, **SLB®-IL60i**, **SLB®-IL111i**, **SLB®-ILD3606**, and **Bentone 34/DNDP SCOT**
- For impurities in toluene, choose **TCEP**, **SLB®-IL100**, and **TCEP SCOT**
- For xylene isomers, choose **SUPELCOWAX® 10**, **SLB®-IL59**, **SLB®-IL60i**, and **Bentone 34/DNDP SCOT**
- For mineral spirits, choose **TCEP** and **TCEP SCOT**
- For chlorinated solvents, choose **SLB®-5ms**, **SUPELCOWAX® 10**, and **SLB®-IL60i**
- For pesticides, choose **SLB®-5ms** and **chiral**
- For fluorocarbons, choose **Supel-Q™ PLOT**, **Alumina KCl PLOT**, and **Silica PLOT**
- For alcohols, choose **Equity®-1**, **SLB®-5ms**, **SUPELCOWAX® 10**, **SLB®-IL60i**, and **chiral**
- For glycol ethers (cellosolves), diols, and glycols, choose **SPB®-1000**, **Nukol™**, **SLB®-IL60i**, and **chiral**
- For formalin, choose **Carboxen® 1006 PLOT**
- For ketones, choose **Equity®-1**, **SLB®-5ms**, **SUPELCOWAX® 10**, **SLB®-IL60i**, and **chiral**
- For carboxylic acids as methyl esters, choose **SP®-2380**, **SLB®-IL111i**, and **chiral**
- For dicarboxylic acids as dimethyl esters, choose **SP®-2380** and **SLB®-IL111i**
- For tall oil fatty acid as methyl esters, choose **SP®-2380** and **SLB®-IL111i**
- For esters and ethers, choose **SPB®-1000**, **Nukol™**, **SLB®-IL60i**, and **chiral**
- For impurities in MTBE, choose **Petrocol® DH Octyl**, **Petrocol® DH 50.2**, **Petrocol® DH**, and **Petrocol® DH 150**
- For terpenes, choose **Equity®-1**, **SLB®-5ms**, **SLB®-IL59**, **SLB®-IL60i**, **SLB®-IL111i**, and **chiral**
- For amines, choose **PTA-5**, **Carbowax® Amine**, **SLB®-IL59**, and **SLB®-IL60i**
- For aromatic amines (anilines), choose **PTA-5**, **Carbowax® Amine**, **SLB®-IL59**, and **SLB®-IL60i**
- For sulfur compounds, choose **SPB®-1 SULFUR**, **SLB®-IL59**, **SLB®-IL60i**, **Supel-Q™ PLOT**, and **Silica PLOT**
- For dissolved gas analysis (DGA), choose **Carboxen® 1010 PLOT**
- For gases and light hydrocarbons, choose **Carboxen® 1010 PLOT**, **Carboxen® 1006 PLOT**, **Supel-Q™ PLOT**, **Alumina sulfate PLOT**, **Alumina KCl PLOT**, **Silica PLOT**, and **Mol Sieve 5A PLOT**
- For process analyzers, choose **Bentone 34/DNDP SCOT**, **TCEP SCOT**, **BMEA SCOT**, and **Squalane SCOT**

Agricultural Industry

These columns are suitable for purity and contaminant detection applications performed by grain growers, edible oil producers, and agrochemical manufacturers.

- For edible oils, choose **SLB®-5ms**, **SAC™-5**, **Omegawax®**, **SLB®-IL59**, **SLB®-IL60i**, **SP®-2380**, **SP®-2560**, and **SLB®-IL111i**
- For free fatty acids, choose **Nukol™** and **SPB®-1000**
- For FAMEs by boiling point elution, choose **Equity®-1**
- For FAMEs by degree of unsaturation, choose **SPB®-PUFA**, **Omegawax®**, **SLB®-IL59**, and **SLB®-IL60i**
- For omega 3 and omega 6 FAMEs, choose **SPB®-PUFA**, **Omegawax®**, **SLB®-IL59**, and **SLB®-IL60i**
- For cis/trans FAME isomers, choose **SP®-2380**, **SP®-2560**, and **SLB®-IL111i**
- For mono-, di-, and triglycerides, choose **MET-Biodiesel** and **SLB®-35ms**
- For pesticides, choose **SLB®-5ms**, **SLB®-35ms**, **Equity®-1701**, **SPB®-608**, and **chiral**
- For dioxins, choose **SLB®-5ms**, **SPB®-225**, and **SP®-2331**
- For flavors, fragrances, and aroma, choose **Equity®-1**, **SLB®-5ms**, **SUPELCOWAX® 10**, **SLB®-IL60i**, and **chiral**

Food and Beverage Industry

These columns are suitable for food composition/nutrition applications, as well as for food safety applications.

- For sugars as alditol acetates, choose **SPB®-624** and **Equity®-1701**
- For free fatty acids, choose **Nukol™** and **SPB®-1000**
- For FAMEs by boiling point elution, choose **Equity®-1**
- For FAMEs by degree of unsaturation, choose **SPB®-PUFA**, **Omegawax®**, **SLB®-IL59**, and **SLB®-IL60i**
- For omega 3 and omega 6 FAMEs, choose **SPB®-PUFA**, **Omegawax®**, **SLB®-IL59**, and **SLB®-IL60i**
- For cis/trans FAME isomers, choose **SP®-2380**, **SP®-2560**, and **SLB®-IL111i**
- For fatty acid ethyl esters (FAEEs), choose **SLB®-5ms**, **Omegawax®**, **SLB®-IL59**, **SLB®-IL60i**, **SP®-2380**, **SP®-2560**, and **SLB®-IL111i**
- For mono-, di-, and triglycerides, choose **MET-Biodiesel** and **SLB®-35ms**
- For sterols, aliphatic alcohols, and waxes, choose **MET-Biodiesel** and **SAC™-5**
- For amino acids, choose **SLB®-5ms** and **chiral**
- For nutraceuticals and antioxidants, choose **SLB®-5ms**
- For organic acids, choose **SLB®-5ms**, **Nukol™**, **SPB®-1000**, **SUPELCOWAX® 10**, and **SLB®-IL60i**
- For flavors, fragrances, and aroma, choose **Equity®-1**, **SLB®-5ms**, **SLB®-35ms**, **SUPELCOWAX® 10**, **SLB®-IL60i**, and **chiral**
- For preservatives, choose **SLB®-5ms**
- For pesticide residues, choose **SLB®-5ms**, **SLB®-35ms**, **Equity®-1701**, **SPB®-608**, and **chiral**
- For veterinary drug residues, choose **SLB®-5ms**, **SLB®-35ms**,**Equity®-1701**, and **SPB®-608**
- For allergens, choose **SLB®-5ms**
- For dioxins, furans, and PCBs, choose **SPB®-Octyl**, **SLB®-5ms**, **SPB®-225**, and **SP®-2331**
- For phthalate esters, choose **SLB®-5ms** and **SLB®-35ms**
- For bisphenol A, BADGE, BFDGE, and NOGE, choose **SLB®-5ms**
- For benzene, choose **SPB®-624**, **VOCOL®**, **SLB®-IL59**, **SLB®-IL60i**, and **SLB®-IL111i**
- For nitrosamines, choose **SLB®-5ms**, **SLB®-35ms**, **SLB®-IL59**, and **SLB®-IL60i**
- For furans, choose **Carboxen® 1010 PLOT**, **Carboxen® 1006 PLOT**, **Supel-Q™ PLOT**, **Alumina sulfate PLOT**, **Alumina chloride PLOT**, and **Mol Sieve 5A PLOT**
- For PAHs, choose **SLB®-ILPAH** or **SLB®-PAHms**
- For acrylamide, choose **SUPELCOWAX® 10**
- For 3-MCPD, choose **SLB®-5ms**
- For disinfection by-products and solvents, choose **SLB®-5ms**, **SLB®-35ms**, and **Equity®-1701**
- For adulterants, choose **SLB®-5ms** and **SUPELCOWAX® 10**
- For beverage analysis, choose **SLB®-5ms**, **SLB®-35ms**, **SPB®-20**, **Equity®-1701**, **SPB®-35**, **SPB®-50**, **Nukol™**, **SPB®-1000**, **SUPELCOWAX® 10**, **SLB®-IL60i**, and **Supel-Q™ PLOT**
- For sulfur compounds in beverages, choose **SPB®-1 SULFUR**, **SLB®-IL59**, **SLB®-IL60i**, and **Supel-Q™ PLOT**

Flavor and Fragrance Industry

Volatiles, essential oils, and small chiral molecules of interest to this industry can be analyzed using the following columns.

- For volatiles, choose **Equity®-1**, **SLB®-5ms**, **SLB®-35ms**, **SUPELCOWAX® 10**, **SLB®-IL60i**, and **chiral**
- For essential oils, choose **Equity®-1**, **SLB®-5ms**, **SLB®-35ms**, **SUPELCOWAX® 10**, **SLB®-IL60i**, and **chiral**

Cosmetics/Cleaning Products

Commercial products, such as shampoos, cosmetics, and rug cleaners, are tested to confirm correct composition, and to ensure that they do not contain items hazardous to the user. These columns can be used for this purpose.

- For alkalis, choose **PTA-5** and **Carbowax® Amine**
- For allergens, choose **SLB®-5ms**
- For coloring compounds, choose **SLB®-5ms**, **SLB®-35ms**, **SPB®-1000**, **Nukol™**, and **SUPELCOWAX® 10**
- For fragrance compounds, choose **Equity®-1**, **SLB®-5ms**, **SLB®-35ms**, **SUPELCOWAX® 10**, **SLB®-IL60i**, and **chiral**
- For glycols, choose **SPB®-1000**, **Nukol™**, and **SLB®-IL60i**
- For preservatives, choose **SLB®-5ms**
- For solvents in cleaning products, choose **SLB®-5ms**, **SLB®-35ms**, **SPB®-1000**, **Nukol™**, and **SUPELCOWAX® 10**
- For surfactants: anionic, choose **SPB®-1000** and **Nukol™**
- For surfactants: nonionic, choose **Equity®-1** and **SLB®-5ms**

Pharma Industry (biopharma and small molecule pharmaceuticals)

Use these columns for analyses of residual solvents, basic drugs, small chiral molecules of interest to this industry, and for methods following specific monographs.

- For residual solvents, choose **Equity®-5**, **OVI-G43**, and **SUPELCOWAX® 10**
- For active pharmaceutical ingredients (APIs), choose **SLB®-5ms**, **PTA-5**, **Carbowax® Amine**, and **chiral**
- For preservatives, choose **SLB®-5ms**
- For heptafluoropropanes, choose **Alumina chloride PLOT**

Clinical Industry

Use these columns for the analyses of analytes from biological fluids.

- For antidepressants, choose **Equity®-1701**
- For antiepileptics, choose **SPB®-20** and **Equity®-1701**
- For antihistamines, choose **PTA-5**, **Carbowax® Amine**, **SLB®-IL59**, and **SLB®-IL60i**
- For bacterial acid methyl esters (BAMEs), choose **SLB®-5ms**, **Omegawax®**, **SLB®-IL59**, **SLB®-IL60i**, **SP®-2380**, **SP®-2560**, and **SLB®-IL111i**
- For basic drug screen, choose **SLB®-5ms**, **PTA-5**, **SLB®-35ms**, **SPB®-35**, **Carbowax® Amine**, **SLB®-IL59**, and **SLB®-IL60i**
- For benzodiazepines as acetic anhydride derivatives, choose **Equity®-1**
- For benzodiazepines as TBDMS derivatives, choose **SLB®-35ms**, **SPB®-35**, **SLB®-IL59**, and **SLB®-IL60i**
- For carboxylic acids as methyl esters, choose **SP®-2380**, **SP®-2560**, **SLB®-IL111i**, and **chiral**
- For cold and sinus medications, choose **PTA-5**, **Carbowax® Amine**, **SLB®-IL59**, and **SLB®-IL60i**
- For Deprenyl (Selegiline), choose **chiral**
- For estrogens, choose **SLB®-5ms**
- For free fatty acids, choose **Nukol™** and **SPB®-1000**
- For FAMEs by boiling point elution, choose **Equity®-1**
- For FAMEs by degree of unsaturation, choose **SPB®-PUFA**, **Omegawax®**, **SLB®-IL59**, and **SLB®-IL60i**
- For omega 3 and omega 6 FAMEs, choose **SPB®-PUFA**, **Omegawax®**, **SLB®-IL59**, and **SLB®-IL60i**
- For cis/trans FAME isomers, choose **SP®-2380**, **SP®-2560**, and **SLB®-IL111i**
- For mono-, di-, and triglycerides, choose **MET-Biodiesel** and **SLB®-35ms**
- For NSAIDs, choose **chiral**
- For phenothiazines, choose **SLB®-5ms**
- For psychostimulants, choose **chiral**
- For steroids, choose **Equity®-1**, **SLB®-5ms**, and **SAC™-5**
- For sympathomimetic amines, choose **PTA-5**, **Carbowax® Amine**, and **SLB®-IL59**
- For sympathomimetic amines as HFBA derivatives, choose **SLB®-5ms**
- For sympathomimetic amines as TFAA derivatives, choose **SLB®-5ms**

Forensics Industry

Use these columns for the analyses of accelerants from arson samples, or for blood alcohols and drugs of abuse from biological fluids.

- For accelerants, choose **Equity®-1** and **SLB®-5ms**
- For blood alcohols, choose **Equity®-1** and **VOCOL®**
- For explosives, use **SLB®-5ms**
- For glycols, choose **SPB®-1000** and **Nukol™**
- For drugs of abuse: drug screen as TBDMS derivatives, choose **SLB®-5ms**, **SLB®-35ms**, and **SPB®-35**
- For drugs of abuse: drug screen as TMS derivatives, choose **SLB®-5ms**, **SLB®-35ms**, and **SPB®-35**
- For drugs of abuse: basic drug screen, choose **SLB®-5ms**, **PTA-5**, **SLB®-35ms**, **SPB®-35**, **Carbowax® Amine**, and **SLB®-IL59**
- For drugs of abuse: amphetamines, choose **SLB®-5ms**, **SLB®-35ms**, **SPB®-35**, and **chiral**
- For drugs of abuse: antidepressants, choose **Equity®-1701**
- For drugs of abuse: barbiturates, choose **SLB®-5ms**, **Equity®-1701**, **SLB®-35ms**, and **SPB®-35**
- For drugs of abuse: cannabis, choose **Equity®-1**
- For drugs of abuse: cannabinoids as TMS derivatives, choose **SLB®-5ms**, **SLB®-35ms**, and **SPB®-35**
- For drugs of abuse: cocaine as TMS derivatives, choose **SLB®-5ms**, **SLB®-35ms**, and **SPB®-35**
- For drugs of abuse: GHB as MTBSTFA derivatives, choose **SLB®-5ms**
- For drugs of abuse: inhalants, choose **Equity®-5** and **VOCOL®**
- For drugs of abuse: ketamines as MBTFA derivatives, choose **SLB®-5ms**
- For drugs of abuse: LSD as TMS derivatives, choose **SLB®-5ms**. **SLB®-35ms**, and **SPB®-35**
- For drugs of abuse: MDMA (Ecstasy) as HFBPC derivatives, choose **SLB®-5ms**
- For drugs of abuse: opiates as TMS derivatives, choose **SLB®-5ms**, **SLB®-35ms**, and **SPB®-35**
- For drugs of abuse: phencyclidine (PCP), choose **SLB®-5ms**
- For drugs of abuse: psychostimulants, choose chiral
- For drugs of abuse: steroids, choose **SAC™-5** and **Equity®-5**
- For drugs of abuse: tryptamines, choose **SLB®-5ms**

Life Science Industry

Proteins, peptides, and amino acids are of importance to the life science industry.

- For amino acids, choose **SLB®-5ms** and **chiral**