

Meet Your New Zebron Gas Management Filters

Purity of gas is important for generating high-quality analytical data. Gas impurities can kill GC columns and detectors and can lead to time intensive troubleshooting. Zebron Gas Management Filters help protect the GC instrument and extend column lifetime, minimize stationary phase bleed, ensure low noise, and provide a steady, stable baseline.



No Diffusion and No Leaks with Dual Wall Housing!

More protection and less contamination with an inner glass wall and better safety with a plastic outer wall.

Higher Capacity

The higher capacity of Zebron gas management filters means less need for replacement and an increase in system uptime, saving you time and money.

Easy Filter Installation in Under 20 Seconds

Avoid system downtime by attaching a new filter to your gas line in seconds!

Never Disrupt Your Instrument!

The integrated one way valve on the Zebron gas management base units allow for quick and easy filter changes without disrupting the instrument.



Easily Know When to Replace Your Filter!

1

Color Change

The indicator on each Zebron Gas Management Filter will display when it is time to change your filter.*

2

Electronic Indicator

The optional electronic indicator will alert you with an audible warning on when to change your filter based on typical usage.

Universal Compatibility

No need to change your existing connecting unit. Simply remove the old filter, replace the O-ring, click a new filter in, and tighten the connection with the ring nut! (Part No.: AG6-1060).

*Hydrocarbon filters do not include a color indicator



Performing LC-MS?
Zebron LC-MS gas filters are now available!

Select Your Zebron Gas Filter for GC or LC

What is your Detector?	Fitting	Connecting Unit	Your Choice of Zebron Gas Filter
GC-FID/FPD/NPD	1/4 inch	AG6-2103 (brass) or AG6-2303 (stainless-steel) 4 Position	AG6-1020 Moisture, AG6-1010 Oxygen, AG6-1030 Hydrocarbon, AG6-1030 Hydrocarbon
	1/2 inch	AG6-2203 (brass) or AG6-2306 (stainless-steel) 4 Position	
GC-ECD/TCD	1/4 inch	AG6-2102 (brass) or AG6-2302 (stainless-steel) 2 Position	AG6-1020 Moisture, AG6-1010 Oxygen
	1/2 inch	AG6-2202 (brass) or AG6-2305 (stainless-steel) 2 Position	
GC-MS	1/4 inch	AG6-2101 (brass) or AG6-2302 (stainless-steel) 1 Position	AG6-1070 Universal
	1/2 inch	AG6-2201 (brass) or AG6-2304 (stainless-steel) 1 Position	
LC-MS	1/4 inch	AG6-2204* 2 Position	AG6-1050* Hydrocarbon/Moisture (2/pk)

*AG6-2204 is high flow connecting unit specially designed for LC-MS and must be used only with AG6-1050

Meet Your New Zebron Inline Gas Traps

Click-On Trap

Never disrupt your instrument! Attach a new filter in under 10 seconds. Once the connecting unit is installed, you will be able to change traps as often as needed without interrupting the instrument.

High Pressure Durability

The Click-On trap is completely made out of stainless steel and can withstand high pressures. The seals at each side of the trap will only be punctured when the Click-on connector is locked in place.

Know When to Replace

The optional electronic indicator displays when scheduled replacement or maintenance is due.

Secure Wall Mount

These wall mounting clamps will EASILY help attach a Zebron gas trap to a wall or surface.



Click-On Connection

The Click-on trap connectors allow inline cartridges to be exchanged without introducing contaminants. Spring loaded check valves seal when a filter is removed and open only when a new filter has been locked in place.



Select Your Zebron Gas Trap for GC or GC-MS analysis

What is your Gas Source?	What is your Detector?	Click-on Fitting	Your Choice of Zebron Click-on Gas Traps
Gas Cylinder	FID/FPD/NPD	1/4 inch	AG6-3170 (brass) or AG6-4160 (stainless-steel)
		1/2 inch	AG6-3160 (brass) or AG6-4150 (stainless-steel)
	ECD/TCD	1/4 inch	AG6-3170 (brass) or AG6-4160 (stainless-steel)
		1/2 inch	AG6-3160 (brass) or AG6-4150 (stainless-steel)
	MSD	1/4 inch	AG6-3170 (brass) or AG6-4160 (stainless-steel)
		1/2 inch	AG6-3160 (brass) or AG6-4150 (stainless-steel)
Gas Generator	FID/FPD/NPD/ECD/TCD/MSD	1/4 inch	AG6-3170
		1/2 inch	AG6-3160

*Universal traps are packed in nitrogen. Please make sure to purge the line and have higher split ratio while connecting to GC-MS to reduce stabilization time



GC Column Selection Guidelines



The Master Resolution Equation

How do you choose a column? Do you reach into a cabinet of mystery columns, look to your favorite 5% phenyl phase, or borrow one from a colleague? Understanding how column parameters impact key elements of the master resolution equation will help you quickly make the right column selection for successful separations.

$$R_s = \left[\frac{\sqrt{N}}{4} \right] \times \left[\frac{\alpha - 1}{\alpha} \right] \times \left[\frac{k}{k + 1} \right]$$

	Efficiency Term	Selectivity Term	Retention Term
Relates to:	Column Length Column ID	Column Phase	Column ID Film Thickness
Other considerations:	Carrier Gas Linear Velocity	Temperature	Temperature



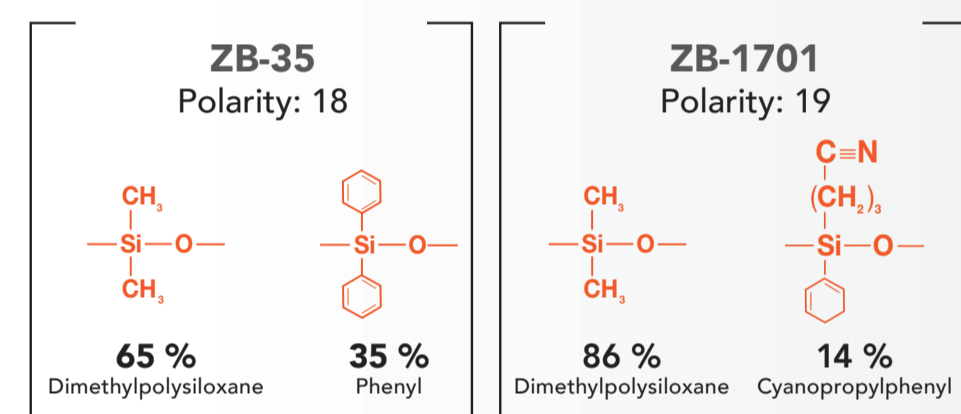
Column Phase

Selectivity Has the Biggest Impact on Resolution

Resolution between two analytes is mainly determined by the selectivity of the stationary phase. By increasing the resolution between two compounds, the total analysis time can often be reduced significantly!

Selectivity vs. Polarity

Polarity gives a general guideline for sample capacity and separation, which can affect peak shape and resolution. However, two columns may have similar polarity but show different separation profiles due to dissimilar phase chemistries. For example, Zebron ZB-35 and ZB-1701 are close in polarity, but the cyanopropyl group makes ZB-1701 very different from ZB-35 in terms of selectivity.



Selected Zebron Polarities

See full selection chart on the right

Polarity	Column	Phase Composition	For
5	ZB-1, ZB-DHA-PONA, ZB-1 PLUS, ZB-1HT Inferno, ZB-1XT SimDist	100% Dimethylpolysiloxane	Non-Polar Analytes
8	ZB-5, ZB-5ms, ZB-5 PLUS, ZB-5MS PLUS, ZB-5HT Inferno, ZB-SemiVolatiles	95% Dimethylpolysiloxane, 5% Phenyl	Alkanes, Aromatics, Oils, Boiling Point separations
9	ZB-XLB, ZB-XLB-HT Inferno	Proprietary	Slightly Polar Analytes
11	ZB-MultiResidue-1	Proprietary	Volatiles, Drugs, Pesticides
13	ZB-624, ZB-624 PLUS	65% Dimethylpolysiloxane, 35% Phenyl	
15	ZB-MultiResidue-2	Proprietary	
18	ZB-35, ZB-35HT Inferno	65% Dimethylpolysiloxane, 35% Phenyl	
19	ZB-1701, ZB-1701P	86% Dimethylpolysiloxane, 14% Cyanopropylphenyl	
24	ZB-50	50% Dimethylpolysiloxane, 50% Phenyl	Very Polar Analytes
52	ZB-WAX PLUS	100% Polyethylene Glycol (PEG)	Polar Volatiles, Alcohols, Phenols, Acids
57	ZB-WAX	100% Polyethylene Glycol (PEG)	
58	ZB-FFAP	100% Nitroterephthalic Modified Polyethylene Glycol	

Internal Diameter

Column internal diameter (ID) has a major impact on both resolution and sample capacity. Unlike column length, using smaller ID columns can actually lead to faster run times, because the column length required with a small ID is often shorter due to increased efficiency.

Narrow	Wide
0.10, 0.18, 0.20 mm	0.32, 0.53 mm
Applications • Complex samples Advantages • Faster run times • Better resolution Disadvantages • Lower sample capacity • Easily overloaded	Good Starting ID 0.25 mm
Applications • Dirty samples • Highly concentrated samples Advantages • Increased sample capacity • Increased sample Disadvantages • Decreased efficiency • May need higher flow rates unsuitable for GC-MS	

Film Thickness

Film thickness determines solute retention and plays an important role in column sample capacity. Thin film columns are faster and provide higher resolution, but lower sample capacity. In most instances, choose the thinnest film possible that still provides adequate retention. When working with active samples, using a slightly thicker film can significantly improve peak shape.

Thin	Thick
0.10, 0.18 µm	0.50 µm or more
Applications • High boilers • GC-MS applications Advantages • Faster run times • Higher temp. limits • Lower bleed • Higher efficiency Disadvantages • Less inert • Limited retention	Good Starting Film 0.25 µm
Applications • Low boilers • Gases, solvents, purgeables, volatiles • Purity testing Advantages • Better inertness • Higher capacity Disadvantages • Slower run times • Lower temp. limits • Higher bleed	

Length

Longer columns can improve resolution, but they will also increase run times. Under isothermal conditions, doubling column length only increases resolution by 41%, but doubles the run time! Choose a column length that balances efficiency with acceptable run times.

Short	Long
15 m or less	60 m or more
Applications • High boilers • GC-MS applications Advantages • Faster run times • Higher temp. limits • Lower bleed • Higher efficiency Disadvantages • Less inert • Limited retention	Good Starting Length 30 m
Applications • Complex samples with closely eluting peaks • Low boilers • Less active samples • Complex temperature ramps Advantages • Better resolution Disadvantages • Slow run times	

POLARITY	COMPOSITION	TEMP. LIMITS (Isothermal/TPGC)	GC/MS CERTIFIED	USP PHASE	APPLICATIONS	RECOMMENDED USE	FOR ALTERNATE RESULTS
5	ZB-1 Non-polar phase suited for boiling point separations 100% Dimethylpolysiloxane	-60 to 360/370 °C * Thicker films (2.1 µm) are rated to 360/360 °C	✓	G1, G2, G9, G38	Essential Oils, Ethanol, Gases (Inert), Hydrocarbons, Mercaptans, MTBE, Natural Gas Odorants, Oxygenates and GIBs, PCBs, Simulated Distillation, Solvent Impurities, Light Sulfur Compounds	• Excellent resolving power of critical pairs in complex petrochemical samples • Used for "fingerprinting" and routine quality control analysis (e.g., citrus oils)	High temperatures: ZB-1HT Inferno
5	ZB-DHA-PONA Non-polar phase tested for Detailed Hydrocarbon Analysis 100% Dimethylpolysiloxane	-60 to 340/360 °C	✓	G1, G2, G9, G38	Detailed Hydrocarbon Analysis (DHA), PIONA, PONA, PIANO, MTBE Analysis	• Excellent separation power for ASTM D5134, D5441, D5501, D6723, D6730, D6733	High temperatures: ZB-1HT Inferno
5	ZB-1 PLUS™ Low bleed phase for non-polar compounds 100% Dimethylpolysiloxane	-60 to 360/370 °C	✓	G1, G2, G9, G38	Acids, Amines, Diesel Fuel, Drugs, Flavors & Fragrances, PCBs (EPA Method 1631), Pesticides	• Especially suited to high sensitivity GC/MS • Improved signal-to-noise ratio for better sensitivity and mass spectral integrity • Extremely inert for active compounds	Simulated distillation: ZB-1HT SimDist Metal High temperatures: ZB-1HT Inferno
5	ZB-1HT Inferno™ High temperature stability up to 430 °C for non-polar compounds 100% Dimethylpolysiloxane	-60 to 400/430 °C * 0.53 mm ID columns are rated to 400 °C	✓	G1, G2, G9, G38	Diesel Fuel, High Boiling Petroleum Products, High Molecular Weight Waxes, Long-chained Hydrocarbons, Motor Oils, Polymers/Plastics, Simulated Distillation	• Rugged, high temperature stable (430 °C) • Robust performance for high temperature bakeouts • True boiling point separation for hydrocarbon distillation methods • Recommended for high boilers, contaminants, or carryovers	Simulated distillation: ZB-1HT SimDist Metal Alternate polarity: ZB-SHT, ZB-35HT, ZB-XLB-HT
5	ZB-1XT SimDist Metal Glass Infusion™ metal column technology for efficient, reproducible separations 100% Dimethylpolysiloxane	-60 to 450 °C * Thicker film (2.65 µm) is rated to 500 °C	✓	G1, G2, G9, G38	ASTM Methods (D2887, D2887X, D3710, D4352, D7169), Crude Oil, Gasoline Fractions, Petroleum Distillates, Petroleum Fractions, Simulated Distillation, Vacuum Distillation	• Uniform Glass Infusion coating for sharp peaks and high efficiency • Individually tested for improved reproducibility • 45-70% higher efficiency than other manufacturers • Improved resolution of C50/C52 after four hours	Fused-silica alternative: ZB-1HT Inferno
8	ZB-5 Low polarity phase for general purpose use 5% Phenyl, 95% Dimethylpolysiloxane	-60 to 360/370 °C * Thicker films (2.1 µm) are rated to 360/360 °C	✓	G27, G36, G41	Alkaloids, Diuretics, Drugs, Essential Oils/Flavors, FAMES, Halo-hydrocarbons, PCBs/Aroclors, Pesticides/Herbicides, Phenols, Residual Solvents	• Versatile column recommended for a wide range of applications • Great column for unknown samples • Resistant to dirty samples – long column life	Even lower bleed: ZB-5ms Enhanced aromatic selectivity: ZB-5ms
8	ZB-5 PLUS™ Versatile, low bleed, inert 5% phenyl phase for multi-use applications 5% Phenyl, 95% Dimethylpolysiloxane	-60 to 360/370 °C	✓	G27, G36, G41	Drugs, EPA Methods, FAMES, Nitroamines, Pesticides, Phenols	• Highly inert for improved peak shape of acidic/basic compounds, drugs of abuse, and pesticides • Maximum selectivity for GC/MS • 5% phenyl selectivity with improved column-to-column performance	SVOCs, PAHs, or PBDEs: ZB-SemVolatiles Drugs of abuse: ZB-Drug-1
8	ZB-5MS PLUS™ The next generation of inertness for specialty chemical, forensic, toxicology, and food testing applications 5% Phenyl-Arylene, 95% Dimethylpolysiloxane	-60 to 325/350 °C	✓	G27	Acids, Alkaloids, Amines, Drugs, Essential Oils/Flavors, Halo-hydrocarbons, Phenols, Residual Solvents, Solvent Impurities, Pesticides/Herbicides	• Specialized deactivation for versatile 5% Phenyl-Arylene selectivity with improved sensitivity • Low bleed (MS Certified) and well-suited to high sensitivity GC/MS and GC/MS/MS work	SVOCs, PAHs, or PBDEs: ZB-SemVolatiles Alternate phenyl selectivity: ZB-5ms
8	ZB-5HT Inferno™ High temperature stability up to 430 °C for high boiling point compounds 5% Phenyl, 95% Dimethylpolysiloxane	-60 to 400/430 °C * 0.53 mm ID columns are rated to 400 °C	✓	G27, G36, G41	Diesel Fuels, High Boiling Petroleum Products, High Molecular Weight Waxes, Long-chained Hydrocarbons, Motor Oils, Polymers/Plastics, Simulated Distillation, Surfactants, Triglycerides	• Rugged, high temperature stable (430 °C) • Robust performance for high temperature bakeouts • True boiling point separation for hydrocarbon distillation methods • Recommended for high boilers, contaminants, or carryovers	Enhanced PBDEs: ZB-SemVolatiles Alternate polarity: ZB-SHT, ZB-35HT, ZB-XLB-HT
8	ZB-5ms General purpose 5% phenyl-arylene phase with enhanced selectivity for aromatics 5% Phenyl-Arylene, 95% Dimethylpolysiloxane	-60 to 325/350 °C	✓	G27	Acids, Alkaloids, Amines, Diuretics, Drugs, EPA Methods, Essential Oils/Flavors, FAMES, Halo-hydrocarbons, PCBs/Aroclors, Pesticides/Herbicides, Phenols, Residual Solvents, Semivolatiles, Solvent Impurities	• Most popular starting column for method development • Arylene Matrix Technology™ (AMT) provides a highly stable arylene phase for enhanced resolution of PAHs and multi-ring aromatic compounds • Subtle to high sensitivity work using GC/MS	SVOCs, PAHs, or PBDEs: ZB-SemVolatiles Alternate phenyl selectivity: ZB-5ms
8	ZB-SemiVolatiles™ 5% phenyl-arylene phase specifically for improved selectivity of acids and amines with Enviro-Inert™ Technology 5% Phenyl-Arylene, 95% Dimethylpolysiloxane	-60 to 325/350 °C	✓	G27	Semivolatiles (DIOXIN, PAHs, PBDEs), EPA Methods (825, 610, 625, 8100, 82705)	• Popular choice for semi-volatiles, PAHs, and PBDEs • Inert, rugged performance for 5% phenyl-arylene selectivity with Enviro-Inert Technology • Supreme inertness for acids, amines, and other notoriously active compounds • Detect down to ultra-low levels (D.2 ng on-column) and improve critical pair resolution	
9	ZB-XLB Low polarity si-arylene phase with extra low bleed for sensitive analyses Proprietary	30 to 340/360 °C * Thicker films (2.1 µm) are rated to 320/340 °C	✓		EPA Methods, PCBs, Pesticides/Herbicides	• Low polarity si-arylene column for MS detectors • Alternative selectivity to standard 5-type phases • Used for confirmation of pesticide, PCB, or other environmental samples • Suited for unknown sample screening and identification	Enhanced pesticide testing: ZB-MultiResidue-1 High temperatures: ZB-XLB-HT
9	ZB-XLB-HT Inferno™ High temperature stability up to 400 °C with extra low bleed Proprietary	30 to 400 °C	✓		EPA Methods, PCBs, Pesticides/Herbicides, Unknown Samples	• Non-metal si-arylene low bleed phase stable to 400 °C • Provides alternate selectivity to 5% phenyl phases • Often used for confirmation of pesticides, PCB, or other environmental samples • Robust column performance for high temperature bakeouts	Enhanced pesticide testing: ZB-MultiResidue-1 Alternate polarity: ZB-SHT, ZB-35HT
11	ZB-MultiResidue™-1 Novel phase designed for pesticides, herbicides, and insecticides Proprietary	-60 to 320/340 °C	✓		Aroclors/PCBs, Halocarbon Acids, Insecticides, Multi-Pesticide Screening, Nitrogen Containing Pesticides, Organochlorine Pesticides, Organophosphorus Pesticides	• Specifically designed for optimized pesticide screening and confirmation by GC/ECD • Resolve common isomers with optimized selectivity • Decreased breakdown of sensitive pesticides such as DDT • Exceed EPA Method 8081 specifications when used with ZB-MultiResidue-2 • Our most popular phase for pesticide testing by GC/MS	Dual-column confirmation: ZB-MultiResidue-2 Chlorinated herbicides / HAAAs: ZB-XLB and ZB-35 pair; ZB-CLPesticides-1 and 2 pair
13	ZB-624 Optimized for volatile organic compounds (VOCs) and organic volatile impurities (OVIs) 6% Cyanopropylphenyl, 94% Dimethylpolysiloxane	-20 to 260 °C	✓	G43	Pharmaceuticals, Residual Solvents, Volatile Organic Compounds (VOCs), EPA Methods (801.3, 802.2, 501.1, 504.2, 401, 402, 404, 8010, 8015, 8020, 8021, 8240, 8260)	• Improved temperature limit speeds run times and re-equilibration • Popular for residual solvent testing (USP Monograph <467>) • Widely used to separate volatile organic flavor and fragrance additives and residual solvents in industrial or pharmaceutical products (OVNs)	G16 phase for residual solvents: ZB-WAX... MS certified G43: ZB-624... for residual solvents by GC/MS
13	Z-624 PLUS™ The optimal choice for the analysis of volatile compounds for Environmental, Pharmaceutical, Food, Cannabis and specialty chemicals Proprietary	-20 to 300/320 °C	✓	G43	Cannabis, Terpenes, Residual Solvents, Volatile Amines, EPA Method 8200, EPA Method 524, Food, Flavors and Fragrances, Solvent Purity, Alcohols	• Enhanced peak shape with superior deactivation • Increased sensitivity for high boiling solvent • Extremely low bleed for GC-MS • High temperature stability (300/320 °C)	
15	ZB-MultiResidue-2 Novel phase designed for pesticides, herbicides, and insecticides Proprietary	-60 to 320/340 °C	✓		Aroclors/PCBs, Halocarbon Acids, Insecticides, Multi-Pesticide Screening, Nitrogen Containing Pesticides, Organochlorine Pesticides, Organophosphorus Pesticides	• Specifically designed for optimized pesticide screening and confirmation by GC/ECD, GC/NPD, and GC/MS • Resolve common isomers with optimized selectivity • Decreased breakdown of sensitive pesticides such as DDT • Exceed EPA Method 8081 specifications when used with ZB-MultiResidue-1	Dual-column confirmation: ZB-MultiResidue-1 Chlorinated herbicides / HAAAs: ZB-XLB and ZB-35 pair or ZB-CLPesticides-1 and 2 pair
18	ZB-35 Intermediate polarity for high molecular weight samples and method development screening 35% Phenyl, 65% Dimethylpolysiloxane	40 to 340/360 °C	✓	G28, G32, G42	Amines, Aroclors, Drugs, EPA Methods (508, 608, 8081, 8141, 8151), Pesticides, Pharmaceuticals	• Intermediate polarity for high molecular weight analysis • Minimized analyte adsorption, improved reproducibility • More rugged (longer column life) than other polar phases • Excellent for trace analysis with bleed-sensitive detectors (MS, FID, ECD, NPD)	High temperatures: ZB-35HT
18	ZB-35HT Inferno™ Intermediate polarity with high temperature stability up to 400 °C 35% Phenyl, 65% Dimethylpolysiloxane	40 to 400 °C	✓	G28, G32, G42	Amines, Aroclors, Chemicals, Drugs, EPA Methods (508, 608, 8081, 8141, 8151), Pesticides, Pharmaceuticals, Steroids	• Rugged, high temperature stable (400 °C) • Robust performance for high temperature bakeouts • True boiling point separation for hydrocarbon distillation methods • Recommended for high boilers, contaminants, or carryovers	Enhanced pesticide testing: ZB-MultiResidue-1 Alternate polarity: ZB-SHT, ZB-XLB-HT
19	ZB-1701 Alternate selectivity to phenyl phases, with similar polarity 14% Cyanopropylphenyl, 86% Dimethylpolysiloxane	-20 to 280/300 °C * Thicker films (2.1 µm) are rated to 260/280 °C	✓	G46	Alcohols, Amines, Aromatic Hydrocarbons, Drugs, Esters, PAHs, PCBs, Pharmaceutical Intermediates, Phenols, Solvents, Steroids, TMS Sugars, Tranquilizers	• Fast run and re-equilibration times for enhanced sample throughput and productivity • Provides alternate selectivity to phenyl phases with similar polarity	Enhanced pesticide testing: ZB-MultiResidue-1 Enhanced Endrin and DDT: ZB-1701P 7 EPA Methods on one pair: ZB-CLPesticides-1 & 2
19	ZB-1701P Bonded, solvent compatible phase excellent for complex polar samples 14% Cyanopropylphenyl, 86% Dimethylpolysiloxane	-20 to 280/300 °C * Thicker films (2.1 µm) are rated to 260/280 °C	✓	G46	Aroclors, Nitrogen Containing Pesticides, Organochlorine Pesticides, Organophosphorus Pesticides	• Specifically tested to ensure response of DDT, Endrin, Endrin Aldehyde, and Endrin Ketone • Guaranteed column pesticide analysis • EPA Method 8081 Certified	Enhanced pesticide testing: ZB-MultiResidue-1
24	ZB-50 High polarity phase with stability for high temperature bakeouts 50% Phenyl, 50% Dimethylpolysiloxane	40 to 320/340 °C	✓	G3, G17	Antidepressants, Aroclors, Cholesterols, Drugs of Abuse, EPA Methods (508, 608, 8081, 8141, 8151), Glycols, Pesticides/Herbicides, Steroids, Triglycerides	• High polarity column capable of high temperature bakeout to remove contaminants • Inertness minimizes analyte adsorption, improves efficiency and reproducibility • More rugged (longer column life) than other polar phases • Great for toxicology and environmental compounds	Enhanced pesticide testing: ZB-MultiResidue-1 Drug screening: ZB-Drug-1
52	ZB-WAX PLUS™ 100% aqueous stability with high retention of alcohols and chlorinated solvents 100% Polyethylene Glycol (PEG)	40 to 250/260 °C * Thicker films (2.1 µm) are rated to 230/240 °C	✓	G14, G15, G16, G20, G39, G47	Alcohols, Aldehydes, Aromatics, Essential Oils, Flavors & Fragrances, Free Fatty Acids, Glycols, OVs, Pharmaceuticals, Solvents / Residual Solvents, Styrene, Xylene Isomers	• Exceptional stability to repeated injections • Extremely inert for acidic compounds • Enhanced selectivity for low boiling solvents; high retention of alcohols and chlorinated solvents at 20 °C • Increased efficiency at 20 °C	G43 phase for residual solvents: ZB-624 Free fatty acids testing: ZB-FFAP
57	ZB-WAX Bonded, solvent compatible phase excellent for complex polar samples 100% Polyethylene Glycol (PEG)	40 to 250/260 °C	✓	G14, G15, G16, G20, G39, G47	Alcohols, Aldehydes, Aromatics, Basic Compounds, Essential Oils, Flavors & Fragrances, Glycols, Pharmaceuticals, Solvents, Styrene, Xylene Isomers	• Low activity for amines • Excellent separation of polar complex mixtures; widely used for profiling and "fingerprinting"	Enhanced aqueous stability: ZB-WAX... Free fatty acids testing: ZB-FFAP
58	ZB-FFAP Excellent peak shape for underivatized acids, organic acids, free fatty acids, and alcohols 100% Nitroterephthalic Modified Polyethylene Glycol	40 to 250/260 °C	✓	G25, G35	Arylates, Alcohols, Aldehydes, Free Fatty Acids, Ketones, Organic Acids, Phenols, Volatile Free Acids	• Popular choice for food industry method development • High polarity with excellent thermal and chemical stability • Improve peak shape for underivatized acids, organic acids, free fatty acids, and alcohols • Bonded, solvent resistant nitroterephthalic acid phase	Enhanced aqueous stability: ZB-WAX... Free fatty acids testing: ZB-FFAP
	ZB-FAME The fast FAME GC column Proprietary High Cyano	-20 to 280 °C	✓	G48	Fatty Acid Methyl Ester (FAME), cis/trans FAME isomers, Omega 1, Omega 6 FAME	• Fatty acid methyl ester (FAME), cis/trans FAME isomers	
	ZB-BAC-1 & 2 High accuracy results for blood alcohols and post-mortem samples Proprietary	-20 to 260/280 °C	✓		Abused Inhalant Anesthetics, Blood Alcohol Analysis	• Enhance resolution of ethanol and acetone peaks • Resolve 2-butanol and 2-propanol for greater selectivity of internal standards • 2 min run time with baseline resolution of key components • Dual-column confirmation with two elution order changes	Drugs of abuse: ZB-Drug-1
	ZB-Bioethanol Fast and accurate bioethanol separations Proprietary	-60 to 340/360 °C	✓		Alcohols, Ethanol Testing, Fuel Alcohols	• Meet ASTM D5501 requirements – resolve methanol and ethanol from all other denaturant peaks • Great resolution of fusel alcohols • Allows for quick bakeout between runs to eliminate contaminants	Bioalcohol testing: ZB-1HT or ZB-SHT
	ZB-CLPesticides-1 & 2 Optimized chlorinated pesticide phases for dual-column testing on one column set Proprietary	40 to 320/340 °C	✓		Dual-column chlorinated pesticide EPA Methods (8081 and 8081 extended, 8082, 8151, 504, 505, 508, 552)	• Guaranteed alternative to Reax®-CLPesticides • Optimized, versatile selectivity for chlorinated pesticides and herbicides • Well-suited for dual-column configurations using GC/ECD • Run EPA Methods 8081 and 8081 extended, 8082, 8151, 504, 505, 508, and 552 on without changing columns – save time	Pesticide screens and enhanced pesticide testing: ZB-MultiResidue-1 & 2 pair
	ZB-Drug-1 Optimized for drugs of abuse separations with resolution of target analytes and interferences Proprietary	40 to 320/340 °C	✓		Drug Screening (3-MAM, Amphetamines, Barbiturates, Benzodiazepines, Opiate, PCP, THC)	• Specially deactivated to improve inertness, peak shape, and quantitation for drug compounds • Run amphetamines in under 5 minutes and opiates in under 5 minutes	GC/MS pesticide screen: ZB-MultiResidue-1 & 2

