

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 (≥ 1.0 µm) are rated to 340/360 °C	✓	G1, G2, G9, G38	Ethanol, Hydrocarbons, Mercaptans, MTBE, Natural Gas Odorants, Oxygenates and GRCs, Solvent Impurities, Light Sulfur Compounds	<ul style="list-style-type: none"> Excellent resolving power of critical pairs in complex petrochemical samples Used for "fingerprinting" and routine quality control analyses (e.g., citrus oils) 	Even lower bleed: ZB-1ms High temperatures: ZB-1HT Inferno
5	ZB-DHA-PONA Separation of paraffins, iso-paraffins, olefins, naphthenes, aromatics and polar compounds up to 430 °C for non-polar compounds	100 % Dimethylpolysiloxane	-60 to 360/370 °C * Thicker films (≥ 1.0 µm) are rated to 340/360 °C	✓	G1, G2, G9, G38	DHA, PONA, PIONA, PIANO, and ASTM Methods (D5134, D5441, D5501, D6729, D6730, D6733)	<ul style="list-style-type: none"> Temperature stability and flexibility Extensive Engineered Self Cross-linking (ESC) provides lowest bleed, excellent separation of Paraffins, Iso-paraffins, Olefins, Naphthenes, Aromatics and polar compounds 	ZB-5
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 and Fragrances, PCBs (EPA Method 1668), Pesticides, Essential Oils	<ul style="list-style-type: none"> 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-1XT 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	<ul style="list-style-type: none"> 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-1XT SimDist Metal Alternate polarity: ZB-5HT, ZB-35HT, ZB-XLB-HT
5	ZB-1XT SimDist Glass Infusion™ metal column technology for efficient, reproducible separations	100 % Dimethylpolysiloxane	-60 to 450 °C * Thicker film (2.65 µm) is rated to 400 °C	✓	G1, G2, G9, G38	ASTM Methods (D2887, D2887X, D3710, D6352, D7169), Crude Oil, Gasoline Fractions, Petroleum Distillates, Petroleum Fractions, Simulated Distillation, Vacuum Distillates	<ul style="list-style-type: none"> 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 hour after hour 	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 (≥ 1.0 µm) are rated to 340/360 °C	✓	G27, G36, G41	Alkaloids, Dioxins, Drugs, Essential Oils/Flavors, FAMES, Halo-hydrocarbons, PCBs/Aroclors, Pesticides/Herbicides, Phenols, Residual Solvents	<ul style="list-style-type: none"> Versatile column recommended for a wide range of applications Great column for unknown samples Resilient to dirty samples – long column life 	Even lower bleed: ZB-5MSI Enhanced aromatic selectivity: ZB-5ms
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, G36, G41	Acids, Alkaloids, Amines, Dioxins, Drugs, EPA Methods Essential Oils/Flavors, FAMES, Halo-hydrocarbons, PCBs/Aroclors, Pesticides/Herbicides, Phenols, Residual Solvents, Semi-volatiles, Solvent Impurities	<ul style="list-style-type: none"> Most popular starting column for method developers Arylene Matrix Technology™ (AMT) provides a highly stable arylene phase for enhanced resolution of PAHs and multi-ring aromatic compounds Suited to high sensitivity work using GC/MS 	SVOCs, PAHs, or PBDEs: ZB-SemiVolatiles Alternate phenyl selectivity: ZB-5MSI
8	ZB-5 PLUS Low bleed 5% phenyl selectivity	5 % Phenyl-Arylene 95 % Dimethylpolysiloxane	-60 to 360/370 °C	✓	G27, G36, G41	Barbiturates, Benzodiazepines, Drugs of Abuse, EPA Methods, FAMES, Nitrosamines, Pesticides, Phenols, THC Metabolites	<ul style="list-style-type: none"> Highly inert for improved peak shape of acidic/basic compounds, drugs of abuse, and pesticides Maximum sensitivity and improved column-to-column performance 	SVOCs, PAHs, or PBDEs: ZB-SemiVolatiles Drugs of abuse: ZB-Drug-1
8	ZB-5MS PLUS Versatile, low bleed, inert 5 % Phenyl-Arylene phase for multi-use applications	5 % Phenyl-Arylene 95 % Dimethylpolysiloxane	-60 to 325/350 °C	✓	G27	Acids, Alkaloids, Amines, Drugs, Ethanolamines, Essential Oils/Flavors, Halo-hydrocarbons, Pesticides/Herbicides, Phenols, Residual Solvents, Solvent Impurities	<ul style="list-style-type: none"> Specialized deactivation for versatile selectivity with improved sensitivity Low bleed and well-suited to high sensitivity GC-MS and GC-MS/MS work 	SVOCs, PAHs, or PBDEs: ZB-SemiVolatile Alternate phenyl selectivity: ZB-5PLUS
8	ZB-5HT Inferno	5 % Phenyl-Arylene 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	<ul style="list-style-type: none"> 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-SemiVolatiles Alternate polarity: ZB-5HT, ZB-35HT, ZB-XLB-HT
8	ZB-SemiVolatiles 5 % phenyl-arylene phase specifically for improved inertness of acids and amines with Enviro-Inert™ Technology	5 % Phenyl-Arylene 95 % Dimethylpolysiloxane	-60 to 325/350 °C	✓	G27	Semi-volatiles (SVOCs), PAHs, PBDEs, EPA Methods (525, 610, 625, 8100, 8270D)	<ul style="list-style-type: none"> 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 (0.2 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 (≥ 1.0 µm) are rated to 320/340 °C	✓		Herbicides / Insecticides, PCBs, Pesticides, Unknown Samples	<ul style="list-style-type: none"> 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 * Thicker films (≥ 1.0 µm) are rated to 340/360 °C	✓		Herbicides / Insecticides, PCBs, Pesticides, Unknown Samples	<ul style="list-style-type: none"> 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-5HT, ZB-35HT, ZB-XLB-HT
11	ZB-MultiResidue™-1 Novel phase designed for pesticides, herbicides, and insecticides	Proprietary	-60 to 320/340 °C	✓		Aroclors/PCBs, Haloacetic Acids, Insecticides, Multi-Pesticide Screening, Nitrogen Containing Pesticides, Organochlorine Pesticides, Organophosphorous Pesticides	<ul style="list-style-type: none"> 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 / HAAs: 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 (501.3, 502.2, 503.1, 524.2, 601, 602, 624, 8010, 8015, 8020, 8021, 8240, 8246)	<ul style="list-style-type: none"> Increased 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 (OVIs) 	G16 phase for residual solvents: ZB-WAX _{MS}
13	ZB-624 PLUS Next generation of inertness. Increased sensitivity for high boiling solvents	Proprietary	-20 to 300/320 °C	✓	G43	Cannabis, Terpenes, Residual Solvents, Volatile Amines, EPA Method 8260, EPA Method 524, EPA Method 624, Food, Flavors and Fragrances, Solvent Purity, Alcohols	<ul style="list-style-type: none"> Enhanced peak shape with superior deactivation Increased sensitivity for high boiling solvent Extremely low bleed for GC-MS High temperature stability (300/320 °C) 	VOCs and OVIs: ZB-WAX _{MS} , ZB-624
15	ZB-MultiResidue-2 Alternate phase designed for pesticides, herbicides, and insecticides	Proprietary	-60 to 320/340 °C	✓		Aroclors/PCBs, Haloacetic Acids, Insecticides, Multi-Pesticide Screening, Nitrogen Containing Pesticides, Organochlorine Pesticides, Organophosphorous Pesticides	<ul style="list-style-type: none"> 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 / HAAs: 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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-5HT, ZB-35HT, 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 (≥ 1.0 µm) are rated to 260/280 °C	✓	G46	Alcohols, Amines, Aromatic Hydrocarbons, Drugs, Esters, PAHs, PCBs, Pharmaceutical Intermediates, Phenols, Solvents, Steroids, TMS Sugars, Tranquilizers	<ul style="list-style-type: none"> 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 EPA Methods on one pair: ZB-CLPesticides-1 & 2
19	ZB-1701P Specifically designed for improved DDT and Endrin response	14 % Cyanopropylphenyl 86 % Dimethylpolysiloxane	-20 to 280/300 °C * Thicker films (≥ 1.0 µm) are rated to 260/280 °C	✓	G46	Aroclors, Nitrogen Containing Pesticides, Organochlorine Pesticides, Organophosphorous Pesticides	<ul style="list-style-type: none"> Specifically tested to ensure response of DDT, Endrin, Endrin Aldehyde, and Endrin Ketone Guaranteed column for 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, Cholesterol, Drugs of Abuse, EPA Methods (508, 608, 8081, 8151, 8151), Glycols, Pesticides/Herbicides, Steroids, Triglycerides	<ul style="list-style-type: none"> High polarity column capable of high temperature bakeout to remove contaminants Inert to minimize analyte adsorption, improve 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)	20 to 250/260 °C * Thicker films (≥ 1.0 µm) are rated to 230/240 °C	✓	G14, G15, G16, G20, G39, G47	Alcohols, Aldehydes, Aromatics, Essential Oils, Flavors & Fragrances, Free Fatty Acids, Glycols, OVIs, Pharmaceuticals, Solvents / Residual Solvents, Styrene, Xylene Isomers	<ul style="list-style-type: none"> Exceptional stability to repeated injections Extremely inert for acidic compounds Enhanced selectivity for low boiling solvents; high retention of alcohols and chlorinated solvents Increased efficiency at 20 °C 	G43 phase for residual solvents: ZB-624 Free fatty acids testing: ZB-FFAP
57	ZB-WAX Bonded, solvent rinseable 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	<ul style="list-style-type: none"> Low activity for amines Excellent separations of polar complex mixtures; widely used for profiling and "fingerprinting" 	Enhanced aqueous stability: ZB-WAX _{MS} 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	Acrylates, Alcohols, Aldehydes, Free Fatty Acids, Ketones, Organic Acids, Phenols, Volatile Free Acids	<ul style="list-style-type: none"> 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 rinseable nitroterephthalic acid phase 	Enhanced aqueous stability: ZB-WAX _{MS}
PROPRIETARY	ZB-BAC-1 & 2 More accurate results for blood alcohols and post-mortem samples	Proprietary	-20 to 260/280 °C	✓		Abused Inhalant Anesthetics, Blood Alcohol Analysis	<ul style="list-style-type: none"> Enhance resolution of ethanol and acetone peaks Resolve isobutanol and n-propanol for greater selection 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, Fusel Alcohols	<ul style="list-style-type: none"> 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 	Biodiesel testing: ZB-1HT or ZB-5HT
	ZB-CLPesticides-1 & 2 Optimized chlorinated pesticide phases for dual-column methods 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)	<ul style="list-style-type: none"> Guaranteed alternative to Restek Rtx-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 (6-MAM, Amphetamines, Barbiturates, Benzodiazepines, Opiates, PCP, THC)	<ul style="list-style-type: none"> Specifically deactivated to improve inertness, peak shape, and quantitation for drug compounds Improve resolution of analytes from matrix interferences Run amphetamines in under 6 minutes and opiates in under 5 minutes 	GC/MS pesticide screen: ZB-MultiResidue-1 & 2
	ZB-FAME Analysis of Fatty Acid Methyl Esters (FAMES)	Proprietary	-20 to 280 °C	✓	G48	Fatty acid methyl esters (FAMES), cis/trans FAME isomers, Omega 3 and Omega 6 FAMES	<ul style="list-style-type: none"> Faster FAME GC Analysis. Reduced run times up to 75 % Separate cis/trans FAME isomers with R_s > 1.0 High-cyanopropyl selectivity acceptable for use with AOCS, AOAC, and IOC methods 	ZB-WAX _{MS}
	ZB-PAH-EU Rapid analysis of PAHs	Proprietary	40 to 340/360 °C	✓	G51	Analysis of 15+1 EU-regulated and EPA regulated PAHs in environmental, food testing, and consumer products	<ul style="list-style-type: none"> Up to 70 % Faster PAH Analysis Elevated Temperature Stability (340/360 °C) Great Resolution of Critical Isomers, e.g. Benzo[b,k]fluoranthene 	ZB-PAH-CT
	ZB-PAH-CT Rapid analysis of PAHs (Enhanced Resolution for Chrysene and Triphenylene)	Proprietary	40 to 320/340 °C	✓	G51	Analysis of 15+1 EU-regulated and EPA regulated PAHs, Chrysene, and Triphenylene separation in environmental, food testing, and consumer products	<ul style="list-style-type: none"> Up to 70 % Faster PAH Analysis Elevated Temperature Stability (320/340 °C) Great Resolution of Critical Isomers, e.g. Benzo[b,k]fluoranthene, Chrysene and Triphenylene 	ZB-PAH-EU
	ZB-Dioxin Simplified Dioxin analysis	Proprietary	40 to 320/340 °C	✓		Dioxin in food and environment, Persistent Organic Pollutants (POPs) in food	<ul style="list-style-type: none"> Improved lab productivity by 50% Enhanced resolution of TCDD & TCDF Improved column lifetime with integrated column option 	N/A

* Polarity scale is based on the McReynolds value, which provides a systematic approach to ranking GC stationary phases by polarity.