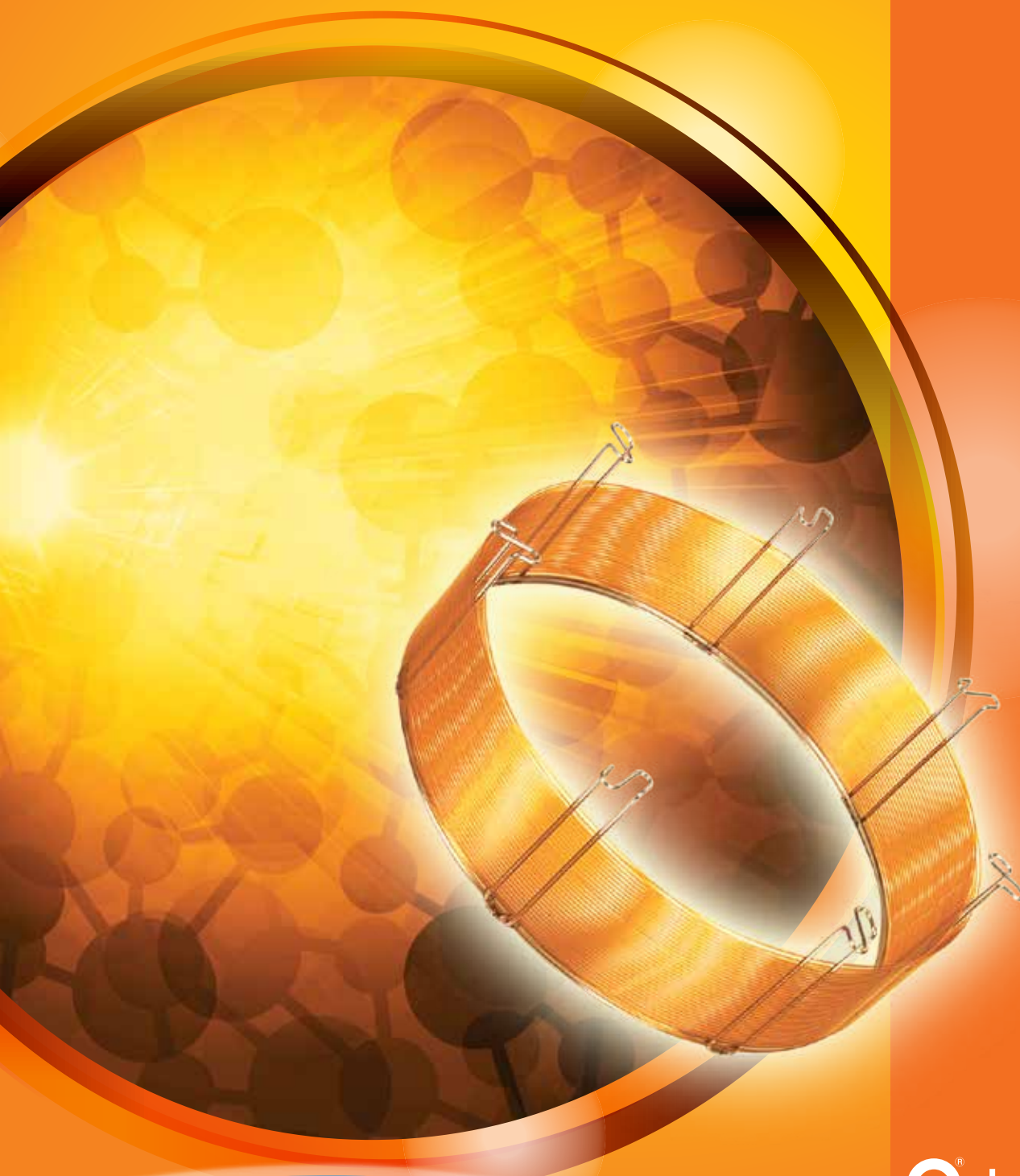


Experience the Zebron Difference

Premier GC Column Selection Guide

Zebron™
GC Columns



phenomenex®
...breaking with traditionSM



www.phenomenex.com/GC

Introducing the Zebron™ Experience

Proven Performance

Zebron GC columns are engineered by expert Phenomenex GC scientists that created key J&W technologies. Our inventive philosophy and expertise in GC column manufacturing allow us to continuously develop award-winning column chemistries. We provide best-in-class technologies and support to make your analysis easier – let the Zebron experience put you first.



Our Customers Come First

Complimentary Services:

- Column and accessory selection support
- Method optimization assistance
- Thousands of resources and applications online

guarantee

If Zebron columns do not provide you with equivalent or better separations as compared to any other GC column of the same phase and comparable dimensions, send in your comparative data within 45 days and keep the column for FREE!!

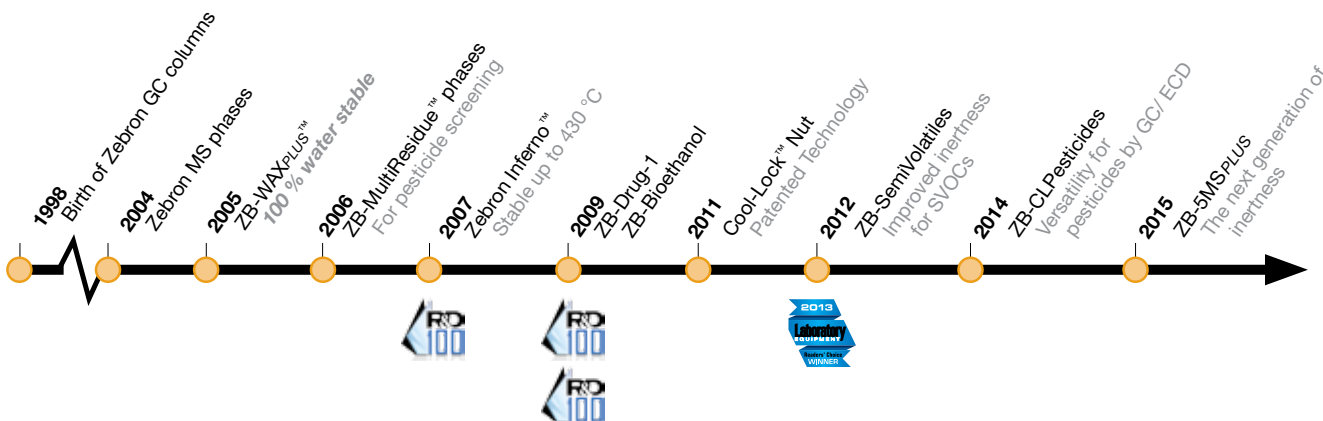


“ Phenomenex has always given superb customer support...I changed suppliers from...Agilent to Phenomenex based on your customer support...about 10 years ago and you have not failed me since that point! ”

Marie Coschigano, Genzyme Corporation

Continuing Innovation

Zebron's track record of innovation has been recognized with 3 R&D 100 Awards. No other GC columns have received this honor. Your input fuels the research and development of GC products designed specifically to overcome your analytical obstacles – share with us at www.phenomenex.com/WeListen



Visit www.phenomenex.com/gc to see our entire GC column and accessory portfolio

© 2016 Phenomenex, Inc. All rights reserved.

Table of Contents

GC Phase Selection Tips p. 4
GC Column Dimension Selection Tips p. 5
GC Column - Phase Selection p. 6

For General Purpose

Wide range of general purpose Zebron phases to suit a variety of applications. Every Zebron GC column is individually QC tested for efficiency, bleed, activity, and retention.

Polar Semi-Volatiles

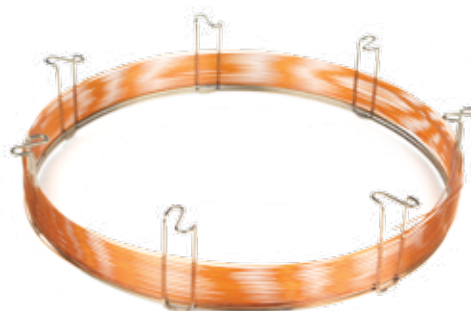
ZB-1ms p. 7
ZB-5MSPLUS p. 8

Non-Polar Volatiles

ZB-624 p. 11
ZB-WAXPLUS™ p. 12

Other Offerings:

ZB-1, ZB-5, ZB-5MSi, ZB-35, ZB-50, ZB-1701, ZB-1701P, ZB-WAX, ZB-FFAP, and ZB-XLB



For Specialty Applications

Premier Zebron phases specially designed and manufactured to deliver the best results for specific application areas

Environmental

ZB-SemiVolatiles pp. 13-14
ZB-MultiResidue™ 1 & 2 pp. 15-16

Drugs of Abuse

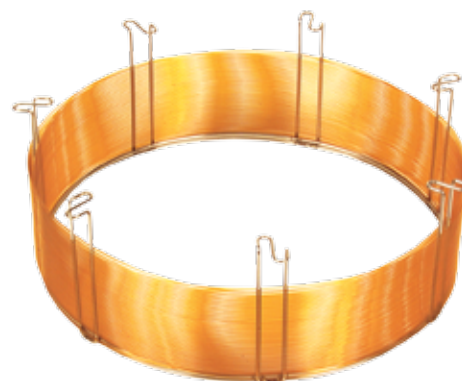
ZB-Drug-1 p. 17

Simulated Distillation

ZB-1XT SimDist Metal p. 18

Other Offerings:

ZB-Bioethanol, ZB-CLPesticides-1 and -2



For High Temperatures

Robust fused silica columns with long lifetimes for high temperature bake outs up to 430 °C

Featured Zebron Inferno™ Phases

ZB-1HT Inferno p. 9
ZB-5HT Inferno p. 10

Other Offerings:

ZB-35HT Inferno and ZB-XLB-HT Inferno



Visit www.phenomenex.com/gc to see our entire GC column and accessory portfolio

Zebtron™ GC Columns

GC Phase Selection Tips

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!

The Master Resolution Equation

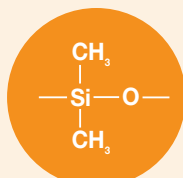
$$R_s = \left[\frac{\sqrt{N}}{4} \right] \times \left[\frac{\alpha-1}{\alpha} \right] \times \left[\frac{k}{k+1} \right]$$

Efficiency Term Selectivity Term Retention Term

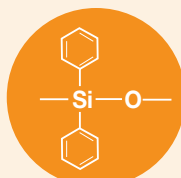
Selectivity vs. Polarity

Column polarity and selectivity are often confused – 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 very different separation profiles because of differences in phase chemistry.

ZB-35 (Polarity: 18)

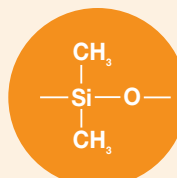


65 %
Dimethylpolysiloxane

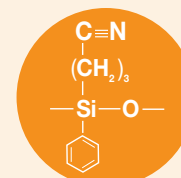


35 %
Phenyl

ZB-1701 (Polarity: 19)



86 %
Dimethylpolysiloxane



14 %
Cyanopropylphenyl

The columns have very similar polarity, but the cyanopropyl group makes ZB-1701 very different from ZB-35 in terms of selectivity.

The 3 Most Prevalent GC Interactions

Dispersive Forces (Van der Waals Interactions)

- Weakest of all intermolecular forces and occurs between non-polar compounds
- Separation is based on boiling point (classic example – hydrocarbon separation in SimDist analysis)

Dipole-Dipole Interactions

- Either permanently present or induced by analyte-stationary phase interactions
- Higher dipole-dipole interaction can help separate compounds with similar boiling points, but different chemical structures

Hydrogen Bonding (Acid-Base Interactions)

- Can cause poor peak shape or irreversible binding to the inlet liner or to the column itself

Zebtron™ GC Columns

GC Column Dimension Selection Tips

A good starting dimension is 30 meter x 0.25 mm x 0.25 μ m. From there, you can tweak individual parameters (column length, ID, and film thickness) depending on the needs of your analysis.

Shorter

(15 m or less)

Recommended For:

Sample screening or samples with very few analytes

Advantages:

Faster run times; higher efficiency separations; good for more chemically active samples and high molecular weight compounds

Disadvantages:

Resolution decreases as length decreases

LENGTH

30m



Longer

(60 m or more)

Recommended For:

Better separation or complex samples with closely eluting peaks

Advantages:

Higher resolution as length increases; good for low boilers, less active samples, or complex temperature ramps

Disadvantages:

Slow run times

Narrower

(0.10, 0.18, or 0.20 mm)

Recommended For:

Faster analysis and complex samples

Advantages:

Faster run times; better resolution

Disadvantages:

Easily overloaded; lower sample capacity

INTERNAL DIAMETER

0.25mm



Wider

(0.32 or 0.53 mm)

Recommended For:

Dirty or highly concentrated samples

Advantages:

Increased sample capacity; good for routine on-column injection

Disadvantages:

Decreased efficiency; resolution decreases as ID increases

Thinner

(0.10 or 0.18 μ m)

Recommended For:

Analysis of high boilers, GC-MS applications

Advantages:

Higher efficiency; lower bleed; faster run times; higher temperature limits

Disadvantages:

Less inert; limited retention

FILM THICKNESS

0.25 μ m



Thicker

(0.50 μ m or more)

Recommended For:

Analysis of low boilers, gases, solvents, purgeables, and volatile compounds

Advantages:

Better inertness; higher capacity

Disadvantages:

Slower run times; higher bleed; lower temperature limits



Visit www.phenomenex.com/gc
to see our entire GC column and accessory portfolio

Zebtron™ GC Columns

Need help selecting a column?
Ask a GC specialist at
www.phenomenex.com/GC

GC Column - Phase Selection

Learn even more about Zebtron GC column phases and applications at www.phenomenex.com/GC.

Polarity	Phase	Composition	Temperature Limits (Isothermal/TPGC)	MS Certified	Recommended Applications
5	ZB-1	100 % Dimethylpolysiloxane	-60 to 360/370 °C*	✓	Amines, Drugs, Essential Oils, Ethanol, Gases (Refinery), Hydrocarbons, Mercaptans, MTBE, Natural Gas Odorants, Oxygenates and GROs, PCBs, Pesticides, Semi-volatiles, Simulated Distillation, Solvent Impurities, Sulfur Compounds (Light)
5	ZB-1ms	100 % Dimethylpolysiloxane	-60 to 360/370 °C	✓	Acids, Amines, Diesel Fuel, Drugs, Flavors & Fragrances, PCBs (EPA Method 1668), Pesticides
5	ZB-1HT Inferno™	100 % Dimethylpolysiloxane	-60 to 400/430 °C**	✓	Diesel Fuel, High Boiling Petroleum Products, High Molecular Weight Waxes, Long-chained Hydrocarbons, Motor Oils, Polymers/Plastics, Simulated Distillation
5	ZB-1XT SimDist	100 % Dimethylpolysiloxane	-60 to 450 °C*	✓	ASTM Methods (D2887, D2887X, D3710, D6352, D7169), Crude Oil, Gasoline Fractions, Petroleum Distillates, Petroleum Fractions, Simulated Distillation, Vacuum Distillates
8	ZB-5	95 % Dimethylpolysiloxane 5 % Phenyl	-60 to 360/370 °C*	✓	Alkaloids, Dioxins, Drugs, Essential Oils/Flavors, FAMES, Halo-hydrocarbons, PCBs/Aroclors, Pesticides/Herbicides, Phenols, Residual Solvents, Semi-volatiles
8	ZB-5ms	95 % Dimethylpolysiloxane 5 % Phenyl-Arylene	-60 to 325/350 °C	✓	Acids, Alkaloids, Amines, Dioxins, Drugs, Essential Oils/Flavors, FAMES, Halo-hydrocarbons, PCBs/Aroclors, Pesticides/Herbicides, Phenols, Residual Solvents, Semi-volatiles, Solvent Impurities
8	ZB-5MSi	95 % Dimethylpolysiloxane 5 % Phenyl	-60 to 360/370 °C	✓	Drugs, EPA Methods, FAMES, Nitrosamines, Pesticides, Phenols
8	ZB-5MS _{PLUS}	5% Pheyl-Arylene 95% Dimethylpolysiloxane	-60 to 325/350 °C	✓	Acids, Alkaloids, Amines, Drugs, Essential Oils/ Flavours, Halo-hydrocarbons, Phenols, Residual Solvents, Solvent Impurities, Pesticides/ Herbicides
8	ZB-5HT Inferno	95 % Dimethylpolysiloxane 5 % Phenyl	-60 to 400/430 °C**	✓	Diesel Fuels, High Boiling Petroleum Products, High Molecular Weight Waxes, Long-chained Hydrocarbons, Motor Oils, Polymers/Plastics, Simulated Distillation, Surfactants, Triglycerides
8	ZB-SemiVolatiles	95 % Dimethylpolysiloxane 5 % Phenyl-Arylene	-60 to 325/350 °C	✓	Acids, Alkaloids, Amine, Dioxins, Drugs, EPA Methods (525, 610, 625, 8100, 8270D), Halogenated Hydrocarbons, PCB/Aroclors, Pesticides/Herbicides, Phenols, Residual Solvents, SemiVolatiles
9	ZB-XLB	Proprietary	30 to 340/360 °C*	✓	PCBs, Pesticides/Herbicides
9	ZB-XLB-HT Inferno	Proprietary	30 to 400 °C	✓	EPA Methods, PCBs, Pesticides/Herbicides
11	ZB-MultiResidue™-1	Proprietary	-60 to 320/340 °C	✓	Aroclors/PCBs, Haloacetic Acids, Herbicides, Insecticides, Multi-Pesticide Screening, Nitrogen Containing Pesticides, Organochlorine Pesticides, Organophosphorous Pesticides
13	ZB-624	94 % Dimethylpolysiloxane 6 % Cyanopropylphenyl	-20 to 260 °C		EPA Methods (501.3, 502.2, 503.1, 524.2, 601, 602, 624, 8010, 8015, 8020, 8021, 8240, 8260), Pharmaceuticals, Residual Solvents, Volatile Organic Compounds (VOCs)
15	ZB-MultiResidue-2	Proprietary	-60 to 320/340 °C	✓	Aroclors/PCBs, Haloacetic Acids, Herbicides, Insecticides, Multi-Pesticide Residue/Screening, Nitrogen Containing Pesticides, Organochlorine Pesticides, Organophosphorous Pesticides
18	ZB-35	65 % Dimethylpolysiloxane 35 % Phenyl	40 to 340/360 °C	✓	Amines, Aroclors, Drugs, EPA Methods (508, 608, 8081, 8141, 8151), Pesticides, Pharmaceuticals, Semi-volatiles, Steroids
18	ZB-35-HT Inferno	65 % Dimethylpolysiloxane 35 % Phenyl	40 to 400 °C	✓	Amines, Aroclors, Chemicals, Drugs, EPA Methods (508, 608, 8081, 8141, 8151), Pesticides, Pharmaceuticals, Semi-volatiles, Steroids
19	ZB-1701	86 % Dimethylpolysiloxane 14 % Cyanopropylphenyl	-20 to 280/300 °C*		Alcohols, Amines, Aromatic Hydrocarbons, Drugs, Esters, PAHs, PCBs, Pharmaceutical Intermediates, Phenols, Solvents, Steroids, TMS Sugars, Tranquilizers
19	ZB-1701P	86 % Dimethylpolysiloxane 14 % Cyanopropylphenyl	-20 to 280/300 °C*		Aroclors, Nitrogen Containing Pesticides, Organochlorine Pesticides, Organophosphorous Pesticides
24	ZB-50	50 % Dimethylpolysiloxane 50 % Phenyl	40 to 320/340 °C	✓	Antidepressants, Aroclors, Cholesterols, Drugs of Abuse, EPA Methods (508, 608, 8081, 8141, 8151), Glycols, Pesticides/Herbicides, Steroids, Triglycerides
52	ZB-WAX _{PLUS} ™	100 % Polyethylene Glycol	20 to 250/260 °C*		Alcohols, Aldehydes, Aromatics, Essential Oils, Flavors & Fragrances, Free Fatty Acids, Glycols, OVI, Pharmaceuticals, Solvents / Residual Solvents, Styrene, Xylene Isomers
57	ZB-WAX	100 % Polyethylene Glycol	40 to 250/260 °C	✓	Alcohols, Aldehydes, Aromatics, Basic Compounds, Essential Oils, Flavors & Fragrances, Glycols, Pharmaceuticals, Solvents, Styrene, Xylene Isomers
58	ZB-FFAP	Nitroterephthalic Acid Modified Polyethylene Glycol	40 to 250/260 °C		Acrylates, Alcohols, Aldehydes, Free Fatty Acids, Ketones, Organic Acids, Phenols, Volatile Free Acids
	ZB-CLPesticides-1 & 2	Proprietary	40 to 320/340 °C		Dual-column chlorinated pesticide EPA Methods (8081 and 8081 extended, 8082, 8151, 504, 505, 508,552)
	ZB-BAC1 & 2	Proprietary	40 to 320/340 °C	✓	Abused Inhalant Anesthetics, Blood Alcohol Analysis
	ZB-Drug-1	Proprietary	-20 to 260/280 °C	✓	Drug Screening (6-MAM, Amphetamines, Barbiturates, Benzodiazepines, Opiates, PCP, THC)
	ZB-Bioethanol	Proprietary	-60 to 340/360 °C	✓	Alcohol, Bioethanol, Fusel Alcohols

* Thicker films (≥ 1.0 µm df) are rated to lower Isothermal/TPGC limits for this phase.

** 0.53 mm ID dimensions are rated to lower max operational temperature for this phase.

For specific temperature limits for your phase, visit www.phenomenex.com/GC or contact your GC Specialist.



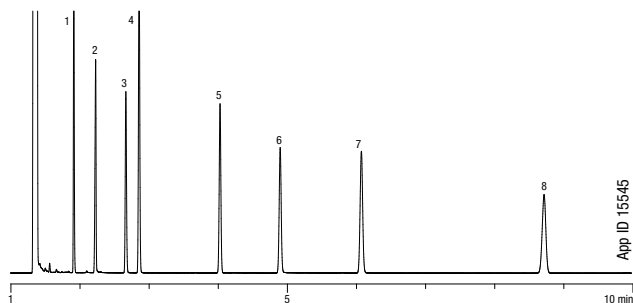
ZB-1ms

- Very low bleed (MS Certified) phase especially suited to high sensitivity GC/MS
- Extremely inert for active compounds such as drugs, pesticides, or acids and bases
- Improved signal-to-noise ratio for better sensitivity and mass spectral integrity
- Identical selectivity to the ZB-1
- Equivalent to USP Phase G2
- Temperature Limits: -60 to 360/370 °C (Isothermal/TPGC)

Lower Overall Column Activity

Activity is a key measure of column quality. This is why Zebtron ZB-1ms columns are aggressively tested to ensure full deactivation. Below is an example of the aggressive QC test mix we use, notice the low tailing for even the most active compounds like 2-Ethylhexanoic Acid!

Test Conditions for Zebtron ZB-1ms



Column: Zebtron ZB-1ms
Dimensions: 30 meter x 0.25 mm x 0.25 µm
Part No.: 7HG-G011-11
Injection: Split 100:1 @ 250 °C, 1.0 µL
Carrier Gas: Hydrogen @ 1.18 mL/min (constant flow)
Oven Program: 140 °C (Isothermal)
Detector: FID @ 325 °C
Sample:

1. Decane
2. 2-Ethylhexanoic Acid
3. 4-Chlorophenol
4. Naphthalene
5. Tridecane
6. 1-Undecanol
7. Dicyclohexylamine
8. Pentadecane



ZB-1ms Test Mix Part No.: AG0-7805

Column Profile

Low High



Applications

- Amines
- Acids
- Diesel Fuel
- Polychlorinated Biphenyls (EPA Method 1668)
- Drugs of abuse
- Flavors & Fragrances
- Pesticides

Alternative to Any MS-Certified 100 % Dimethylpolysiloxane Phase:

- DB-1ms
- HP-1ms
- AT-1ms
- MDN-1
- Rtx-1MS
- VF-1ms
- SolGEL-1ms
- Equity-1
- CP-Sil 5 CB ms

Ordering Information

Zebtron ZB-1ms GC Columns

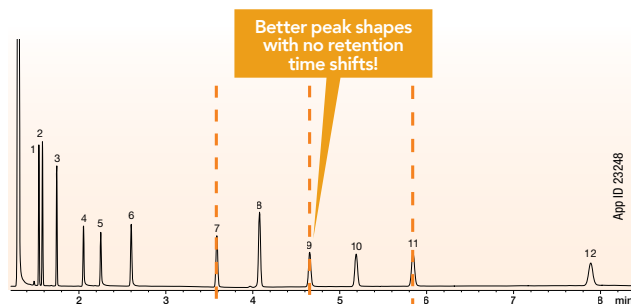
ID(mm)	df(µm)	Temp. Limits °C	Part No.
10-Meter			
0.10	0.10	-60 to 360/370	7CB-G011-02
0.18	0.18	-60 to 360/370	7CD-G011-08
12-Meter			
0.20	0.33	-60 to 360/370	7DE-G011-14
15-Meter			
0.25	0.25	-60 to 360/370	7EG-G011-11
0.32	0.25	-60 to 360/370	7EM-G011-11
20-Meter			
0.18	0.18	-60 to 360/370	7FD-G011-08
0.32	1.00	-60 to 360/370	7FD-G011-22
25-Meter			
0.20	0.33	-60 to 360/370	7GE-G011-14
30-Meter			
0.25	0.10	-60 to 360/370	7HG-G011-02
0.25	0.25	-60 to 360/370	7HG-G011-11
0.25	0.50	-60 to 360/370	7HG-G011-17
0.25	1.00	-60 to 360/370	7HG-G011-22
0.32	0.25	-60 to 360/370	7HM-G011-11
0.32	1.00	-60 to 360/370	7HM-G011-22
0.53	1.00	-60 to 360/370	7HK-G011-22
60-Meter			
0.25	0.25	-60 to 360/370	7KG-G011-11
0.25	1.00	-60 to 360/370	7KG-G011-22
0.32	1.00	-60 to 360/370	7KM-G011-22

Note: If you need a 5 in. cage, simply add a (-B) after the part number, e.g., 7HG-G011-11-B. Some exceptions may apply. Agilent 6850 and some SRI and process GC systems use only 5 in. cages.

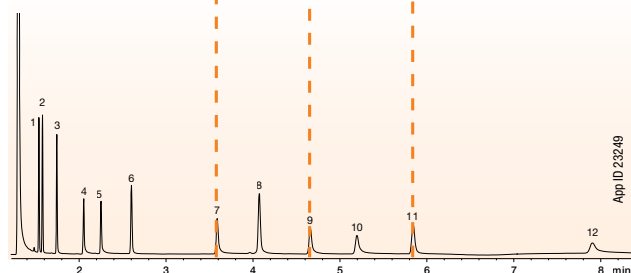
ZB-5MSPLUS™

- The next generation of inertness for specialty chemical, forensic, toxicology, and food testing applications
- 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
- Equivalent to USP Phase G27
- Temperature Limits: -60 to 325/350 °C

Zebtron ZB-5MSPLUS



Traditional 5ms Phase



Conditions for both columns:

- Column: As listed
 Dimensions: 30 meter x 0.25 mm x 0.25 μm
 Injection: Split 200:1 @ 250 °C, 1 μL
 Carrier Gas: Helium @ 2.4 mL/min (constant flow)
 Oven Program: 140 °C (Isothermal)
 Detector: FID @ 325 °C
- | | | |
|---------|-------------------------|------------------------|
| Sample: | 1. m-Xylene | 7. Tridecane |
| | 2. o-Xylene | 8. 1-Methylnaphthalene |
| | 3. Decane | 9. 1-Undecanol |
| | 4. 2-Ethylhexanoic Acid | 10. Tetradecane |
| | 5. 1,6-Hexanediol | 11. Dicyclohexylamine |
| | 6. 4-Chlorophenol | 12. Pentadecane |

Column Profile



Applications

- Acids
- Alkaloids
- Amines
- Drugs
- Essential Oils/Flavors
- Halo-hydrocarbons
- Phenols
- Residual Solvents
- Solvent Impurities
- Pesticides/Herbicides

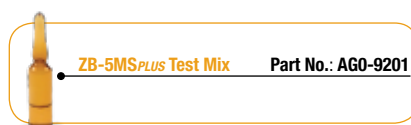
Upgrade from Any 5% Phenyl or 5% Phenyl -Arylene 95% Dimethylpolysiloxane Phase:

- DB®-5ms
- DB-5ms Ultra Inert
- DB-5.625
- HP®-5ms
- HP-5ms Ultra Inert
- VF-5ms
- Rxi®-5Sil MS
- SLB®-5ms

Ordering Information

Zebtron ZB-5MSPLUS GC Columns

ID (mm)	df (μm)	Temp. Limits °C	Part No.
15-Meter			
0.25	0.25	-60 to 325/350	7EG-G030-11
20-Meter			
0.18	0.18	-60 to 325/350	7FD-G030-08
0.18	0.36	-60 to 325/350	7FD-G030-53
30-Meter			
0.25	0.25	-60 to 325/350	7HG-G030-11
0.25	0.50	-60 to 325/350	7HG-G030-17
0.25	1.00	-60 to 325/350	7HG-G030-22
0.32	0.25	-60 to 325/350	7HM-G030-11
0.32	1.00	-60 to 325/350	7HM-G030-22
30-Meter with 5-Meter Guardian™ Integrated Guard			
0.25	0.25	-60 to 325/350	7HG-G030-11-GGA
30-Meter with 10-Meter Guardian Integrated Guard			
0.25	0.25	-60 to 325/350	7HG-G030-11-GGC
0.25	0.50	-60 to 325/350	7HG-G030-17-GGC
60-Meter			
0.25	0.25	-60 to 325/350	7KG-G030-11



Want better peak shape for acidic/basic compounds, drugs of abuse, and pesticides? Try the highly inert and low bleed ZB-5MS! www.phenomenex.com/products/gc

Zebtron™ GC Columns



2007 R&D 100
Award Recipient



ZB-1HT Inferno™

- First non-metal columns stable to 430 °C
- Provides true boiling point separation for hydrocarbon distillation methods
- Longer lifetime with rugged high temperature, polyimide coated, fused silica tubing
- Low activity, provides good peak shape for acidic and basic samples
- Provides robust column performance for high temperature bake outs
- Individually tested for low bleed, MS certified
- Temperature Limits: -60 to 400/430 °C (Isothermal/TPGC)*

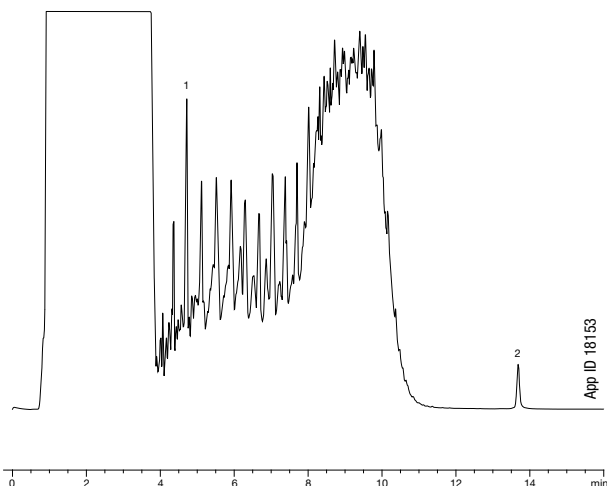
Column Profile



Applications

- High Boiling Petroleum Products
- Simulated Distillation Methods
- Long-chained Hydrocarbons
- High Molecular Weight Waxes
- Polymers/Plastics
- Motor Oils
- Diesel Fuel

Hydrocarbons from Water: DIN EN ISO 9377-2 (DEV H53)



Column: Zebtron ZB-1HT Inferno
Dimensions: 15 meter x 0.32 mm x 0.25 µm
Part No.: 7EM-G014-11
Injection: Splitless @ 300 °C, 20 µL
Carrier Gas: Helium @ 2.0 mL/min (constant flow)
Oven Program: 50 °C for 2 min to 320 °C @ 30 °C/min for 5 min
Detector: FID @ 330 °C
Sample: 1. Decane
 2. Tetracontane

Alternative to Any 100 % Dimethylpolysiloxane High Temperature Phase:

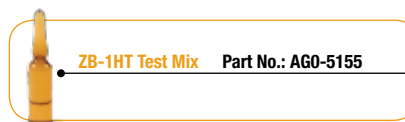
- DB-1ht
- Rxi®-1HT
- Petrocol 2887
- CP-SimDist

Ordering Information

Zebtron ZB-1HT Inferno GC Columns

ID(mm)	df(µm)	Temp. Limits °C	Part No.
5-Meter			
0.53	0.10	-60 to 400/430	7AK-G014-02
10-Meter			
0.32	0.25	-60 to 400/430	7CM-G014-11
15-Meter			
0.25	0.10	-60 to 400/430	7EG-G014-02
0.25	0.25	-60 to 400/430	7EG-G014-11
0.32	0.10	-60 to 400/430	7EM-G014-02
0.32	0.25	-60 to 400/430	7EM-G014-11
0.53	0.15	-60 to 400	7EK-G014-05
20-Meter			
0.18	0.18	-60 to 400/430	7FD-G014-08
30-Meter			
0.25	0.10	-60 to 400/430	7HG-G014-02
0.25	0.25	-60 to 400/430	7HG-G014-11
0.32	0.10	-60 to 400/430	7HM-G014-02
0.32	0.25	-60 to 400/430	7HM-G014-11
0.53	0.15	-60 to 400	7HK-G014-05

Note: If you need a 5 in. cage, simply add a (-B) after the part number, e.g., 7HG-G014-11-B. Some exceptions may apply. Agilent 6850 and some SRI and process GC systems use only 5 in. cages.



Courtesy of Dr. Alexander Ruderisch, Agrolab Labor GmbH, Bruckberg



*0.53 mm ID columns are rated to 400 °C max operational temperature.



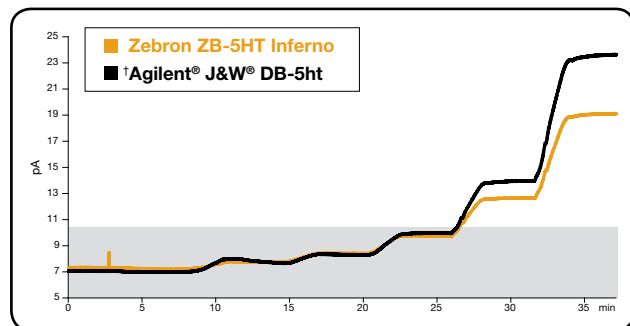
Visit www.phenomenex.com/gc
to see our entire GC column and accessory portfolio



ZB-5HT Inferno™

- First non-metal columns stable to 430 °C
- Robust column for high temperature bake outs analysis, such as biodiesel, long-chain hydrocarbons, polymers, and high molecular weight compounds
- Provides true boiling point separation for hydrocarbon distillation methods
- Longer lifetime with rugged high temperature, polyimide coated, fused silica tubing
- Low activity, provides good peak shape for acidic and basic samples
- Individually tested for low bleed, MS certified
- Temperature Limits: -60 to 400/430 °C (Isothermal/TPGC)*

Lower Bleed!*



Conditions for all columns**:

Dimensions: 30 meter x 0.25 mm x 0.10 µm
Injection: Null Injection @ 250 °C
Carrier Gas: Hydrogen @ 11 psi (Constant Pressure)
Oven Program: 120 °C for 3 min to 320 °C @ 30 °C/min (hold 5 min) to 340 °C @ 30 °C/min (hold 5 min) to 360 °C @ 30 °C/min (hold 5 min) to 380 °C @ 30 °C/min (hold 5 min) to 400 °C @ 30 °C/min (hold 5 min)
Detector: FID @ 405 °C

How does the lifetime test work?

Hydrocarbons are a good way to measure the stability and lifetime of a non-polar column. Because its interaction with the phase is mostly based on London Dispersion forces, any change in retention time is correlated with phase loss. This will result in increased bleed and poor reproducibility.

In the lifetime study above, the Zebtron ZB-5HT Inferno column has twice the lifetime as the two comparative columns. For the test, all columns were held at 400 °C for 2 hours and then the oven was lowered to 120 °C for Pentadecane analysis. The Varian® HT column broke just after 40 hours at 400 °C. The Agilent® J&W® DB-5ht column had the same retention for Pentadecane at 40 hours as the ZB-5HT at 100 hours.

*The shaded area depicts the bleed criteria for MS certified columns on a MS detector. MS bleed certification values are typically read at 320 °C. This demonstrates the low bleed capabilities of the ZB-5HT. It meets MS certification limits even at 360 °C!

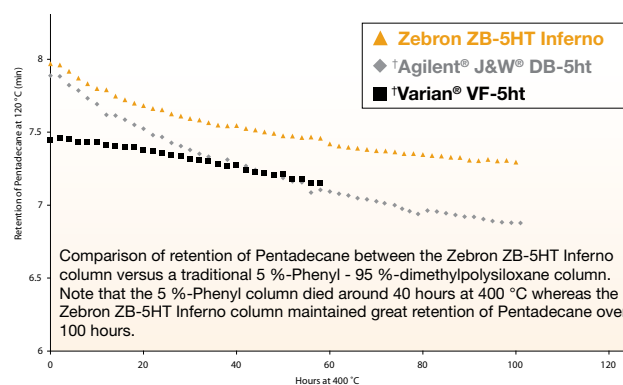
**All columns used for above tests were new/never used, prior to this testing and purchased either directly from the original manufacturer or through an authorized distributor. All testing was carefully controlled to ensure conditions were similar for all columns involved. The comparative data may not be representative of every application.

Visit www.phenomenex.com/gc to see our entire GC column and accessory portfolio

Column Profile



Zebtron Inferno Columns Win In The Lifetime Test



Comparison of retention of Pentadecane between the Zebtron ZB-5HT Inferno column versus a traditional 5 %-Phenyl - 95 %-dimethylpolysiloxane column. Note that the 5 %-Phenyl column died around 40 hours at 400 °C whereas the Zebtron ZB-5HT Inferno column maintained great retention of Pentadecane over 100 hours.

Conditions for all columns**:

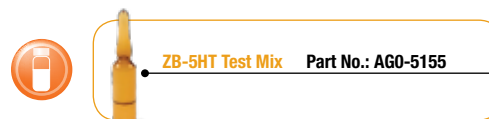
Dimensions: 30 meter x 0.25 mm x 0.10 µm
Injection: 1.0 µL of test mix AGO-7578
Carrier Gas: Helium @ 1.9 mL/min (constant flow)
Oven Program: 120 °C Isothermal
Detector: Flame Ionization Detector (FID) @ 400 °C
Sample: Pentadecane

Ordering Information

Zebtron ZB-5HT Inferno GC Columns

ID(mm)	df(µm)	Temp. Limits °C	Part No.
10-Meter with 2-Meter Spliced Guard (0.53 mm ID)			
0.32	0.10	-60 to 400/430	7CM-G015-02-GST
15-Meter			
0.25	0.10	-60 to 400/430	7EG-G015-02
0.25	0.25	-60 to 400/430	7EG-G015-11
0.32	0.10	-60 to 400/430	7EM-G015-02
0.32	0.25	-60 to 400/430	7EM-G015-11
0.53	0.15	-60 to 400	7EK-G015-05
15-Meter with 2-Meter Spliced Guard (0.53 mm ID)			
0.32	0.10	-60 to 400/430	7EM-G015-02-GST
20-Meter			
0.18	0.18	-60 to 400/430	7FD-G015-08
30-Meter			
0.25	0.10	-60 to 400/430	7HG-G015-02
0.25	0.25	-60 to 400/430	7HG-G015-11
0.32	0.10	-60 to 400/430	7HM-G015-02
0.32	0.25	-60 to 400/430	7HM-G015-11
0.53	0.15	-60 to 400	7HK-G015-05
60-Meter			
0.25	0.25	-60 to 400/430	7KG-G015-11

Note: If you need a 5 in. cage, simply add a (-B) after the part number, e.g., 7HG-G015-11-B. Some exceptions may apply. Agilent 6850 and some SRI and process GC systems use only 5 in. cages.



*0.53 mm ID columns are rated to 400 °C max operational temperature.

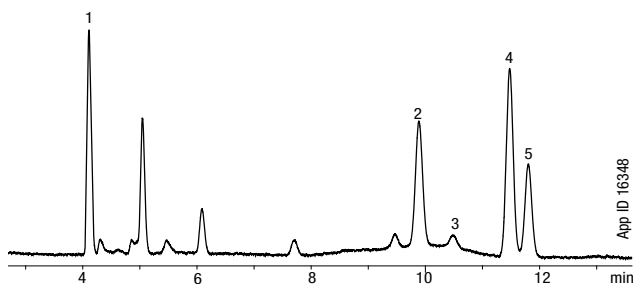
*Agilent and J&W are registered trademarks of Agilent Technologies, Inc. Varian is a registered trademark under license to Agilent Technologies, Inc.

Zebtron™ GC Columns

ZB-624

- Widely used phase to separate volatile organic flavor and fragrance additives and residual solvents in industrial or pharmaceutical products (OVIs)
- Popular choice for residual solvent testing
- Excellent for US EPA Methods 501.3, 502.2, 503.1, 524.2, 601, 602, 624, 8010, 8015, 8020, 8021, 8240, 8260
- Specifically designed for the separation of volatile organic compounds (VOCs)
- Increased temperature limit speeds run times and re-equilibration
- Equivalent to USP Phase G43
- Temperature Limits: -20 to 260 °C

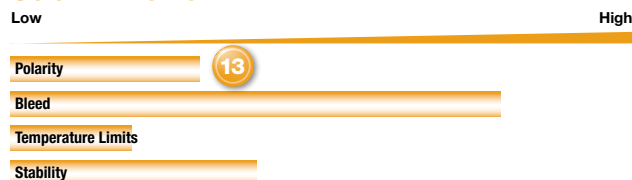
USP <467>: Residual Solvents Procedure A - Class 1



Column: Zebtron ZB-624
Dimensions: 30 meter x 0.32 mm x 1.80 µm
Part No.: 7HM-G005-31
Injection: Split 5:1 @ 140 °C, 1 mL
Carrier Gas: Helium @ 35 cm/sec (constant flow)
Oven Program: 40 °C for 20 min to 240 °C @ 10 °C/min for 20 min
Detector: FID @ 250 °C
Sample:

- 1,1-Dichloroethene
- 1,1,1-Trichloroethane
- Carbon tetrachloride
- Benzene
- 1,2-Dichloroethane

Column Profile



Applications

- Volatile Organic Compounds (VOCs)
- Residual Solvents
- EPA Methods 501.3, 502.2, 503.1, 524.2, 601, 602, 624, 8010, 8015, 8020, 8021, 8240, 8260
- Pharmaceuticals

Alternative to Any 6 %-Cyanopropylphenyl-94 %-Dimethylpolysiloxane Phase:

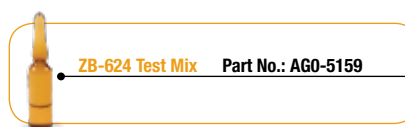
- | | | |
|------------|-----------|--------------------|
| • DB-624 | • Rtx-624 | • DB-1301 |
| • AT-624 | • BP624 | • SPB-1301 |
| • DB-VRX | • 007-502 | • CP-Select 624 CB |
| • Rtx-1301 | • HP-VOC | • SPB-624 |
| • CP-1301 | • 007-624 | • Rtx-VMS |

Ordering Information

Zebtron ZB-624 GC Columns

ID (mm)	df (µm)	Temp. Limits °C	Part No.
20-Meter			
0.18	1.00	-20 to 260	7FD-G005-22
30-Meter			
0.25	1.40	-20 to 260	7HG-G005-27
0.32	1.80	-20 to 260	7HM-G005-31
0.53	3.00	-20 to 260	7HK-G005-36
60-Meter			
0.25	1.40	-20 to 260	7KG-G005-27
0.32	1.80	-20 to 260	7KM-G005-31
0.53	3.00	-20 to 260	7KK-G005-36
75-Meter			
0.53	3.00	-20 to 260	7LK-G005-36
105-Meter			
0.53	3.00	-20 to 260	7NK-G005-36

Note: If you need a 5 in. cage, simply add a (-B) after the part number, e.g., 7HM-G005-31-B. Some exceptions may apply. Agilent 6850 and some SRI and process GC systems use only 5 in. cages.



Visit www.phenomenex.com/gc to see our entire GC column and accessory portfolio

Zebtron™ GC Columns

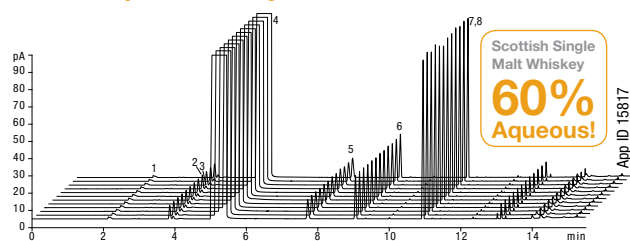
ZB-WAX^{PLUS}™

- 100 % aqueous stable, excellent for aqueous samples
- Extremely inert for acidic compounds
- Enhanced selectivity for low boiling solvents
- High retention of alcohols and chlorinated solvents
- Increased efficiency at 20 °C
- Bonded and solvent rinsible
- Equivalent to USP Phase G16
- Temperature Limits: 20 to 250/260 °C (Isothermal/TPGC)*

Enhanced Aqueous Stability for Polar Compounds

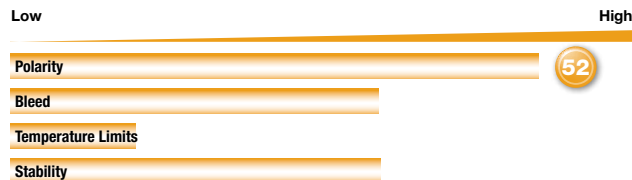
Wax columns provide optimal selectivity for many aqueous soluble compounds such as those found in alcoholic beverages or glycol samples. Historically, Polyethylene Glycol (PEG) phases have been unstable with aqueous samples resulting in poor reproducibility and decreased lifetime. The ZB-WAX^{PLUS} bonding procedure results in exceptional stability to repeated injections of aqueous matrices.

Water Reproducibility of ZB-WAX^{PLUS}



Column: Zebtron ZB-WAX^{PLUS}
Dimensions: 30 meter x 0.25 mm x 0.25 µm
Part No.: 7HG-G013-11
Injection: Split 30:1 @ 140 °C, 0.2 µL
Carrier Gas: Helium @ 1.4 mL/min (constant flow)
Oven Program: 35 °C for 5 min to 85 °C @ 10 °C/min to 200 °C @ 25 °C/min for 1 min
Detector: FID @ 200 °C
Sample: 1. Acetaldehyde
 2. Ethyl Acetate
 3. Methanol
 4. Ethanol
 5. Propanol
 6. Isobutanol
 7. 2-Methylbutanol
 8. 3-Methylbutanol

Column Profile



Applications

- Alcoholic Beverages
- Acids (free)
- Pharmaceuticals
- Alcohols
- Essential oils
- Solvents
- OVIs
- Flavors / Fragrances
- Xylene Isomers
- Aldehydes
- Styrene
- Aromatics
- Glycols

Alternative to Any Polyethylene Glycol Phase:

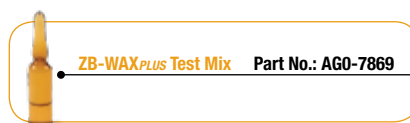
- DB-WAX
- SUPELCO WAX-10
- Carbowax 20M
- PEG 20M
- AT-WAX
- Permabond CW 20M
- HP-20M
- CP-WAX 52 CB
- CAM
- Stabilwax
- AT-AquaWax
- BP20

Ordering Information

Zebtron ZB-WAX^{PLUS} GC Columns

ID (mm)	df (µm)	Temp. Limits °C	Part No.
10-Meter			
0.10	0.10	20 to 250/260	7CB-G013-02
15-Meter			
0.25	0.25	20 to 250/260	7EG-G013-11
0.53	1.00	20 to 230/240	7EK-G013-22
20-Meter			
0.18	0.18	20 to 250/260	7FD-G013-08
30-Meter			
0.25	0.25	20 to 250/260	7HG-G013-11
0.25	0.50	20 to 250/260	7HG-G013-17
0.32	0.25	20 to 250/260	7HM-G013-11
0.32	0.50	20 to 250/260	7HM-G013-17
0.32	1.00	20 to 230/240	7HM-G013-22
0.53	1.00	20 to 230/240	7HK-G013-22
60-Meter			
0.25	0.15	20 to 250/260	7KG-G013-05
0.25	0.25	20 to 250/260	7KG-G013-11
0.25	0.50	20 to 250/260	7KG-G013-17
0.32	0.25	20 to 250/260	7KM-G013-11
0.32	0.50	20 to 250/260	7KM-G013-17
0.53	1.00	20 to 230/240	7KK-G013-22

Note: If you need a 5 in. cage, simply add a (-B) after the part number, e.g., 7HG-G013-11-B. Some exceptions may apply. Agilent 6850 and some SRI and process GC systems use only 5 in. cages.



*Thicker films (≥1.0 µm df) are rated to 230/240 °C (Isothermal/TPGC).



ZB-SemiVolatiles

- Specifically designed to overcome obstacles for sensitive semi-volatile methods
- Enviro-Inert™ Technology provides a rugged 5 %-Phenyl-Arylene phase – improve inertness without compromising selectivity
- Rugged QC test includes EPA 8270 tuning standard to ensure column is ready to pass suitability requirements
- Low bleed (MS Certified) especially suited to high sensitivity work using GC/MS
- Our column of choice for EPA Methods 525, 610, 625, 8100, and 8270
- Temperature Limits: -60 to 325/350 °C

Upgrade from Any 5%-Phenyl or 5%-Phenyl -Arylene-95%-Dimethylpolysiloxane Phase:

- DB-5ms
- DB-5ms Ultra Inert
- DB-5.625
- HP-5ms
- HP-5ms Ultra Inert
- VF-5ms
- Rxi-5ms
- Rxi-5Sil MS
- CP-Sil 8 CB MS

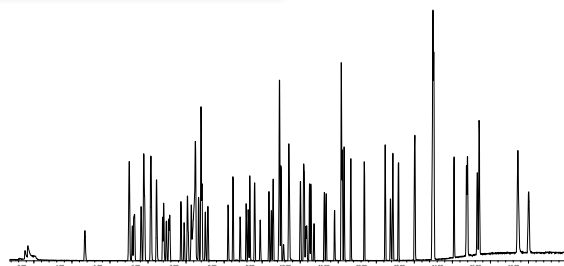
You Spoke, You Tested, You Approved

Your input fueled the research and development of Zebtron ZB-SemiVolatiles – the column specifically designed to overcome your EPA Method 8270D obstacles.

Several environmental labs have verified real-world performance on ZB-SemiVolatiles:

- TestAmerica Laboratories, Inc. Buffalo
- Phoenix Environmental Laboratories, Inc.
- Other labs like yours!

Real Customer Results For EPA Method 8270D on ZB-SemiVolatiles



“Zebtron ZB-SemiVolatiles is a very stable and durable semi-volatile column. This has reduced TestAmerica’s downtime and increased our productivity, enabling us to better serve our clients’ needs.”

David Wilkes, GC/MS Semi-Volatile Department
TestAmerica Laboratories, Inc. Buffalo

The opinions stated herein are solely those of the speaker and not necessarily those of any company or organization.

Column Profile



Applications

- Acids
- Alkaloids
- Amine
- Dioxins
- Drugs
- EPA Methods (525, 610, 625, 8100, 8270D)
- Halogenated Hydrocarbons
- PCB/Aroclors
- Pesticides/Herbicides
- Phenols
- Residual Solvents
- SemiVolatiles

We QC Test for the SVOC Compounds You Analyze

We take the guesswork out of meeting method requirements by aggressively testing ZB-SemiVolatiles with two different test mixes. We incorporated troublesome analytes from your samples (Pyridine) and compounds in the 8270D tuning standard (DDT, Pentachlorophenol, and Benzidine) into our QC test, so you can be sure your column is ready to meet suitability requirements for the method.

Pyridine (PYR)		
Very active amine – exposes any basic activity		
	EPA 8270D Requirement	Our Requirement
Peak Response:	Not Specified	≥ 0.6*
Pentachlorophenol (PCP)		
PCP peaks disappear and exhibit tailing on columns with acid activity		
	EPA 8270D Requirement	Our Requirement
Peak Skew:	≤ 2.0	≤ 2.0
Peak Response:	Not Specified	≥ 0.3
Benzidine		
Active amine that tails when basic activity is present		
	EPA 8270D Requirement	Our Requirement
Peak Skew:	≤ 2.0	≤ 2.0
DDT		
Breaks down in an active system to DDE & DDD		
	EPA 8270D Requirement	Our Requirement
Breakdown:	< 20 %	< 20 %

*Requirement of 0.5 for 60 m x 0.25 mm x 0.25 μm and 10m Guardian™ dimensions



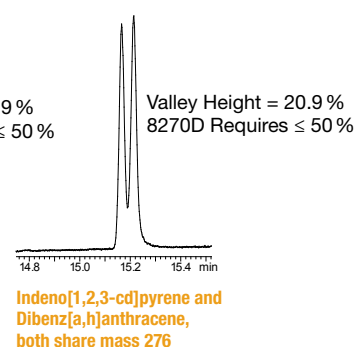
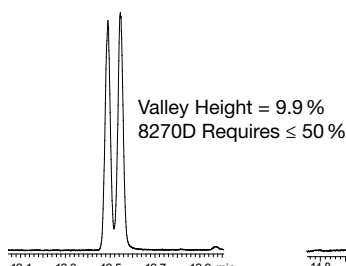
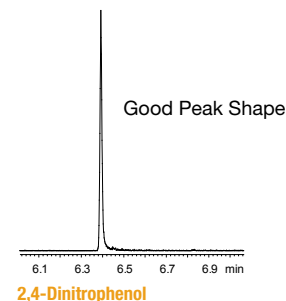
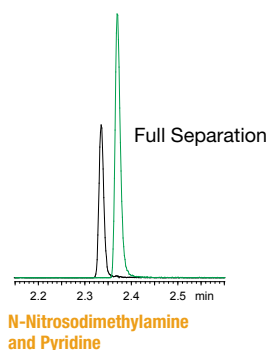
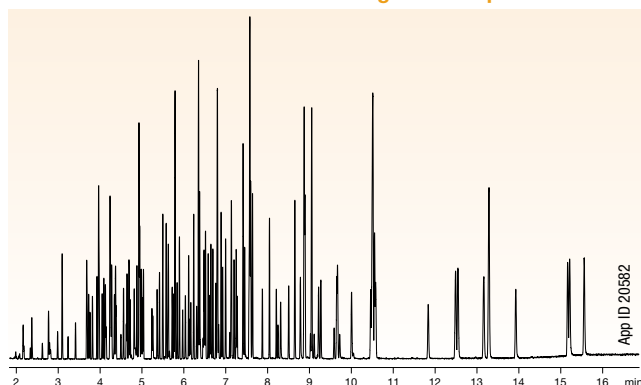
Visit www.phenomenex.com/gc to see our entire GC column and accessory portfolio

ZB-SemiVolatiles (cont'd)

Great Resolution of Key Critical Pairs and Improved Peak Shapes

Enviro-Inert™ technology allows Zebron ZB-SemiVolatiles to provide improved productivity with shorter run times for EPA 8270D, while maintaining resolution of key critical pairs.

EPA Method 8270D: Semi-volatile Organic Compounds



Improve Resolution, Decrease Run Time

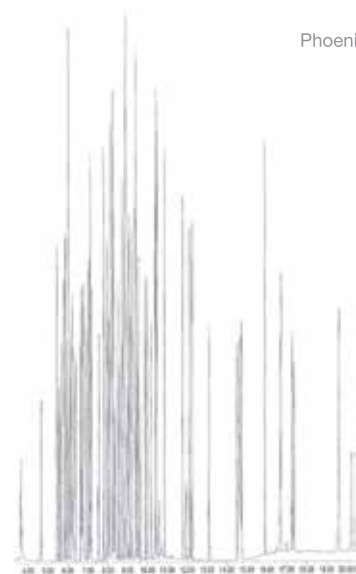
“We made the switch to the ZB-SemiVolatiles column for an increase in performance for separating pyridine and n-nitrosodimethylamine. The improved peak shape has dramatically decreased the %RSD in our calibration curve. Additionally, we have seen an increase of peak separation for aniline and bis(2-chloroethyl) ether. This has allowed for us to decrease run times while seeing excellent peak resolution without sacrificing quality, something I strive for as an analyst.”

Senior Organic Chemist
Phoenix Environmental Laboratories, Inc.

Stands Up to Tough Samples for Increased Lifetime

“I have found the Phenomenex ZB-SemiVolatiles columns to be superior in quality and durability than any other columns we have previously used. The columns not only last longer, but the reproducibility of column is extraordinary. The column holds calibrations particularly well, even after multiple injections of samples with far less than desirable matrices. All of this equates to less downtime and maintenance and more productivity for TestAmerica.”

Ryan McKernan, GC/MS Semi-Volatile Analyst
TestAmerica Laboratories, Inc. Buffalo



Real Customer Sample for
EPA Method 8270D

Ordering Information

Zebron ZB-SemiVolatiles GC Columns			
ID (mm)	df (µm)	Temperature Limits (°C)	Part No.
15-Meter			
0.25	0.25	-60 to 325/350	7EG-G027-11
0.25	0.50	-60 to 325/350	7EG-G027-17
20-Meter			
0.18	0.18	-60 to 325/350	7FD-G027-08
0.18	0.36	-60 to 325/350	7FD-G027-53
30-Meter			
0.25	0.25	-60 to 325/350	7HG-G027-11
0.25	0.50	-60 to 325/350	7HG-G027-17
30-Meter with 5-Meter Guardian™ Integrated Guard			
0.25	0.25	-60 to 325/350	7HG-G027-11-GGA
0.25	0.50	-60 to 325/350	7HG-G027-17-GGA
30-Meter with 10-Meter Guardian Integrated Guard			
0.25	0.25	-60 to 325/350	7HG-G027-11-GGC
0.25	0.50	-60 to 325/350	7HG-G027-17-GGC
60-Meter			
0.25	0.25	-60 to 325/350	7KG-G027-11

The opinions stated herein are solely those of the speaker and not necessarily those of any company or organization.

ZB-MultiResidue™ -1 and -2

- Proprietary phase specially designed for the separation of all types of pesticides, herbicides, and insecticides
- Provides baseline resolution and confirmation of all 20 chlorinated pesticides regulated under EPA Method 8081 in ≤ 10 min
- Low activity, decreased breakdown of sensitive pesticides such as DDT
- Provides robust column performance for high temperature bake outs
- MS Certified phases provide low bleed performance for pesticide confirmation by MS
- Temperature Limits: -60 to 320/340 °C (Isothermal/TPGC)

Column Profile

Low High

Polarity MR-1 11

Polarity MR-2 15

Bleed

Temperature Limits

Stability

Applications

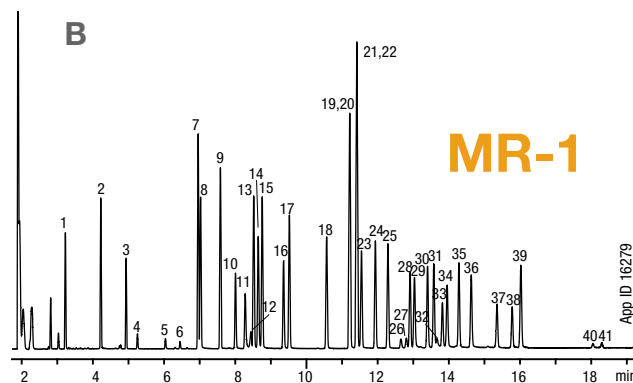
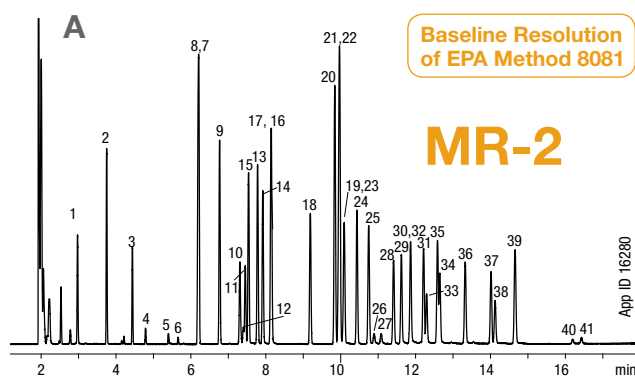
- Organochlorine Pesticides
- Insecticides
- Organophosphorous Pesticides
- Aroclors/PCBs
- Nitrogen Containing Pesticides
- Haloacetic Acids
- Herbicides
- Multi-pesticide Residue Methods

Similar* to:

- Rtx-CLPesticides
- Stx-CLPesticides
- Rtx-CLPesticides2
- Stx-CLPesticides2

*not exact equivalent, selectivity might be different

EPA Methods 508 and 8081A



Column: A) Zebron MultiResidue-2
B) Zebron MultiResidue-1

Dimensions: A) 30 meter x 0.32 mm x 0.25 µm
B) 30 meter x 0.32 mm x 0.50 µm

Part No.: A) 7HM-G017-11
B) 7HM-G016-17

Injection: On-Column @ 123 °C, 1 µL

Carrier Gas: Helium @ 1.2 mL/min (constant flow)

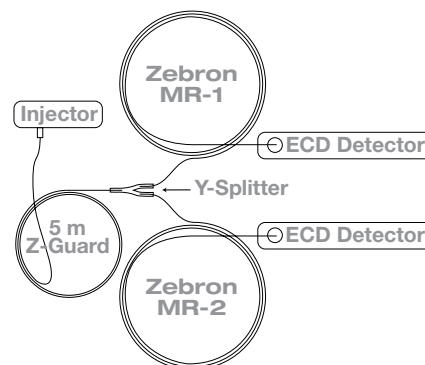
Oven Program: 120 °C for 0.5 min to 210 °C @ 30 °C/min to 300 °C @ 6 °C/min for 2 min

Detector: ECD @ 340 °C

Sample: All analytes are 50 ppb in isooctane

- | | | |
|------------------------------|-----------------------------|------------------------|
| 1. DBCP | 16. DCPA (Dacthal) | 31. Endosulfan II |
| 2. Hexachlorocyclopentadiene | 17. Aldrin | 32. Kepone |
| 3. Etridiazole | 18. Heptachlor epoxide | 33. Trithion |
| 4. Chloroneb | 19. Captan | 34. Endrin aldehyde |
| 5. Propachlor | 20. trans-Chlordane (gamma) | 35. DDT |
| 6. Diallate | 21. cis-Chlordane (alpha) | 36. Endosulfan sulfate |
| 7. α-BHC | 22. trans-Nonachlor | 37. Captafol |
| 8. Hexachlorobenzene | 23. Endosulfan I | 38. Methoxychlor |
| 9. γ-BHC | 24. DDE | 39. Endrin ketone |
| 10. β-BHC | 25. Dieldrin | 40. Permethrin |
| 11. Dichlone | 26. Chloropropylate | 41. Permethrin isomer |
| 12. Alachlor | 27. Chlorobenzilate | |
| 13. d-BHC | 28. Endrin | |
| 14. Chlorothalonil | 29. Nitrofen | |
| 15. Heptachlor | 30. DDD | |

Well-suited for Dual Column Analysis



ZB-MultiResidue™ -1 and -2 (cont'd)

Ordering Information

Zebtron ZB-MultiResidue GC Columns (MR)-1

ID(mm)	df(µm)	Temp. Limits °C	Part No.
20-Meter			
0.18	0.18	-60 to 320/340	7FD-G016-08
30-Meter			
0.25	0.25	-60 to 320/340	7HG-G016-11
0.32	0.25	-60 to 320/340	7HM-G016-11
0.32	0.50	-60 to 320/340	7HM-G016-17
0.53	0.50	-60 to 320/340	7HK-G016-17

Zebtron ZB-MultiResidue GC Columns (MR)-2

ID(mm)	df(µm)	Temp. Limits °C	Part No.
30-Meter			
0.25	0.20	-60 to 320/340	7HG-G017-10
0.32	0.25	-60 to 320/340	7HM-G017-11
0.53	0.50	-60 to 320/340	7HK-G017-17

Note: If you need a 5 in. cage, simply add a (-B) after the part number, e.g., 7HG-G016-11-B or 7HG-G017-10-B. Some exceptions may apply. Agilent 6850 and some SRI and process GC systems use only 5 in. cages.

ZB-MultiResidue Column Kits

Ordering Information

0.25 mm ID (kit consists of products below)			Part No.: KGO-8237
Description	Dimension	Part No.	
MultiResidue MR-1 Column	30 meter x 0.25 mm x 0.25 µm df	7HG-G016-11	
MultiResidue MR-2 Column	30 meter x 0.25 mm x 0.20 µm df	7HG-G017-10	
Z-Guard	5 meter x 0.25 mm	7AG-G000-00-GZ0	
Universal Capillary Column Y-connector, Fused Quartz		AGO-4717	
0.32mm ID (kit consists of products below)			Part No.: KGO-8238
Description	Dimension	Part No.	
MultiResidue MR-1 Column	30 meter x 0.32 mm x 0.50 µm df	7HM-G016-17	
MultiResidue MR-2 Column	30 meter x 0.32 mm x 0.25 µm df	7HM-G017-11	
Z-Guard	5 meter x 0.32 mm	7AM-G000-00-GZ0	
Universal Capillary Column Y-connector, Fused Quartz		AGO-4717	
0.53 mm ID (kit consists of products below)			Part No.: KGO-8239
Description	Dimension	Part No.	
MultiResidue MR-1 Column	30 meter x 0.53 mm x 0.50 µm df	7HK-G016-17	
MultiResidue MR-2 Column	30 meter x 0.53 mm x 0.50 µm df	7HK-G017-17	
Z-Guard	5 meter x 0.53 mm	7AK-G000-00-GZ0	
Universal Capillary Column Y-connector, Fused Quartz		AGO-4717	



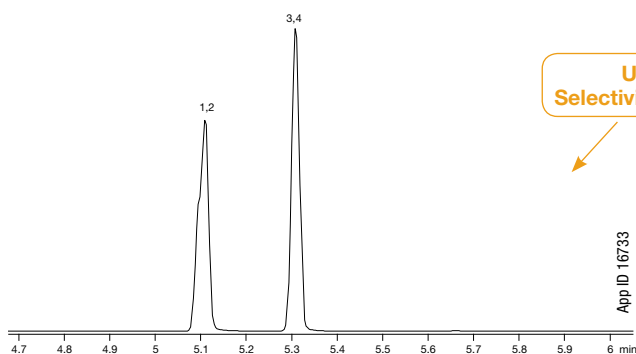
Zebtron ZB-Drug-1

- Optimized phase for the separation of drugs of abuse
- Provides fast analysis with great peak shape
- Improves resolution of target analytes from matrix interferences
- Specially deactivated to improve quantitation for drug compounds
- Temperature Limits: 40 to 320/340 °C

Applications

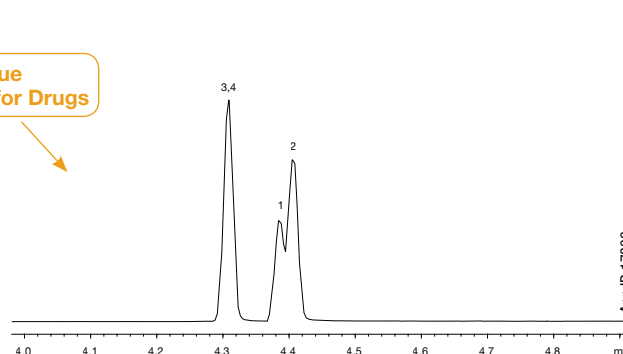
- Drugs of Abuse

Opiates on a ZB-5ms



Unique Selectivity for Drugs

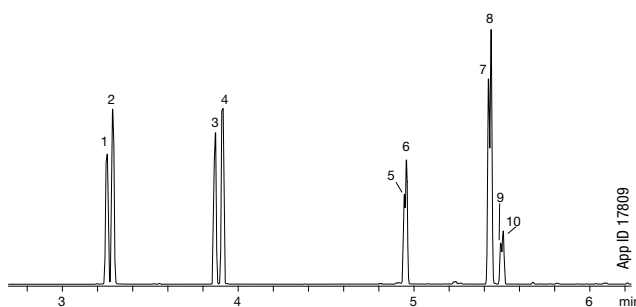
Opiates on a ZB-Drug-1



Column: Zebtron ZB-5ms
Dimensions: 10 meter x 0.18 mm x 0.18 µm
Part No.: 7CD-G010-08
Injection: Split 10:1 @ 240 °C, 1 µL
Carrier Gas: Helium @ 1.2 mL/min (constant flow)
Oven Program: 140 °C to 320 °C @ 20 °C for 1 min
Detector: MSD @ 230 °C
Sample: Analytes @ 10 ppm BSTFA/Pyridine
 1. Codeine-d6
 2. Codeine
 3. Morphine-d3
 4. Morphine

Column: Zebtron ZB-Drug-1
Dimensions: 10 meter x 0.18 mm x 0.18 µm
Part No.: 7CD-G023-08
Injection: Split 10:1 @ 280 °C, 1 µL
Carrier Gas: Helium @ 55 cm/sec (constant flow)
Oven Program: 180 °C to 340 °C @ 20 °C/min
Detector: MSD @ 230 °C
Sample: Analytes @ 10 ppm BSTFA/Pyridine
 1. Codeine-d6
 2. Codeine
 3. Morphine-d3
 4. Morphine

Amphetamines



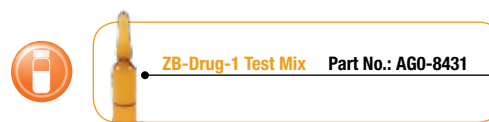
Column: Zebtron ZB-Drug-1
Dimensions: 10 meter x 0.18 mm x 0.18 µm
Part No.: 7CD-G023-08
Injection: Split 10:1 @ 280 °C, 0.1 µL
Carrier Gas: Helium @ 55 cm/sec (constant flow)
Oven Program: 70 °C to 130 °C @ 20 °C/min to 270 °C @ 30 °C/min
Detector: MSD @ 230 °C
Sample: Analytes are 40 ppm derivatized with HFBA
 1. Amphetamine-d11
 2. Amphetamine
 3. Methamphetamine-d14
 4. Methamphetamine
 5. MDA-d5
 6. MDA
 7. MDMA-d5
 8. MDMA
 9. MDEA-d5
 10. MDEA

Ordering Information

Zebtron ZB-Drug-1 GC Columns

ID(mm)	df(µm)	Temp. Limits °C	Part No.
10-Meter			
0.18	0.18	40 to 320/340	7CD-G023-08
15-Meter			
0.25	0.25	40 to 320/340	7EG-G023-11
30-Meter			
0.25	0.25	40 to 320/340	7HG-G023-11

Note: If you need a 5 in. cage, simply add a (-B) after the part number, e.g., 7HG-G023-11-B. Some exceptions may apply. Agilent 6850 and some SRI and process GC systems use only 5 in. cages.

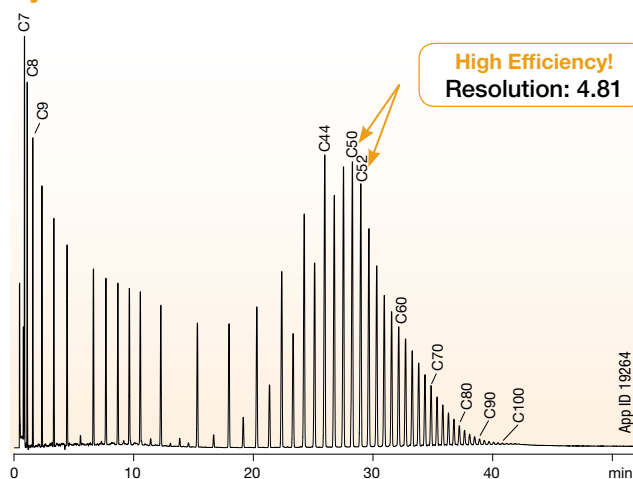


Visit www.phenomenex.com/gc to see our entire GC column and accessory portfolio

ZB-1XT SimDist Metal

- New Glass Infusion™ technology provides higher efficiency and greater column-to-column reproducibility
- Guaranteed high quality - every column is individually tested
- Up to 70% more efficiency than other columns
- Improved resolution of C50/C52
- Increased accuracy for high temperature simulated distillation analysis
- Temperature Limits: -60 to 450 °C (Isothermal/TPGC)*

Hydrocarbons C7–C100+: ASTM Method D7169



Column: Zebtron ZB-1XT SimDist
Dimensions: 5 meter x 0.53 mm x 0.15 μm
Part No.: 7AK-G026-05
Injection: On-Column @ 33 °C, 1 μL
Carrier Gas: Helium @ 7 mL/min (constant flow)
Oven Program: 30 °C to 450 °C @ 10 °C/min for 10 min
Detector: FID @ 450 °C
Sample: C7 to C44 hydrocarbons and POLYWAX® 655
 Note: Sample in CS₂. Chromatogram is baseline subtracted.

Column Profile



Applications

- Crude Oil
- Vacuum Distillates
- Petroleum Distillates
- Petroleum Fractions
- Gasoline Fractions
- Simulated Distillations
- ASTM Methods D2887, D2887X, D3710, D6352, D7169

Alternative to:

- Varian® CP-SimDist UltiMetal
- Restek® MXT®-1HT SimDist
- Agilent® J&W DB-HT Sim Dis



Ordering Information

Zebtron ZB-1XT SimDist Metal			
ID(mm)	df(μm)	Temp. Limits °C	Part No.
5-Meter			
0.53	0.09	-60 to 450	7AK-G026-55
0.53	0.15	-60 to 450	7AK-G026-05
10-Meter			
0.53	0.15	-60 to 450	7CK-G026-05
0.53	0.88	-60 to 450	7CK-G026-49
0.53	2.65	-60 to 400	7CK-G026-35
15-Meter			
0.53	0.25	-60 to 450	7EK-G026-11

If you need a 5 in. cage, simply add a (-B) after the part number, e.g., 7CK-G026-05-B. Some exceptions may apply. Agilent 6850 and some SRI and process GC systems use only 5 in. cages.



*Thicker film (2.65 μm df) is rated to 400 °C (Isothermal/TPGC).

GC Accessories

Don't Forget **Your GC Accessories!**



Including:

- Liners
- Septa
- Ferrules
- Syringes
- Unions
- And Test Mixes

Discover the full range of GC Accessories available from Phenomenex at www.phenomenex.com/GCaccessories



Learn More Online!

Get full access to the newest GC products, applications, and technical resources!



Visit www.phenomenex.com/gc to see our entire GC column and accessory portfolio



Zebtron™
GC Columns

For additional GC columns, resources,
and applications, visit

www.phenomenex.com/GC

Australia

t: +61 (0)2-9428-6444
f: +61 (0)2-9428-6445
auinfo@phenomenex.com

Austria

t: +43 (0)1-319-1301
f: +43 (0)1-319-1300
anfrage@phenomenex.com

Belgium

t: +32 (0)2 503 4015 (French)
t: +32 (0)2 511 8666 (Dutch)
f: +31 (0)30-2383749
beinfo@phenomenex.com

Canada

t: +1 (800) 543-3681
f: +1 (310) 328-7768
info@phenomenex.com

China

t: +86 (0)20 2282-6668
f: +86 (0)20 2809-8130
chinainfo@phenomenex.com

Denmark

t: +45 4824 8048
f: +45 4810 6265
nordicinfo@phenomenex.com

Finland

t: +358 (0)9 4789 0063
f: +45 4810 6265
nordicinfo@phenomenex.com

France

t: +33 (0)1 30 09 21 10
f: +33 (0)1 30 09 21 11
franceinfo@phenomenex.com

Germany

t: +49 (0)6021-58830-0
f: +49 (0)6021-58830-11
anfrage@phenomenex.com

India

t: +91 (0)40-3012 2400
f: +91 (0)40-3012 2411
indiainfo@phenomenex.com

Ireland

t: +353 (0)1 247 5405
f: +44 1625-501796
eireinfo@phenomenex.com

Italy

t: +39 051 6327511
f: +39 051 6327555
italiainfo@phenomenex.com

Luxembourg

t: +31 (0)30-2418700
f: +31 (0)30-2383749
nlinfo@phenomenex.com

Mexico

t: 01-800-844-5226
f: 001-310-328-7768
tecnicomx@phenomenex.com

The Netherlands

t: +31 (0)30-2418700
f: +31 (0)30-2383749
nlinfo@phenomenex.com

New Zealand

t: +64 (0)9-4780951
f: +64 (0)9-4780952
nzinfo@phenomenex.com

Norway

t: +47 810 02 005
f: +45 4810 6265
nordicinfo@phenomenex.com

Puerto Rico

t: +1 (800) 541-HPLC
f: +1 (310) 328-7768
info@phenomenex.com

Spain

t: +34 91-413-8613
f: +34 91-413-2290
espinfo@phenomenex.com

Sweden

t: +46 (0)8 611 6950
f: +45 4810 6265
nordicinfo@phenomenex.com

United Kingdom

t: +44 (0)1625-501367
f: +44 (0)1625-501796
ukinfo@phenomenex.com

USA

t: +1 (310) 212-0555
f: +1 (310) 328-7768
info@phenomenex.com

**All other countries
Corporate Office USA** 

t: +1 (310) 212-0555
f: +1 (310) 328-7768
info@phenomenex.com



www.phenomenex.com

Phenomenex products are available worldwide. For the distributor in your country,
contact Phenomenex USA, International Department at international@phenomenex.com

BR93520416_L

Terms and Conditions

Subject to Phenomenex Standard Terms and Conditions, which may be viewed at
www.phenomenex.com/TermsAndConditions.

Trademarks

Zebtron, Arylene Matrix Technology, Cool-Lock, Enviro-Inert, ESC (Engineered Self Cross-linking™), Glass Infusion, Guardian, Inferno, MultiResidue, SMS^{PLUS} and WAX^{PLUS} are trademarks of Phenomenex. Rtx, MXT, Rxi, Stx, XTI and StabilWax are registered trademarks of Restek Corp. Agilent and J&W are registered trademarks of Agilent Technologies, Inc. Varian is a registered trademark under license to Agilent Technologies, Inc. POLYWAX is a registered trademark of Baker Hughes Inc.

Disclaimer

Comparative separations may not be representative of all applications. Phenomenex is not affiliated with Restek Corp., Agilent Technologies, Varian, or Baker Hughes Inc.

Cool-Lock Nut is patented by Phenomenex. U.S. Patent No. 8, 062, 516

The opinions stated herein are solely those of the speaker and not necessarily those of any company or organization.

© 2016 Phenomenex, Inc. All rights reserved.