

GC Columns

Metal MXT® Capillary Columns

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What is an MXT® column?

MXT® columns are wall coated open tubular (WCOT) columns made from stainless steel tubing that has had the internal surface treated with an exclusive Siltek® treatment. This treatment makes the surface as inert as deactivated fused silica, and it allows us to treat the tubing with a wide variety of polymer phases. The unique Siltek® treatment also enables us to offer MXT® columns in a wide range of internal diameters, including 0.18 mm, 0.25 mm, 0.28 mm, 0.32 mm, and 0.53 mm. Because the Siltek® treatment permeates the stainless steel surface, rather than simply coating it, the layer is exceptionally flexible, so the tubing can be coiled to very small diameters. The standard coil diameter for most MXT® columns is 4.5", but they also are available in 3.5" and 6" coil diameters.



Whether you're using them in a process GC or a benchtop GC, our MXT® columns will be a perfect fit. Just add the proper suffix number in the table to the column part number when you order!

Coil Diameter	Suffix Number	Configuration
3.5"	-273	Bundled
4.5"	None	Standard Banded
6.0"	-276	Bundled



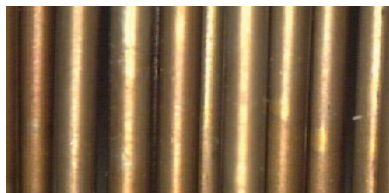
Additional sizes and configurations may be available; call for details.

Note that the minimum coil diameter for 0.53 mm ID columns is 2.5 inches, and the minimum coil diameter for 0.25 mm ID columns is 1.5 inches.

MXT® columns are your best choice for high temperature analyses and situations in which the potential for column breakage is high. Here's why:

- Metal tubing allows MXT® columns to be used to higher temperatures (430 °C) than fused silica columns (standard rating is 360 °C). This is because the polyimide resin that encases the fused silica becomes brittle over time at high temperatures. MXT® columns do not become brittle or break.
- Inertness of MXT® columns and fused silica columns is similar, due to the unique properties of the Siltek® surface treatment.
- Metal columns can be coiled under 4.5 inches without breaking, making them ideal for small instruments.
- Coating efficiency (plates/meter) of MXT® columns is similar to that of fused silica.
- MXT® columns will not break under stress, making them perfect for process GCs and field instruments.

MXT®-Biodiesel TG columns are undamaged by high thermal cycles compared to high-temperature (HT) fused silica columns, which break down under the same conditions.



MXT®-Biodiesel TG columns are undamaged by high thermal cycles.

100 temperature cycles to 430 °C totaling 500 minutes at maximum temperature.

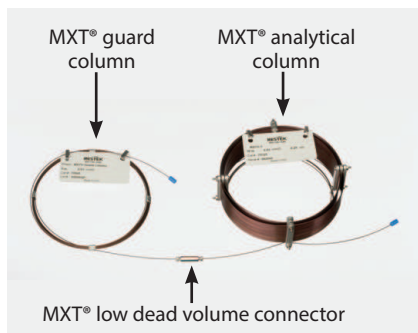


HT fused silica columns, labeled as stable to 430 °C, show pitting and breakdown.



Custom MXT® columns are also available.

If you do not see the column you need listed in the following pages, contact Customer Service and we will be happy to help.

Connect MXT® columns using an MXT® low dead volume connector!**Connect transfer lines or guard columns directly to your MXT® columns without compromising your data.**

Rugged MXT® low dead volume connectors are Siltek® treated to make them inert to active compounds, just like our MXT® columns! They can be used at temperatures up to 430 °C without degrading the deactivated layer, and their low thermal mass tracks rapid oven temperature programming. Kits are available for 0.28 mm, 0.32 mm, and 0.53 mm ID columns in a standard configuration for column-to-column connections and a “Y” configuration for connecting two columns to one inlet or one column to two detectors. In addition to the MXT® union, each kit also contains stainless steel 1/32-inch ferrules and nuts. (See page 232 for more details.)

Intermediate-Polarity Deactivated MXT® Guard/Retention Gap Columns/Transfer Lines (passivated stainless steel)

- Useful for a wide range of applications.
- Compatible with most common solvents.
- Maximum temperature: 325 °C.

Nominal ID	Nominal OD	5-Meter cat.#	5-Meter (6-pk.) cat.#	10-Meter cat.#
0.28 mm	0.56 ± 0.025 mm	70044	70044-600	70046
0.53 mm	0.74 ± 0.025 mm	70045	70045-600	70047

did you know?

Certificates of analysis for 5 m and 10 m Restek® guard columns are provided electronically. To view and download your 5 m or 10 m guard column certificate, simply visit www.restek.com/documentation then enter your catalog # and serial #.

Hydroguard®-Treated MXT® Guard/Retention Gap Columns/Transfer Lines (passivated stainless steel)

- Extend analytical column lifetime by preventing degradation from harsh “steam-cleaning” water injections.
- Maximum temperature: 325 °C.

When transfer lines from purge-and-trap systems, air monitoring equipment, or other instruments carry condensed water vapor, deactivated column tubing quickly becomes active because of the creation of free silanol groups. These silanol groups adsorb active oxygenated compounds, such as alcohols and diols.

Restek chemists have addressed this concern and found a solution—Hydroguard® deactivated tubing. A unique deactivation chemistry creates a high-density surface that is not readily attacked by aggressive hydrolysis. The high-density surface coverage of the Hydroguard® deactivation layer effectively prevents water vapor from reaching the surface beneath. Use Hydroguard® tubing for connecting GCs to:

- Headspace analyzers.
- Air analysis equipment and concentrator units.
- Purge-and-trap systems.

also available
Column connector
kits & ferrules

See **page 232**.



Nominal ID	Nominal OD	5-Meter cat.#	10-Meter cat.#	30-Meter* cat.#
0.28 mm	0.56 ± 0.025 mm	70080	70083	70086
0.53 mm	0.74 ± 0.025 mm	70081	70084	70087

*30-meter lengths are banded in 5-meter sections.

Diameters greater than 0.10 mm are tested with the Grob test mix to ensure high inertness.

MXT®-1 Columns (Siltek®-treated stainless steel)

(nonpolar phase; Crossbond® dimethyl polysiloxane)

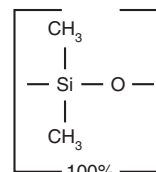
- General-purpose columns for solvent impurities, PCB congeners (e.g., Aroclor mixes), gases, natural gas odorants, sulfur compounds, essential oils, hydrocarbons, semivolatiles, pesticides, and oxygenates.
- Temperature range: -60 °C to 430 °C.
- Equivalent to USP G1, G2, G38 phases.
- 4.5" standard coil diameter.

MXT®-1 columns exhibit long lifetime and very low bleed at high operating temperatures. A proprietary synthesis process eliminates residual catalysts that could cause degradation and increase bleed.

ID	df	temp. limits*	6-Meter cat.#	15-Meter cat.#	30-Meter cat.#	60-Meter cat.#	105-Meter cat.#
0.25 mm	0.10 µm	-60 to 360/430 °C		70105	70116	70117	70114
	0.25 µm	-60 to 360/430 °C		70120	70123	70126	70129
	0.50 µm	-60 to 330/400 °C		70135	70138		
	1.00 µm	-60 to 320/360 °C		70150	70153	70156	70159
0.28 mm	0.10 µm	-60 to 360/430 °C	70102	70106	70109		
	0.25 µm	-60 to 360/430 °C		70121	70124	70127	
	0.50 µm	-60 to 400 °C			70139	70142	
	1.00 µm	-60 to 320/360 °C		70151	70154	70157	
	3.00 µm	-60 to 285/360 °C		70181	70184	70187	
0.53 mm	0.15 µm	-60 to 360/430 °C	70101	70107			
	0.25 µm	-60 to 360/430 °C		70122	70125	70128	
	0.50 µm	-60 to 330/400 °C		70137	70140	70143	
	1.00 µm	-60 to 320/360 °C		70152	70155	70158	
	1.50 µm	-60 to 310/360 °C		70167	70170	70173	
	3.00 µm	-60 to 285/360 °C		70182	70185	70188	70189
	5.00 µm	-60 to 270/360 °C		70177	70179	70183	
	7.00 µm	-60 to 240/360 °C		70191	70192	70193	

ID	df	temp. limits	10-Meter cat.#	20-Meter cat.#	40-Meter cat.#
0.18 mm	0.20 µm	-60 to 330/430 °C	71811	71812	71813
	0.40 µm	-60 to 320/400 °C		71815	71816

*Maximum temperatures listed are for shorter length columns. Longer columns may have a different maximum temperature.

MXT®-1 Structure

Similar to: (100%-methyl)-polysiloxane

similar phases

DB-PS1, UAC-1, UAC-1MS

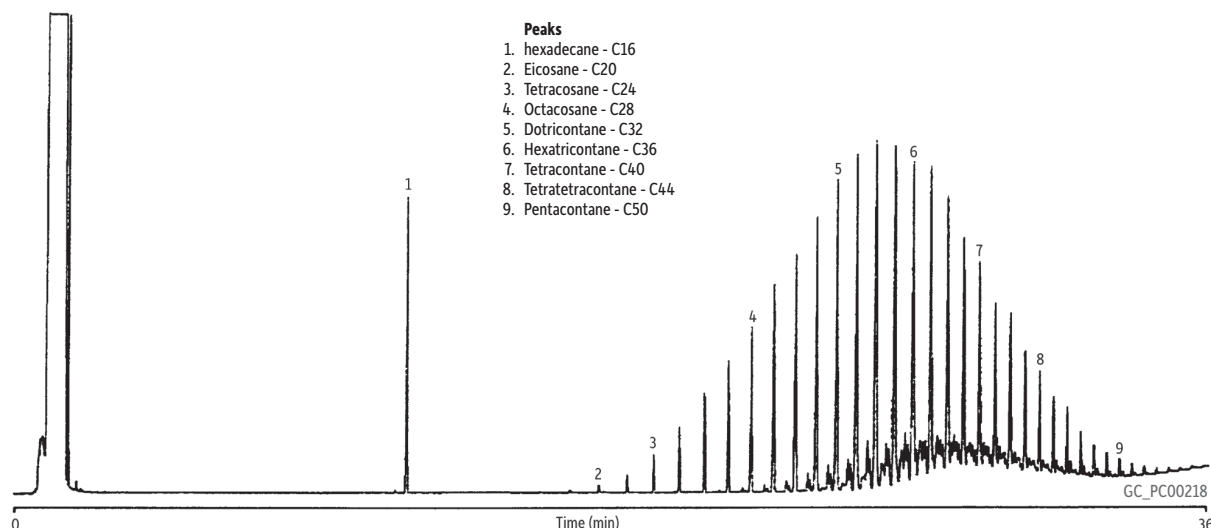
free literature

Analyzing Oxygenates in Gasoline Using TCEP and Rtx®-1/MXT®-1 Columns

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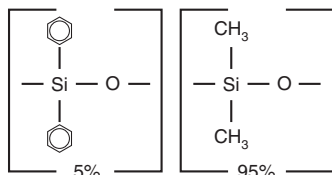
**Petroleum Wax on MXT®-1**

Column MXT®-1, 30 m, 0.28 mm ID, 0.25 µm (cat.# 70124)
Sample Petroleum wax
Diluent: cyclohexane
Conc.: 0.1% w/w
Injection
Inj. Vol.: 1.0 µL cold on-column

Oven
Oven Temp.: 50 °C to 400 °C at 10 °C/min (hold 10 min)
Carrier Gas H₂, constant flow
Linear Velocity: 60 cm/sec @ 50 °C
Detector FID @ 400 °C
Notes FID sensitivity: 64 x 10⁻¹¹ AFS

General-Purpose Columns

MXT®-5 Structure



Similar to: (5%-phenyl)-methylpolysiloxane

similar phases

DB-PS5, VF-5ht UltiMetal, UAC-5, UAC-5MS

also
availableMetal MXT®
PLOT Columns

See page 129.



MXT®-5 Columns (Siltek®-treated stainless steel)

(low-polarity phase; Crossbond® diphenyl dimethyl polysiloxane)

- General-purpose columns for drugs, solvent impurities, pesticides, hydrocarbons, PCB congeners (e.g., Aroclor mixes), essential oils, and semivolatiles.
- Temperature range: -60 °C to 430 °C.
- Equivalent to USP G27, G36 phases.
- 4.5" standard coil diameter.

The diphenyl dimethyl polysiloxane stationary phase is the most popular GC stationary phase and is used in a wide variety of applications. All residual catalysts and low molecular weight fragments are removed from the MXT®-5 polymer, providing a tight monomodal distribution and extremely low bleed.

ID	df	temp. limits*	15-Meter cat.#	30-Meter cat.#	60-Meter cat.#
0.25 mm	0.10 µm	-60 to 330/430 °C	70205	70208	
	0.25 µm	-60 to 360/430 °C	70220	70223	70226
	0.50 µm	-60 to 330/360 °C	70235	70238	70241
	1.00 µm	-60 to 310/340 °C	70250	70253	
0.28 mm	0.25 µm	-60 to 340/430 °C	70221	70224	70227
	0.50 µm	-60 to 315/400 °C	70236	70239	
	1.00 µm	-60 to 310/360 °C	70251	70254	70257
	3.00 µm	-60 to 290/360 °C	70281	70284	
0.53 mm	0.25 µm	-60 to 340/430 °C	70222	70225	70228
	0.50 µm	-60 to 330/400 °C	70237	70240	
	1.00 µm	-60 to 310/360 °C	70252	70255	70258
	1.50 µm	-60 to 300/360 °C	70267	70270	
	3.00 µm	-60 to 290/360 °C	70282	70285	70288
	5.00 µm	-60 to 270/360 °C	70277	70279	70283

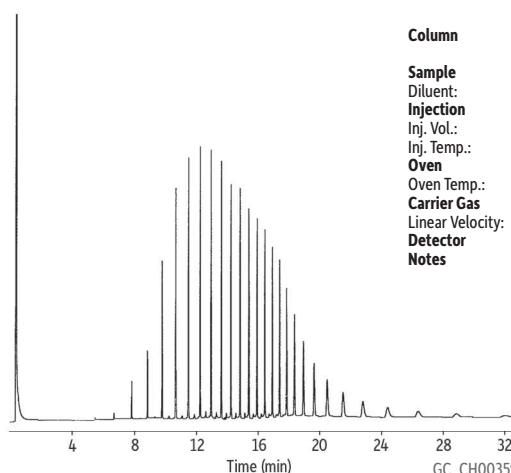
ID	df	temp. limits	10-Meter cat.#	20-Meter cat.#	40-Meter cat.#
0.18 mm	0.20 µm	-60 to 325/430 °C	71821	71822	71823
	0.40 µm	-60 to 315/400 °C	71824	71825	

*Maximum temperatures listed are for shorter length columns. Longer columns may have a different maximum temperature.

MXT® GC Column Ferrule Guide

GC Column ID	GC Column OD	Ferrule ID
0.18 mm	0.36 ± 0.001	0.4
0.25 mm	0.41 ± 0.001	0.5
0.28 mm	0.56 ± 0.001	0.6
0.32 mm	0.44 ± 0.0015	0.5
0.53 mm	0.74 ± 0.001	0.8

Siloxane (Polysiloxane 20) on MXT®-5



Column MXT®-5, 15 m, 0.28 mm ID, 0.25 µm (cat.# 70221)
Sample Polysiloxane 20
Diluent: Pentane
Injection
 Inj. Vol.: 1.0 µL split (split ratio 100:1)
 Inj. Temp.: 250 °C
Oven
 Oven Temp.: 75 °C to 340 °C at 15 °C/min
Carrier Gas H₂, constant flow
Linear Velocity: 40 cm/sec
Detector FID @ 340 °C
Notes FID sensitivity: 16 x 10⁻¹¹ AFS

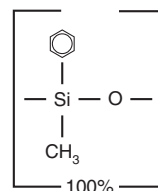
MXT®-50 Columns (Siltek®-treated stainless steel)

(midpolarity phase; Crossbond® phenyl methyl polysiloxane)

- General-purpose columns for pesticides, herbicides, rosin acids, phthalate esters, and sterols.
- Temperature range: 0 °C to 300 °C.
- Equivalent to USP G3 phase.
- 4.5" standard coil diameter.

ID	df	temp. limits*	15-Meter cat.#	30-Meter cat.#	60-Meter cat.#
0.53 mm	0.83 µm	0 to 280/300 °C		70569	
	1.00 µm	0 to 260/280 °C	70552	70555	70558
	1.50 µm	0 to 250/280 °C		70570	

*Maximum temperatures listed are for shorter length columns. Longer columns may have a different maximum temperature.

MXT®-50 Structure

Similar to: (50%-phenyl)-methylpolysiloxane

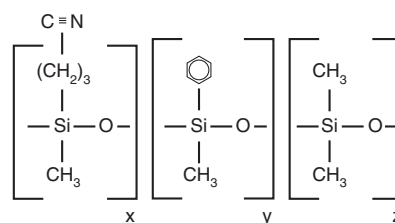
MXT®-1301 Columns (Siltek®-treated stainless steel)

(low- to midpolarity phase)

- General-purpose columns for residual solvents, alcohols, oxygenates, and volatile organic compounds.
- Temperature range: -20 °C to 280 °C.
- Equivalent to USP G43 phase.
- 4.5" standard coil diameter.

ID	df	temp. limits*	15-Meter cat.#	30-Meter cat.#	60-Meter cat.#
0.53 mm	1.00 µm	-20 to 260/280 °C		76055	
	3.00 µm	-20 to 240/280 °C	76082	76085	76088

*Maximum temperatures listed are for shorter length columns. Longer columns may have a different maximum temperature.

MXT®-1301 Structure

Similar to: (6%-cyanopropylphenyl)-methylpolysiloxane

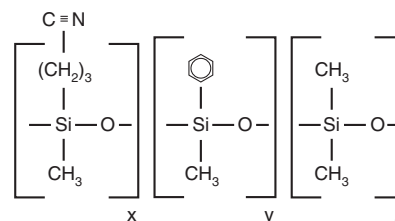
MXT®-1701 Columns (Siltek®-treated stainless steel)

(midpolarity Crossbond® phase)

- General-purpose columns for alcohols, oxygenates, PCB congeners (e.g., Aroclor mixes), and pesticides.
- Temperature range: -20 °C to 280 °C.
- Equivalent to USP G46 phase.
- 4.5" standard coil diameter.

ID	df	temp. limits*	15-Meter cat.#	30-Meter cat.#	60-Meter cat.#
0.25 mm	0.25 µm	-20 to 280 °C	72020	72023	
	1.00 µm	-20 to 260 °C		72053	
0.28 mm	1.00 µm	-20 to 260 °C	72051		
	1.50 µm	-20 to 250 °C	72066		
0.53 mm	0.50 µm	-20 to 270/280 °C		72040	
	1.00 µm	-20 to 260 °C	72052	72055	
	1.50 µm	-20 to 250 °C		72070	
	3.00 µm	-20 to 240 °C	72082	72085	72088

*Maximum temperatures listed are for shorter length columns. Longer columns may have a different maximum temperature.

MXT®-1701 Structure

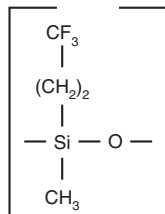
Similar to: (14%-cyanopropylphenyl)-methylpolysiloxane

similar phases

DB-PS1701

General-Purpose Columns

MXT®-200 Structure



Similar to: (trifluoropropyl)-methylpolysiloxane

MXT®-200 Columns (Siltek®-treated stainless steel)

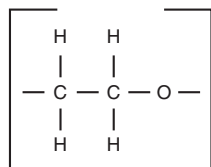
(midpolarity phase; Crossbond® trifluoropropylmethyl polysiloxane)

- General-purpose columns for solvents, Freon® fluorocarbons, alcohols, ketones, silanes, and glycols. Excellent confirmation column with an Rtx®-5 column, for phenols, nitrosamines, organochlorine pesticides, chlorinated hydrocarbons, and chlorophenoxy herbicides.
- Temperature range: -20 °C to 400 °C.
- Equivalent to USP G6 phase.
- 4.5" standard coil diameter.

ID	df	temp. limits*	15-Meter cat.#	30-Meter cat.#	60-Meter cat.#
0.25 mm	0.50 µm	-20 to 400 °C		75038	
	1.00 µm	-20 to 310/360 °C		75053	
0.53 mm	1.00 µm	-20 to 290/360 °C	75052	75055	75058
	1.50 µm	-20 to 280/360 °C		75070	75073
	3.00 µm	-20 to 260/360 °C	75082	75085	75088

*Maximum temperatures listed are for shorter length columns. Longer columns may have a different maximum temperature.

MXT®-WAX Structure



similar phases

DB-PSWAX, UAC-CW

MXT®-WAX Columns (Siltek®-treated stainless steel)

(polar phase; Crossbond® Carbowax® polyethylene glycol—provides oxidation resistance)

- General-purpose columns for FAMES, flavor compounds, essential oils, amines, solvents, xylene isomers, and U.S. EPA Method 603 (acrolein/acrylonitrile).
- Temperature range: 40 °C to 260 °C.
- Equivalent to USP G14, G15, G16, G20, and G39 phases.
- 4.5" standard coil diameter.

ID	df	temp. limits	15-Meter cat.#	30-Meter cat.#	60-Meter cat.#
0.25 mm	0.25 µm	40 to 250/260 °C	70620	70623	
	0.50 µm	40 to 260 °C		70638	
0.28 mm	0.25 µm	40 to 250/260 °C		70624	
	0.50 µm	40 to 250/260 °C		70639	70642
	1.00 µm	40 to 240/250 °C	70651	70654	70657
0.53 mm	0.25 µm	40 to 250/260 °C	70622	70625	
	0.50 µm	40 to 250/260 °C	70637	70640	
	1.00 µm	40 to 240/250 °C	70652	70655	70658
	1.50 µm	40 to 230/250 °C	70666	70669	70672
	2.00 µm	40 to 220/250 °C	70667	70670	

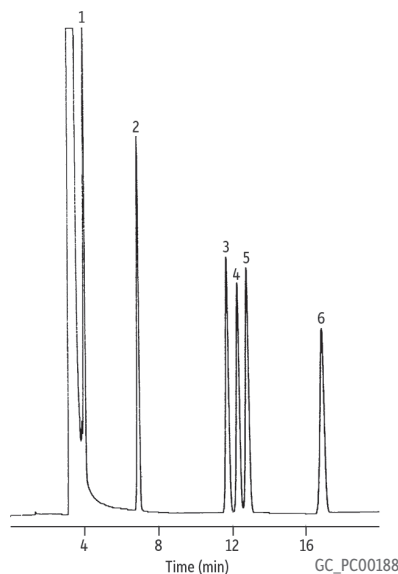
*Maximum temperatures listed are for shorter length columns. Longer columns may have a different maximum temperature.

also
availableMetal MXT®
PLOT Columns

See page 129.



Aromatics (Benzene/Toluene/Xylene) on MXT®-WAX



Peaks

1. Benzene
2. Toluene
3. Ethylbenzene
4. *p*-Xylene
5. *m*-Xylene
6. *o*-Xylene

Column MXT®-WAX, 30 m, 0.28 mm ID, 1.00 µm (cat.# 70654)
Sample Injection BTEX Standard (cat.# 30051)
Inj. Vol.: 1.0 µL split (split ratio 100:1)
Inj. Temp.: 260 °C
Oven
Oven Temp.: 60 °C
Carrier Gas H₂, constant flow
Linear Velocity: 38 cm/sec
Detector FID @ 260 °C
Notes FID sensitivity: 3.2 x 10⁻¹¹ AFS

Volatile Organics Analysis

MXT®-502.2 Columns (Siltek®-treated stainless steel)
(proprietary Crossbond® diphenyl/dimethyl polysiloxane phase)

- Application-specific columns with unique selectivity for volatile organic pollutants, cited in U.S. EPA Method 502.2 and in many gasoline range organics (GRO) methods for monitoring underground storage tanks. Excellent separation of trihalomethanes; ideal polarity for light hydrocarbons and aromatics.
- Temperature range: -20 °C to 320 °C.
- 4.5" standard coil diameter.

An MXT®-502.2 column will enable you to quantify all compounds listed in U.S. EPA Methods 502.2 or 524.2, whether you use a mass spectrometer or a PID in tandem with an ELCD. The diphenyl/dimethyl polysiloxane based MXT®-502.2 stationary phase provides low bleed and thermal stability to 320 °C. A 105-meter column can separate the light gases specified in EPA methods without subambient cooling.

ID	df	temp. limits*	30-Meter cat.#	60-Meter cat.#	105-Meter cat.#
0.25 mm	1.40 µm	-20 to 270/320 °C		70916	
0.28 mm	1.60 µm	-20 to 250/320 °C	70919		
0.53 mm	3.00 µm	-20 to 250/320 °C	70908	70909	70910

*Maximum temperatures listed are for shorter length columns. Longer columns may have a different maximum temperature.

MXT®-Volatiles Columns (Siltek®-treated stainless steel)
(proprietary Crossbond® diphenyl/dimethyl polysiloxane phase)

- Application-specific columns for volatile organic pollutants.
- Temperature range: -20 °C to 320 °C.
- 4.5" standard coil diameter.

MXT®-Volatiles columns were the first columns designed specifically for analyses of the 34 volatile organic pollutants listed in U.S. EPA Methods 601, 602, and 624. With these columns, you can quantify all compounds listed in these methods, whether you use a mass spectrometer or a PID in tandem with an ELCD. The diphenyl/dimethyl polysiloxane based MXT®-Volatiles stationary phase provides low bleed and thermal stability to 320 °C.

ID	df	temp. limits*	30-Meter cat.#	60-Meter cat.#
0.28 mm	1.25 µm	-20 to 280/320 °C	70924	70926
0.53 mm	2.00 µm	-20 to 280/320 °C	70925	70927
	3.00 µm	-20 to 250/320 °C	70922	

*Maximum temperatures listed are for shorter length columns. Longer columns may have a different maximum temperature.

MXT®-624 Columns (Siltek®-treated stainless steel)
(low- to midpolarity phase)

- Application-specific columns for volatile organic pollutants. Recommended in U.S. EPA methods for volatile organic pollutants.
- Temperature range: -20 °C to 280 °C.
- Equivalent to USP G43 phase.
- 4.5" standard coil diameter.

The unique polarity of "624" columns makes them ideal for analyses of volatile organic pollutants. Although the MXT®-502.2 column is recommended in many methods, MXT®-624 columns offer the best separation of the early-eluting gases.

ID	df	temp. limits	30-Meter cat.#	60-Meter cat.#
0.25 mm	1.40 µm	-20 to 240/280 °C	70968	70969
0.53 mm	3.00 µm	-20 to 240/280 °C	70971	70973

similar phases

DB-PS502.2

MXT® GC Column Ferrule Guide

GC Column ID	GC Column OD	Ferrule ID
0.18 mm	0.36 ± 0.001	0.4
0.25 mm	0.41 ± 0.001	0.5
0.28 mm	0.56 ± 0.001	0.6
0.32 mm	0.44 ± 0.0015	0.5
0.53 mm	0.74 ± 0.001	0.8

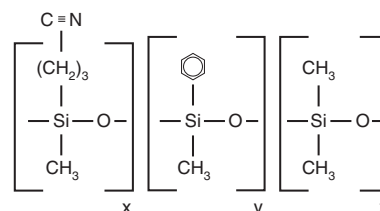
also available

Column connector
kits & ferrules

See **page 232**.



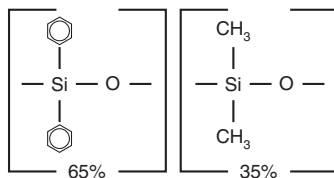
MXT®-624 Structure



Similar to: (6%-cyanopropylphenyl)-methylpolysiloxane

similar phases

DB-PS624, UAC-624

MXT®-65TG Structure

Similar to: (65%-phenyl)-methylpolysiloxane

similar phases

UAC-65HT

Triglycerides in Foods Analysis**MXT®-65TG Columns** (Siltek®-treated stainless steel)

(high-polarity phase; Crossbond® diphenyl dimethyl polysiloxane)

- Application-specific columns, specially tested for triglycerides.
- Stable to 370 °C.
- 4.5" standard coil diameter.

The MXT®-65TG phase resolves triglycerides by degree of unsaturation as well as by carbon number. Because of the chemistry required to achieve 370 °C thermal stability, an MXT®-65TG column should not be used for analyses of compounds that contain active oxygenated groups.

ID	df	temp. limits	15-Meter cat.#	30-Meter cat.#
0.25 mm	0.10 µm	20 to 370 °C	77005	77008
0.53 mm	0.10 µm	20 to 370 °C	77007	77010

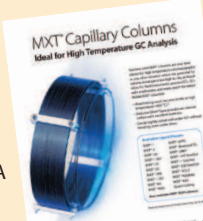
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MXT® Capillary Columns:
Ideal for High Temperature
GC Analysis

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lit. cat.# GNTS1368A

**MXT® GC Column Ferrule Guide**

GC Column ID	GC Column OD	Ferrule ID
0.18 mm	0.36 ± 0.001	0.4
0.25 mm	0.41 ± 0.001	0.5
0.28 mm	0.56 ± 0.001	0.6
0.32 mm	0.44 ± 0.0015	0.5
0.53 mm	0.74 ± 0.001	0.8

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Biodiesel Fuels Analysis

MXT®-Biodiesel TG Columns (Siltek®-treated stainless steel)

- Fast analysis times and sharp mono-, di-, and triglyceride peaks.
- Stable at 430 °C for reliable, consistent performance.

Description	temp. limits	3.5" Coil	7" diameter
		cat.#	11-pin cage
14 m, 0.53 mm ID, 0.16 µm with 2 m Integra-Gap*	-60 to 380/430 °C	70289-273	70289
10 m, 0.32 mm ID, 0.10 µm	-60 to 380/430 °C	—	70292
10 m, 0.32 mm ID, 0.10 µm with 2 m x 0.53 mm Retention Gap**	-60 to 380/430 °C	—	70290
15 m, 0.32 mm ID, 0.10 µm	-60 to 380/430 °C	—	70293
15 m, 0.32 mm ID, 0.10 µm with 2 m x 0.53 mm Retention Gap**	-60 to 380/430 °C	—	70291
2 m x 0.53 mm MXT Biodiesel TG Retention Gap	-60 to 430 °C	—	70294

*Total column length = 16 meters.

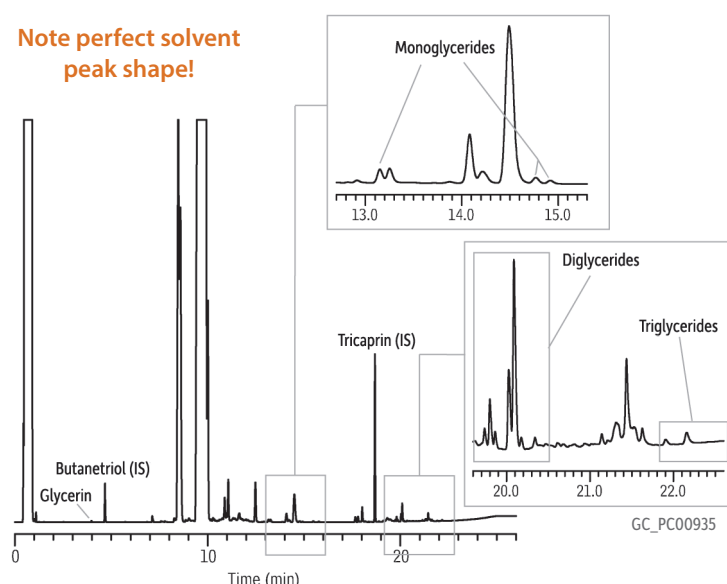
**Connected with low dead volume MXT connector.

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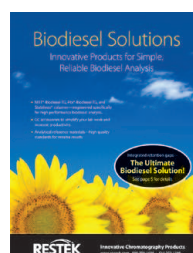
MET-Biodiesel

ASTM D6584 Derivatized B100 and Internal Standards on MXT®-Biodiesel TG

Note perfect solvent peak shape!



Column MXT®-Biodiesel TG w/2 m x 0.53 mm retention gap, 10 m, 0.32 mm ID, 0.10 µm (cat.# 70290)
Sample B100 + IS butanetriol & tricaprin derivatized with MSTFA as per ASTM D6584
Injection 1.0 µL cold on-column
Inj. Vol.: 1.0 µL cold on-column
Temp. Program: Oven track
Oven 50 °C (hold 1 min) to 180 °C at 15 °C/min to 230 °C at 7 °C/min to 430 °C at 30 °C/min (hold 5 min)
Oven Temp.: 50 °C (hold 1 min) to 180 °C at 15 °C/min to 230 °C at 7 °C/min to 430 °C at 30 °C/min (hold 5 min)
Carrier Gas H₂, constant flow
Flow Rate: 4 mL/min
Detector FID @ 430 °C



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Innovative Products
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Biodiesel Analysis

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lit. cat.# PCFL1409-UNV

Simulated Distillation Analysis (C5-C44)

MXT®-2887 Column (Siltek®-treated stainless steel)

(nonpolar phase; Crossbond® 100% dimethyl polysiloxane—for simulated distillation)

- Application-specific columns for simulated distillation.
- Stable to 400 °C.
- 4.5" standard coil diameter.

MXT®-2887 columns' stationary phase, column dimensions, and film thicknesses have been optimized to exceed the resolution and skewing factor requirements specified in ASTM Method D2887. Each column is individually tested to guarantee a stable baseline with low bleed and reproducible retention times. The Crossbond® methyl silicone stationary phase has increased stability compared to packed columns, ensuring stable baselines and shorter conditioning times. Manufactured from Siltek®-treated stainless steel tubing, MXT® columns are the most durable high temperature GC columns available.

ID	df	temp. limits	10-Meter cat.#
0.53 mm	2.65 µm	-60 to 360/400 °C	70199

similar phases

DB-PS2887

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Rtx®-2887/ MXT®-2887
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similar phases

DB-HT SimDis ProSteel, CP-SimDist UltiMetal,
ZB-1X SimDist

Method Recommended Columns

ASTM Method	Hydrocarbon Range	cat. #	Configuration
D2887	C5–C44	70131	5 m x 0.53 mm, 0.88 µm
		70132	10 m x 0.53 mm, 2.65 µm
D7213 (D2887-ext)	C5–C60	70131	5 m x 0.53 mm, 0.88 µm
		70115	5 m x 0.53 mm, 0.20 µm
		70112	5 m x 0.53 mm, 0.10 µm
D5307	crude up to C42	70115	5 m x 0.53 mm, 0.20 µm
D6352	C10–C90	70112	5 m x 0.53 mm, 0.10 µm
		70115	5 m x 0.53 mm, 0.20 µm
D7096	gasoline up to C14	70132	10 m x 0.53 mm, 2.65 µm
		10177	15 m x 0.53 mm, 5 µm
D7500	C7–C110	70112	5 m x 0.53 mm, 0.10 µm
		70115	5 m x 0.53 mm, 0.20 µm
D7169	C5–C100	70112	5 m x 0.53 mm, 0.10 µm
		70115	5 m x 0.53 mm, 0.20 µm

Simulated Distillation Analysis (C5-C110)

MXT®-1HT SimDist Column (Siltek®-treated stainless steel)

(nonpolar phases)

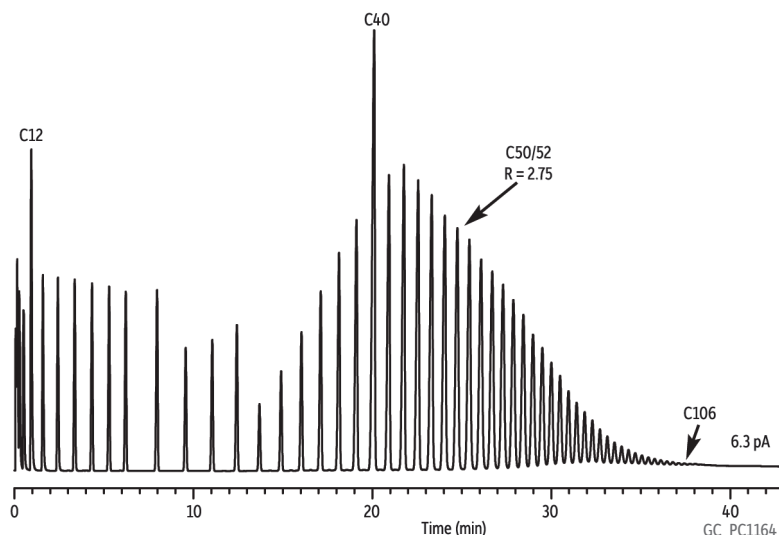
- Stable up to 450 °C—lowest bleed for longest column lifetime.
- Reliably meets all ASTM D6352, D7169, and D7500 specifications.
- 100% dimethyl polysiloxane phase allows easy comparisons to historical data.
- Individually tested for guaranteed performance.
- 7" coil diameter.



Accurate boiling point determination for medium and heavy fractions using GC simulated distillation requires columns and phase polymers that are robust enough to withstand high temperatures without significant degradation.

ID	df	temp. limits	5-Meter cat.#	10-Meter cat.#
0.53 mm	0.10 µm	-60 to 430/450 °C	70112	
	0.20 µm	-60 to 400/430 °C	70115	
	0.21 µm	-60 to 400/430 °C		70118
	0.88 µm	-60 to 380/430 °C	70131	70134
	1.00 µm	-60 to 380/400 °C		70130
	1.20 µm	-60 to 380/380 °C		70119
	2.65 µm	-60 to 360/400 °C		70132
	5.00 µm	-60 to 360/400 °C		70133

Hydrocarbons (C5-C106) on MXT®-1HT SimDist at 450 °C



Peaks	tr (min)		
1. C5	—	40. C70	30.002
2. C6	—	41. C72	30.489
3. C7	—	42. C74	30.906
4. C8	—	43. C76	31.414
5. C9	—	44. C78	31.862
6. C10	—	45. C80	32.294
7. C11	—	46. C82	32.719
8. C12	0.938	47. C84	33.132
9. C13	1.586	48. C86	33.529
10. C14	2.425	49. C88	33.927
11. C15	3.365	50. C90	34.310
12. C16	4.332	51. C92	34.689
13. C17	5.290	52. C94	35.059
14. C18	6.217	53. C96	35.423
15. C20	7.966	54. C98	35.773
16. C22	9.566	55. C100	36.120
17. C24	11.051	56. C102	36.463
18. C26	12.426	57. C104	36.793
19. C28	13.689	58. C106	37.118
20. C30	14.897		
21. C32	16.035		
22. C34	17.110		
23. C36	18.133		
24. C38	19.108		
25. C40	20.096		
26. C42	20.923		
27. C44	21.759		
28. C46	22.556		
29. C48	23.317		
30. C50	24.051		
31. C52	24.752		
32. C54	25.422		
33. C56	26.079		
34. C58	26.701		
35. C60	27.305		
36. C62	27.878		
37. C64	28.439		
38. C66	28.975		
39. C68	29.499		

Column MXT®-1HT SimDist, 5 m, 0.53 mm ID, 0.10 µm (cat.# 70112)
Sample Custom C5–C106 hydrocarbon standard
Diluent: Carbon disulfide
Conc.: 1%
Injection
Inj. Vol.: 0.5 µL cold on-column
Temp. Program: 53 °C to 450 °C at 10 °C/min (hold 5 min)
Oven
Oven Temp.: 50 °C to 450 °C at 10 °C/min (hold 5 min)
Carrier Gas He, constant flow
Flow Rate: 18 mL/min

Detector FID @ 450 °C
Make-up Gas
Flow Rate: 24 mL/min
Constant Column
+ Constant
Make-up: 42 mL/min
Make-up
Gas Type: N₂
Data Rate: 20 Hz
Instrument Shimadzu 2010 GC

Application-Specific Columns: Petroleum & Petrochemical

MXT®-500 SimDist Column (Siltek®-treated stainless steel)

(nonpolar phase)

- Application-specific columns in unbreakable Siltek® treated stainless steel tubing meet all resolution criteria for high temperature simulated distillation.
- Stable to 430 °C.
- 4.5" standard coil diameter.

ID	df	temp. limits	6-Meter cat.#
0.53 mm	0.15 µm	-60 to 420/430 °C	70104

Polywax® Calibration Materials

Description	qty.	cat.#
Polywax 655 calibration material	1 g	36225
Polywax 1,000 calibration material	1 g	36227

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UAC-DX30

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by Simulated Distillation, Using
MXT® SimDist Columns

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