

MXT® and Hydroguard™ Guard/Retention Gap Columns

Intermediate-Polarity Deactivated Guard/Retention Gap Columns/Transfer Lines

- Useful for a wide range of applications.
- Use with most common solvents.
- Maximum temperature: 430°C

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

Nominal ID	Nominal OD	5-Meter	5-Meter/6-pk.	10-Meter
0.28mm	0.53 ± 0.025mm	70044	70044-600	70046
0.53mm	0.74 ± 0.025mm	70045	70045-600	70047

Hydroguard™ Guard/Retention Gap Columns/Transfer Lines

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

When transfer lines from purge & 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—the Hydroguard™ deactivation process. 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 fused silica surface beneath. Use Hydroguard™ Tubing for Connecting GCs to:

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

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

Nominal ID	Nominal OD	5-Meter	10-Meter	30-Meter*	60-Meter*†
0.28mm	0.53 ± 0.025mm	70080	70083	70086	70089
0.53mm	0.74 ± 0.025mm	70081	70084	70087	70090

*30- and 60-meter lengths are banded in 5-meter sections.

†Recommendation: Cut 60m guard columns into shorter lengths. Using full length may cause peak distortion.

References

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- ³Cabane, M., P. Coll, C. Szopa, G. Israël, F. Raulin, R. Sternberg, P. Mahaffy, A. Person, C. Rodier, R. Navarro-Gonzalez, H. Niemann, D. Harpold and W. Brinckerhoff *Adv. Space Research*, 33, 2240-2245 (2004)
- ⁴Zampolli, M-G., D. Meunier, R. Sternberg, C. Szopa., F. Raulin, M. C. Pietrogrande, F. Dondi *Chirality* 18 (5):383-394 (2006)
- ⁵C. Szopa, U.J. Meierhenrich, D. Coscia, L. Janin, F. Goesmann, R. Sternberg, J.-F. Brun, G. Israel, M. Cabane, R. Roll, F. Raulin, W. Thiemann and C. Vidal-Madjar and H. Rosenbauer *J. Chromatogr. A*, 982 303-312 (2002)

a plus 1 story

“Since now almost 15 years, the Laboratoire Interuniversitaire des Systèmes Atmosphériques (LISA) of the University of Paris XII has been developing GC subsystems for on-board space probe GCMS experiments dedicated to the *in situ* analysis of extraterrestrial environments. Most of the capillary columns used in these subsystems were and still are provided by the Restek company.

One capillary column, MXT-1701³, was aboard the Huygens probe of the Cassini-Huygens mission which explored successfully in 2005 the atmosphere of Titan, the largest moon of Saturn. Four columns, MXT-1, 20, 1701 and MXT-UPL0T², are “en route” towards the comet Churyumov-Gerasimenko in the frame of the ESA Rosetta mission launched in 2004 to be arrived by 2014. They will be used for the first time *in situ* analysis of a cometary nucleus. And finally, so far, 4 other PLOT (MXT U) and WCOT^{3,4} (MXT-1, 20 and CLP) columns have been selected and are currently being built in the GC of the Sample Analysis at Mars (SAM) Pyr/GCMS instrument, part of the payload of the NASA MSL 2009 Mars exploratory mission.

I would like to mention that all the columns selected for space mission are Silcosteel Treated metallic capillary columns and they have all been submitted successfully to space qualification tests such as vibration, radiation and thermal cycles⁵, which demonstrated their robustness for space application.

Since the beginning, the Restek company has been more than a manufacturer providing LISA with columns. Indeed, it has been strongly collaborating and helping LISA to develop custom-made columns able to meet the requirements of such an unusual scientific goal for chromatographic columns. That is why LISA is very grateful to Restek for being this ideal partner without the help of which the study and development of chromatographic columns for space use could not have been possible.”

Robert STERNBERG

Responsible for the space GC team at LISA (Paris, France)

