

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

(nonpolar phase; Crossbond® 100% dimethyl polysiloxane)

- General purpose columns for solvent impurities, PCB congeners (e.g. Aroclor mixes), simulated distillation, drugs of abuse, 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.

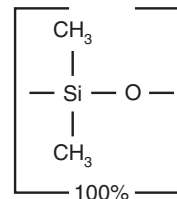
MXT®-1 columns exhibit long lifetime and very low bleed at high operating temperatures. A proprietary synthesis process eliminates residual catalysts that could cause degradation and increase bleed.

| ID | df | temp. limits | 6-Meter | 15-Meter | 30-Meter | 60-Meter | 105-Meter |
|--------|--------|------------------|--------------|----------|----------|----------|-----------|
| 0.25mm | 0.10µm | -60 to 330/430°C | | 70105 | 70116 | 70117 | 70114 |
| | 0.25µm | -60 to 430°C | | 70120 | 70123 | 70126 | 70129 |
| | 0.50µm | -60 to 400°C | | 70135 | 70138 | 70141 | 70144 |
| | 1.00µm | -60 to 340/360°C | | 70150 | 70153 | 70156 | 70159 |
| 0.28mm | 0.10µm | -60 to 430°C | 70102 \$310 | 70106 | 70109 | | |
| | 0.25µm | -60 to 430°C | | 70121 | 70124 | 70127 | |
| | 0.50µm | -60 to 400°C | | 70136 | 70139 | 70142 | |
| | 1.00µm | -60 to 320/360°C | | 70151 | 70154 | 70157 | |
| | 3.00µm | -60 to 285/360°C | | 70181 | 70184 | 70187 | |
| 0.53mm | 0.15µm | -60 to 430°C | 70101* \$310 | 70107 | | | |
| | 0.25µm | -60 to 430°C | | 70122 | 70125 | 70128 | |
| | 0.50µm | -60 to 400°C | | 70137 | 70140 | 70143 | |
| | 1.00µm | -60 to 320/360°C | | 70152 | 70155 | 70158 | |
| | 1.50µm | -60 to 310/360°C | | 70167 | 70170 | 70173 | |
| | 3.00µm | -60 to 285/360°C | | 70182 | 70185 | 70188 | |
| | 5.00µm | -60 to 270/360°C | | 70177 | 70179 | 70183 | |
| | 7.00µm | -60 to 250/360°C | | 70191 | 70192 | 70193 | |

| ID | df | temp. limits | 10-Meter | 20-Meter | 40-Meter |
|--------|--------|------------------|----------|----------|----------|
| 0.18mm | 0.20µm | -60 to 330/430°C | 71811 | 71812 | 71813 |
| | 0.40µm | -60 to 320/400°C | 71814 | 71815 | 71816 |

*For simulated distillation.

Maximum temperatures listed are for 15- and 30-meter lengths. Longer lengths may have a slightly reduced maximum temperature.

MXT®-1 Structure**similar phases**

DB-1, DB-1MS, HP-1, HP-1MS, Ultra-1, SPB-1, Equity-1, MDN-1, CP-Sil 5 CB, VF-1ms

**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-1701¹, 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-UPLOT², are "en route" towards the comet Churyumov-Gerasimenko in the frame of the ESA Rosetta mission launched in 2004 to arrive 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 metal 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)

**References**

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- ⁴Zampolli, M-G., D. Meunier, R. Sternberg, C. Szopa., F. Raulin, M. C. Pietrogrande, F. Dondi *Chirality* 18 (5):383-394 (2006)
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