



**Increase Productivity:
Get More Runs from Your
SimDist Setup Using Next
Generation MXT[®]-1HT
SimDist Columns**

- Stable up to 430°C—lowest bleed for longest column lifetime.
- Reliably meet all ASTM D6352 and D7500 specifications.
- 100% dimethyl polysiloxane phase allows easy comparisons to historical data.

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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. Metal columns are a better alternative than fused silica, and the new MXT®-1HT SimDist columns are the lowest bleed, highest efficiency column available, outperforming other metal columns for critical method parameters.

Low bleed is an important column characteristic in simulated distillation. High phase bleed shortens retention times, making it necessary to frequently rerun boiling point calibrations. In contrast, with a low bleed column, the stationary phase remains in place giving stable retention times. This results in longer in-calibration periods, extended column lifetimes, and more accurate final boiling point determinations. Efficiency is also a critical factor as columns that are higher in efficiency produce sharper peaks and higher resolution values, meaning that more samples can be analyzed before the minimum resolution specification is reached.

When compared to columns from other manufacturers, MXT®-1HT SimDist columns meet all D6352 method criteria and easily outperform competitors (Figures 1 and 2). In addition, field testing under accelerated conditions further demonstrates column robustness, even at 430°C (Figure 3). The exceptionally low bleed and high efficiency characteristics of the new MXT®-1HT SimDist columns translate directly into assured method performance, more analyses per calibration, and longer column lifetimes.

Figure 1 Low bleed, high efficiency MXT®-1HT SimDist columns outperform competitors (ASTM D6352 conditions).

Lower bleed means:

- Longer column lifetime.
- More stable calibrations.
- Accurate boiling point determinations.

RESTEK ADVANTAGE:

Longer column lifetime and more accurate data!

Higher efficiency means:

- Greater resolution; analyze more samples before method criteria are reached.
- Assured method performance.

RESTEK ADVANTAGE:

Run more samples within method specifications!

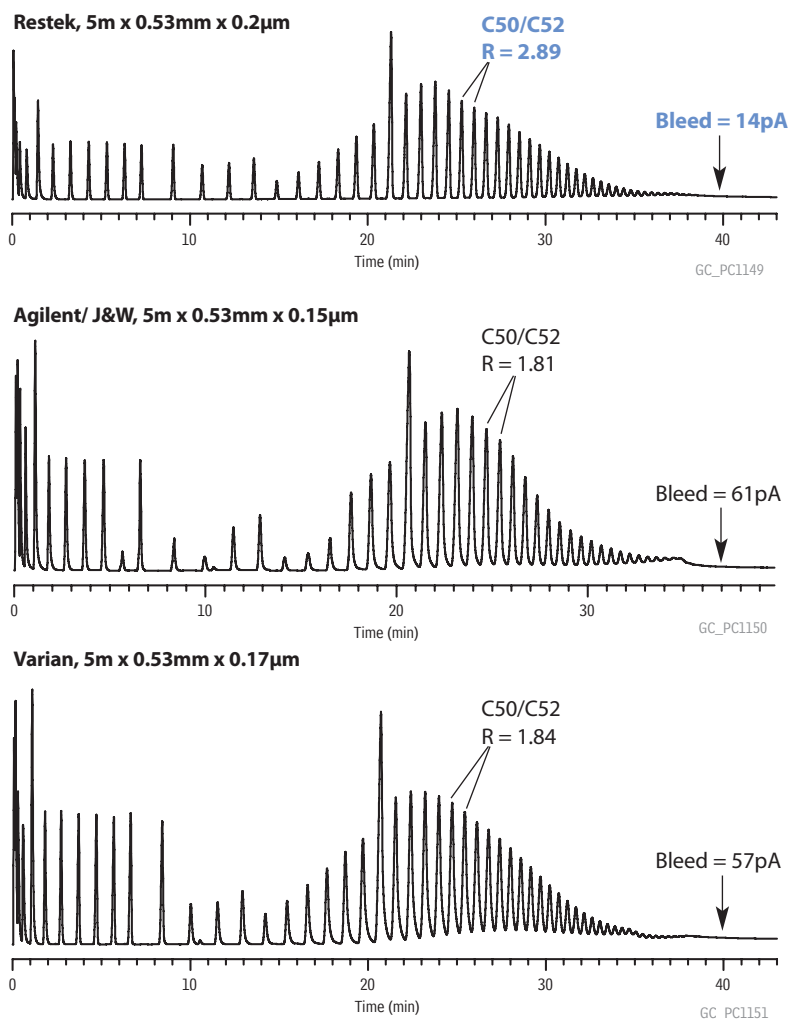
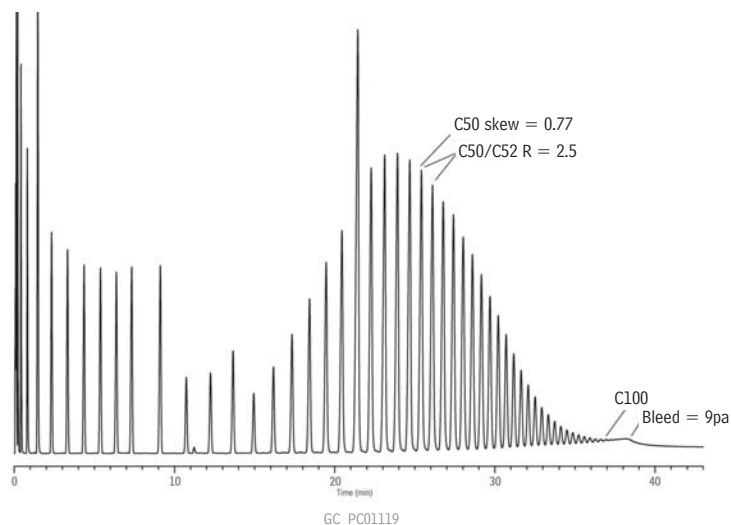


Figure 2 Superior resolution and peak shape on MXT®-1HT SimDist columns result in more accurate final boiling point determinations.



Column: MXT®-1HT Sim Dist, 5m, 0.53mm ID, 0.20 μ m (cat.# 70115)
 Sample: C5-C100, 1% in carbon disulfide
 Inj.: 1 μ L on-column (PTV)
 Inj. temp.: 53°C to 430°C @ 10°C/min. (hold 5 min.)
 Carrier gas: helium, constant flow
 Flow rate: 18mL/min.
 Oven temp.: 50°C to 430°C @ 10°C/min. (hold 5 min.)
 Det.: FID @ 430°C
 Instrument: Shimadzu 2010

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

Replaces: DB-1HT, DB-HT SimDis, CP-HT-Simdist CB

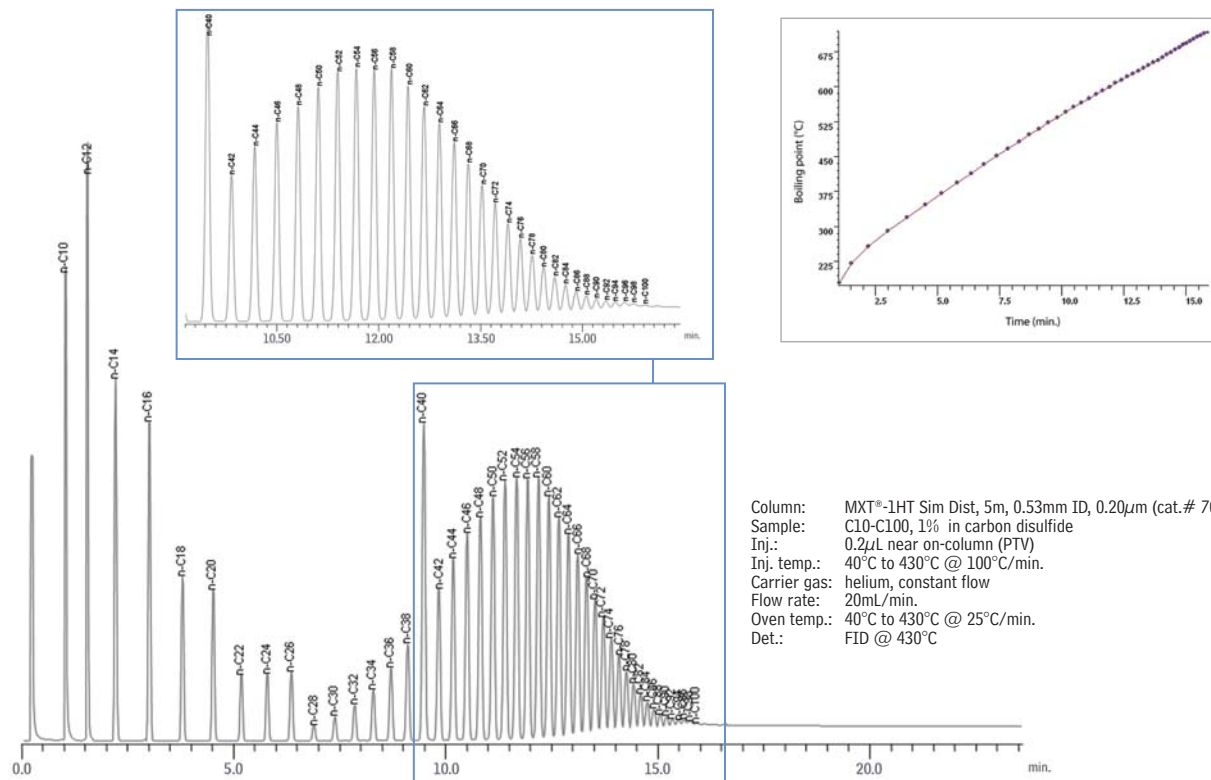
ID	df (μ m)	temp. limits	length	cat. #
0.53mm	0.10	-60 to 400/430°C	5-Meter	70112
0.53mm	0.20	-60 to 400/430°C	5-Meter	70115
0.53mm	0.21	-60 to 400/430°C	10-Meter	70118
0.53mm	1.0	-60 to 380/400°C	10-Meter	70130
0.53mm	1.2	-60 to 380/400°C	10-Meter	70119

Table I: Recommended SimDist columns (100% PDMS) for use in ASTM SimDist methods.

ASTM Method	Range	Recommended Column
D2887	C5-C44	5/10m x 0.53mm, df = 0.88 – 2.65 μ m
D7213 (2887-ext)	C5-C60	5m x 0.53mm, df = 0.15 – 1.2 μ m
D3710	Gasoline up to FBP 260°C (C14)	10m x 0.53mm, df = 2.65 μ m
D5307	Crude up to FBP 538°C (C42)	5m x 0.53mm, df = 0.2 μ m PDMS
D6352/ D7500	C10-C90/ C7-C110	5m x 0.53mm, df = 0.1 – 0.2 μ m
D7169	C5-C100	5m x 0.53mm, df = 0.2 μ m

FBP = final boiling point

Figure 3 Robust MXT®-1HT SimDist columns meet all ASTM D6352 requirements, even under accelerated conditions.



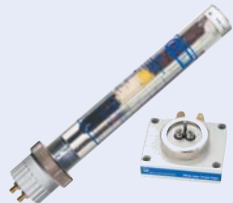
Column: MXT®-1HT Sim Dist, 5m, 0.53mm ID, 0.20 μ m (cat.# 70115)
 Sample: C10-C100, 1% in carbon disulfide
 Inj.: 0.2 μ L near on-column (PTV)
 Inj. temp.: 40°C to 430°C @ 100°C/min.
 Carrier gas: helium, constant flow
 Flow rate: 20mL/min.
 Oven temp.: 40°C to 430°C @ 25°C/min.
 Det.: FID @ 430°C

Chromatograms courtesy of Joaquin Lubkowitz, Separation Systems, Gulf Breeze, FL.



Practical Tips for High Temperature Analyses

Oxygen and moisture will dramatically reduce siloxane phase stability, especially at temperatures over 400°C. To ensure maximum column lifetime, follow these guidelines for proper instrument set-up.



- Use gas filters to remove oxygen and moisture from the carrier gas.



- When installing a column, prevent leaks by using a proper cutting device (such as a scoring wafer or MXT® tubing scorer) to ensure the column is not crushed. (cat. # 20523)



- Use graphite ferrules for column installation; Vespel®/graphite ferrules may leak, due to expansion and contraction at high temperatures (>400°C).



- Check the system for leaks using an electronic leak detector. (cat. # 22839)

Visit www.restek.com/petro for a complete list of petroleum standards and accessories.

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