

APPLICATION NOTE

Bleed Comparison Between Three Different Septa Types Using Gas Chromatography

Introduction

With the increasing need to improve the quality of data derived from Gas Chromatographs (GC's) and High Performance Liquid Chromatographs (HPLC's), efforts are underway to increase the quality of the consumables associated with these instruments. This application note reviews three (3) different septa designs and evaluates their overall bleed characteristics using gas chromatography. The three (3) types are:

- NT Series – Natural PTFE/Natural (non-pigmented) Silicone, .040" Thick
- Red/White – Competitor Red PTFE/White Silicone, .040" Thick
- HPLC Low Bleed Version – Competitor Clear Silicone/Clear PTFE (probably FEP or ETFE), marketed as a low bleed alternative for HPLC applications, .040" Thick

Experimental

GC: Septa were extracted (50 mg/mL) in dichloromethane:methanol (50:50) for 24 hours, then analyzed by GC under the following conditions:

Column	Agilent DB-1 30.0 m x 320 um (19091Z-213)
Detection	FID
H2 flow	30 ml/min
Air flow	400 ml/min
Makeup flow	25.0 ml/min (He)
Detector Heater	300 °C
Injection Size	1.0 uL (splitless)
Oven	50 °C hold for 3 minutes, 50-100°C @ 25°C / min, 100-300°C @10°C/min, 300-325°C @25°C/min (hold for 5 minutes)
Pressure	25 psi for 27 minutes, 50 psi from 27-33 minutes.

In addition, control blanks were performed after each injection to ensure zero carryover.

Results

The total peak area was obtained for the full length of the run and yielded the following results:

Figure #1 – Total Peak Area Comparisons

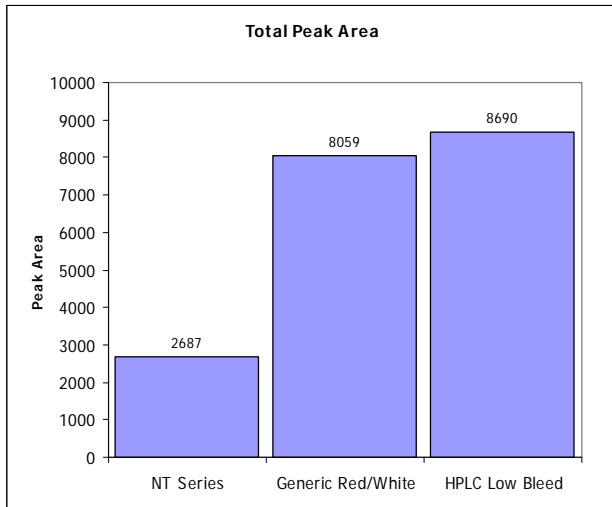


Figure #2 –Cepure NT Series Sample

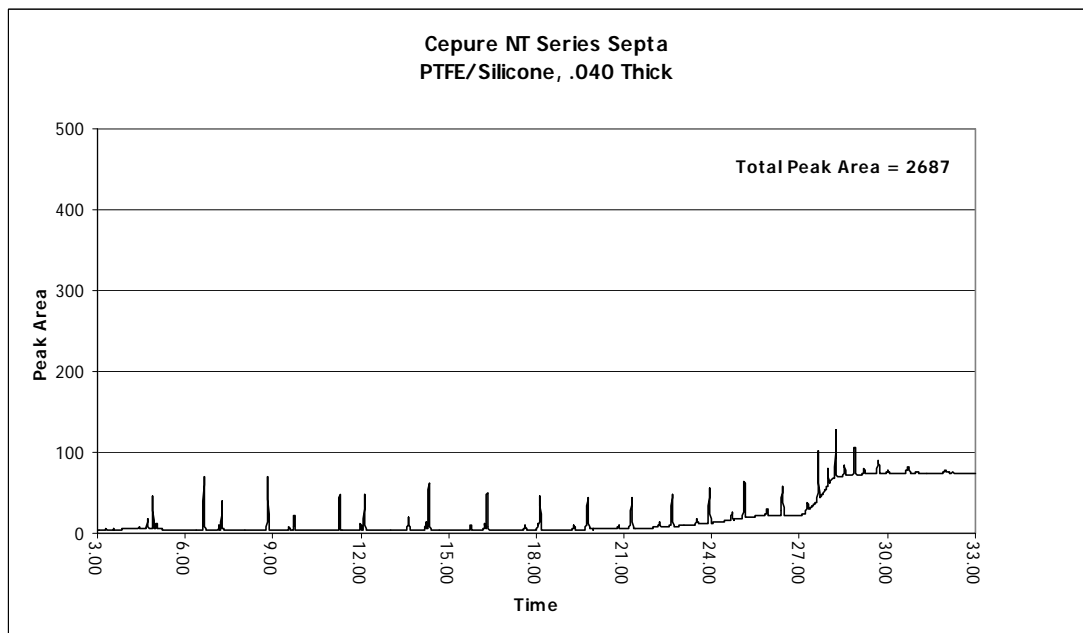


Figure #3 – Red/White Sample

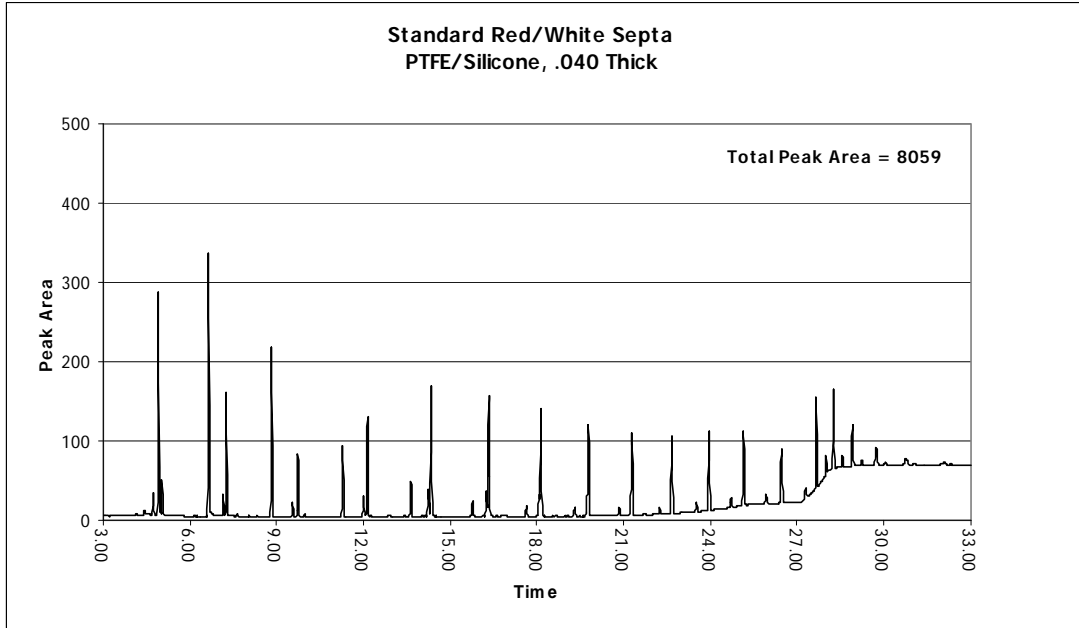
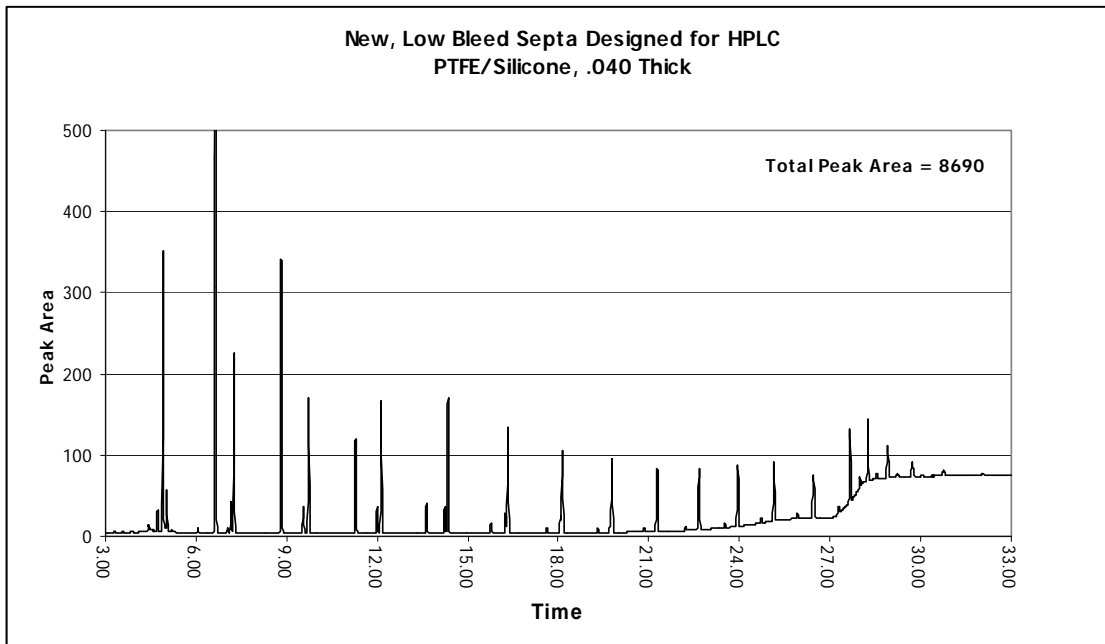


Figure #4 – HPLC Low Bleed





Summary

Results show the Cepure NT series of silicone septa as being over 60% cleaner than the standard Red/White and new, HPLC versions on the market today. Use of this lower bleed material reduces the potential for sample error caused by septum bleed and improves overall reliability.

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