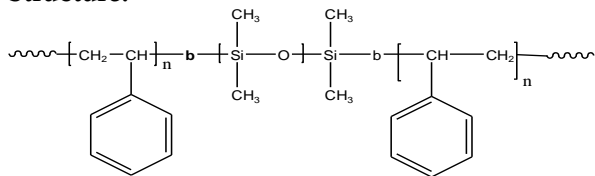


**Sample Name:**

Poly(styrene-b-dimethyl siloxane-b-styrene)

**Sample #:** P10773-SDMSS**Structure:****Composition:**

$M_n \times 10^3$ S-b-DMS-b-S	Mw/Mn (PDI)
10.0-b-40.0-b-10.0	1.28
Coupling %	>95%

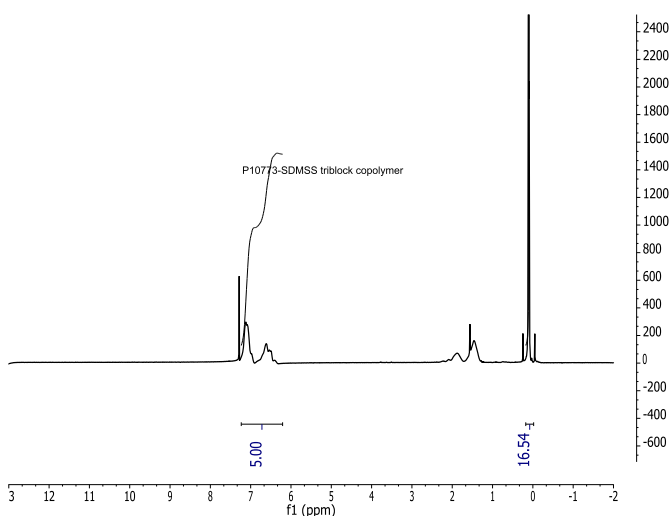
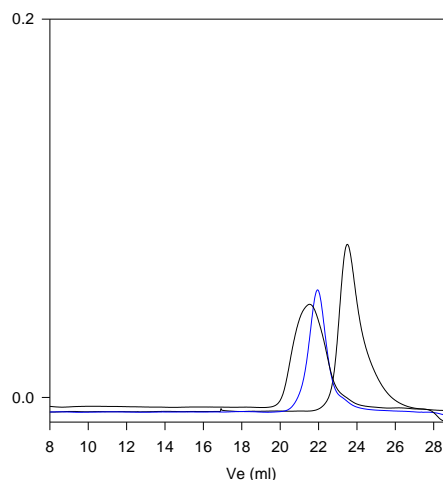
**Synthesis Procedure:**

Poly(styrene-b-dimethyl siloxane-styrene) is prepared by living anionic polymerization with sequence addition of styrene followed by hexamethyl cyclotrisiloxane and linking reaction using dimethyl dichlorosilane. For the details please see the references.

**Characterization:** By size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from  $^1\text{H-NMR}$  spectroscopy by comparing the peak area of the styrene protons at 6.3-7.2 ppm with the peak area of siloxane protons near 0.13 ppm. Block copolymer PDI is determined by SEC.

**Thermal Analysis:**

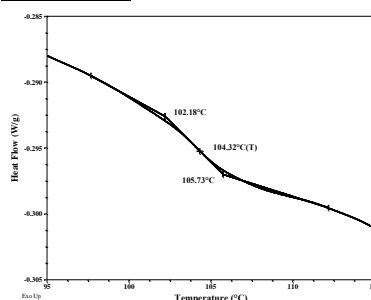
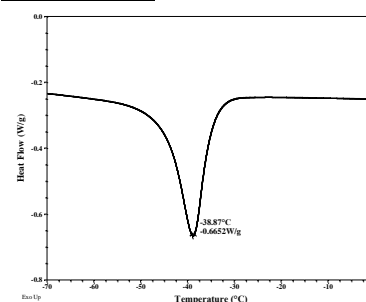
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of  $10^\circ\text{C}/\text{min}$ . The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature ( $T_g$ ).

 **$^1\text{H}$  NMR spectrum of the sample:****SEC profile of the block copolymer****P10773-SDMS**

Size exclusion chromatography of poly(styrene-b-dimethylsiloxane)

— Polystyrene,  $M_n=10,000$   $M_w/M_n=1.06$ — Poly(styrene-b-dimethylsiloxane)  
 $M_n$ : PS(10,000)-b-PDMS(20,000)=1.18

After linking reaction:

PS-b-DMS-b-PS  $M_n$  10,000-b-40,000-b-10,000  $M_w/M_n = 1.28$ **DSC thermogram for PS block:** **$T_g$  of Polystyrene block:** **$T_m$  of Polydimethylsiloxane:****References:**

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- P. Bajaj, S. K. Varshney, "Morphology and Properties of Poly(Dimethylsiloxane-b-Styrene-b-Dimethylsiloxane) Polymers" *CA Vol. 093*, 02, 008652, *Polymer*, 1980, 21, 201-206.
- S. K. Varshney, C. L. Beatty "Synthesis and Characterization of Polymethylmethacrylate and Polydimethylsiloxane Block Copolymers Polymerizes with an Organometallic Initiator" *Org. Coat. Appl. Polym. Sci.*, 1981, 45, 151-157.
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