Sample Name: Poly(isobutylene-b-dimethylsiloxane)
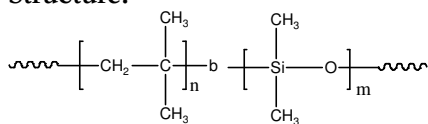**Sample #: P6218F5-IbDMS**
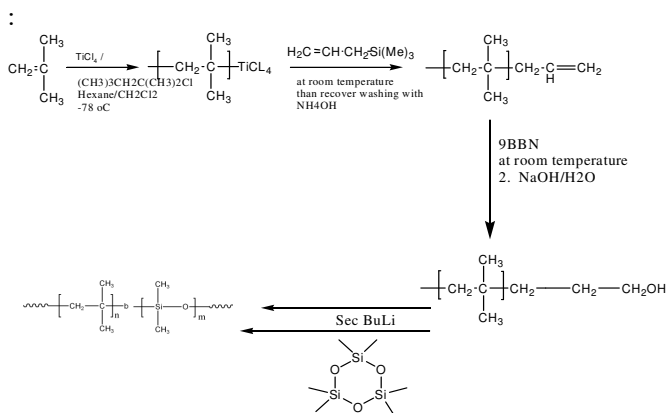**Structure:**

Composition:

Mn × 10³ Ib-b-DMS	Mw/Mn (PDI)
8.0-b-10.0	1.25
T_g for Ib block:	-69°C
T_g & T_m for DMS block:	-127 (lit. value); -37 &-46°C

Synthesis Procedure:

Poly(isobutylene-b-dimethylsiloxane) is prepared by combination of living cationic and anionic polymerization. Allyl end functionalized poly isobutylene was synthesized by cationic polymerization. Allyl end groups were modified to get OH end functionalized polyisobutylene. Lithium salt of Poly isobutylene were further used to initiate the anionic polymerization of hexamethyl cyclotrisiloxane monomer resulted into AB diblock copolymer. The reaction scheme is shown below:

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Characterization:

An aliquot of the anionic poly(isobutylene) block was terminated before addition of dimethylsiloxane and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from ¹H-NMR spectroscopy by comparing the peak area of the isobutylene protons with the dimethylsiloxane protons. Block copolymer PDI is determined by SEC.
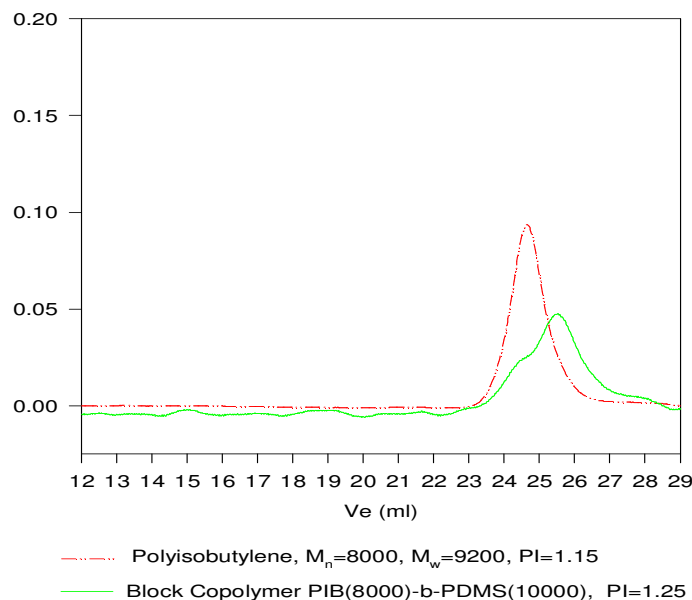
Thermal analysis:
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min.The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g). The melting temperature (T_m) was taken as the maximum of the endothermic peak.
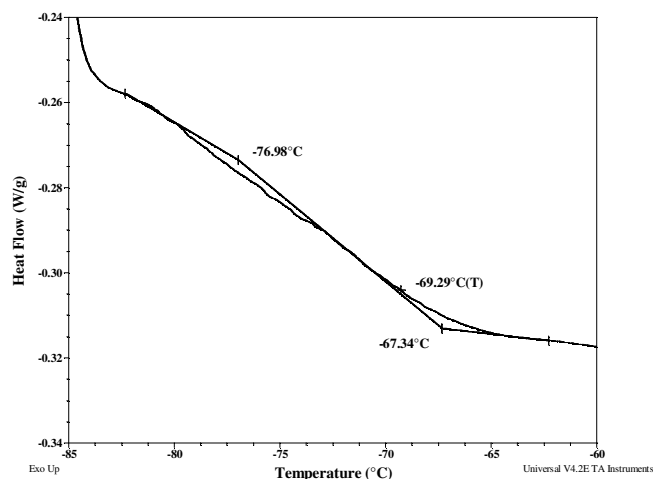
Solubility:
Poly(isobutylene-b-dimethylsiloxane) is soluble in THF, toluene and hexane.

SEC profile of the block copolymer:
P6218F5-IBDMS

- - - - Polyisobutylene, M_n=8000, M_w=9200, PI=1.15
——— Block Copolymer PIB(8000)-b-PDMS(10000), PI=1.25

DSC thermogram for Ib block:

Melting curve for DMS block: