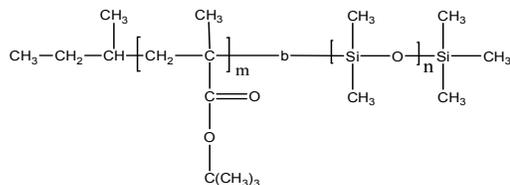


Sample Name: Poly(dimethyl siloxane-b-t-butyl methacrylate)

Sample #: P1891-1DMStBuMA

Structure:

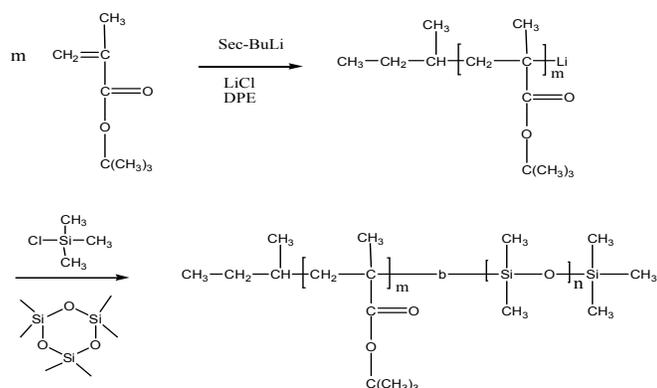


Composition:

$M_n \times 10^3$ DMS -b tBuMA	M_w/M_n (PDI)
3.6-b-22.3	1.50
DMS block: $T_m = -41^\circ\text{C}$, $T_c = -76^\circ\text{C}$ & $T_g = -127^\circ\text{C}$ (Lit.)	tBuMA block: $T_g = 113^\circ\text{C}$

Synthesis Procedure:

Poly(dimethyl siloxane-b-t-butyl methacrylate) is prepared by living consequent anionic polymerization of t-butyl methacrylate and hexamethyl cyclotrisiloxane. The reaction scheme is shown below:



Characterization:

An aliquot of the anionic poly(t-butyl methacrylate) block was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI) before addition of D3 and. The final block copolymer composition was calculated from $^1\text{H-NMR}$ spectroscopy by comparing the peak area of the dimethyl siloxane protons near 0.1 ppm with the t-butyl protons at about 1.43 ppm. Block copolymer PDI is determined by SEC.

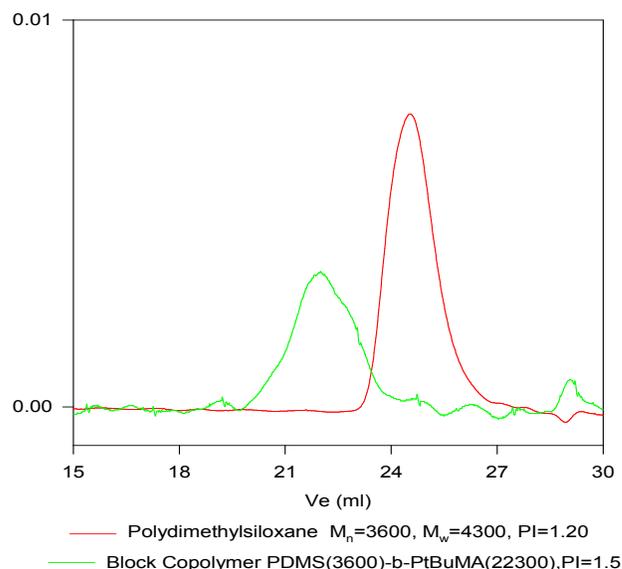
Thermal analysis:

Thermal analysis of the samples was carried out on a TA Q100 DSC at a heating rate of $10^\circ\text{C}/\text{min}$. The midpoint of the slope change of the heat flow was considered as the glass transition temperature (T_g). The melting temperature (T_m) was taken as the maximum of the endothermic peak where as the crystallization temperature (T_c) was considered as the minimum of the exothermic peak.

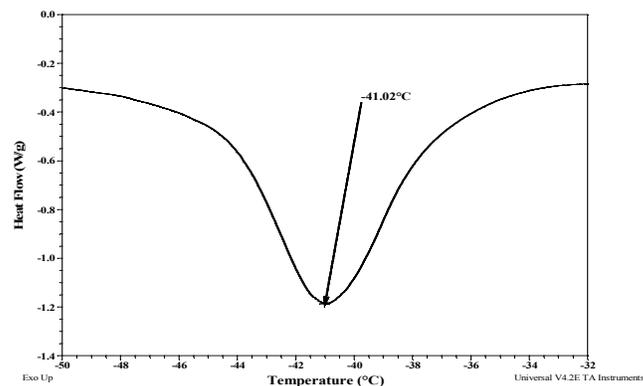
Solubility:

The polymer is soluble in THF, CHCl_3 , and DMF, not soluble in methanol, hexane and ether.

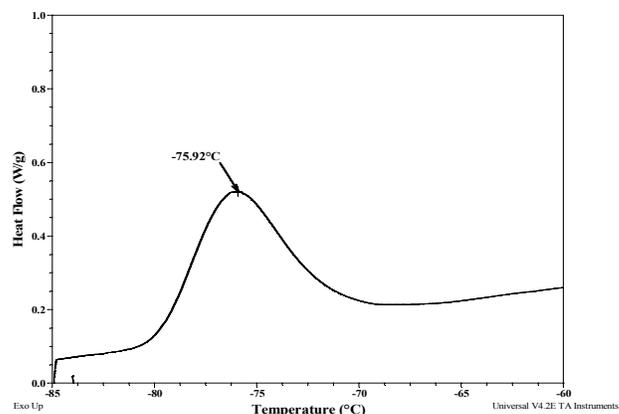
SEC profile of the block copolymer
P1891-1DMStBuMA



Melting curve for DMS block:



Crystallization curve:



Thermogram for tBuMA block:

