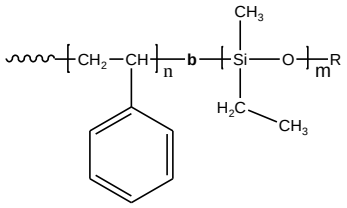
Sample Name:

Poly(styrene-b- Ethyle methyl siloxane)

Sample #: **P10116-SEtMS (R=(H)**

Structure:

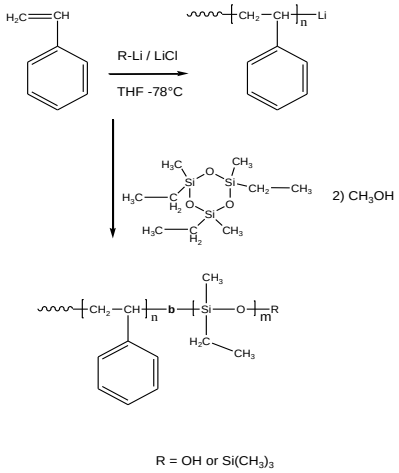


Composition:

Mn × 10^3 S-b-EtMS	Mw/Mn (PDI)
26.0-b-12.0	1.05
T_g for PS block: 102 °C	DMS block: Not distinct

Synthesis Procedure:

Poly(styrene-b-ethyl methyl siloxane) is prepared by living anionic polymerization with sequence addition of styrene followed by trimethyl triethyl cyclotrisiloxane.



R = OH or $Si(CH_3)_3$

Characterization:

An aliquot of the polystyrene block was terminated before addition of methylethyl cyclotrisiloxane and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from ^{1}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.

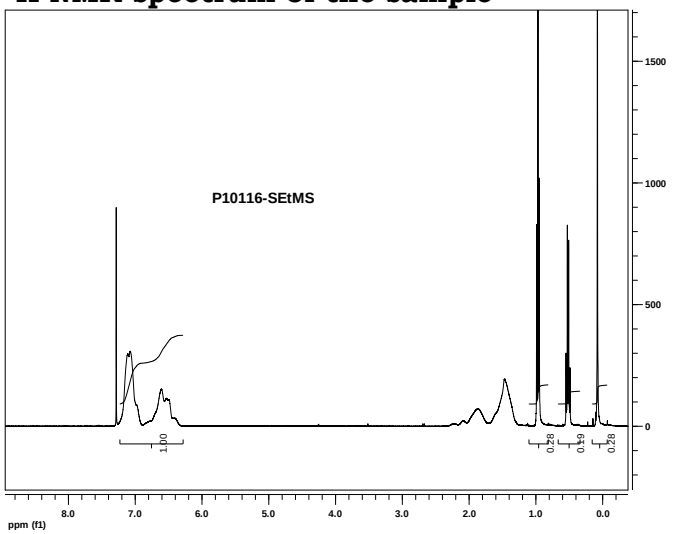
Thermal analysis

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min.The midpoint of the slope change of the heat flow plot was considered as the glass transition temperature (T_g).

Solubility:

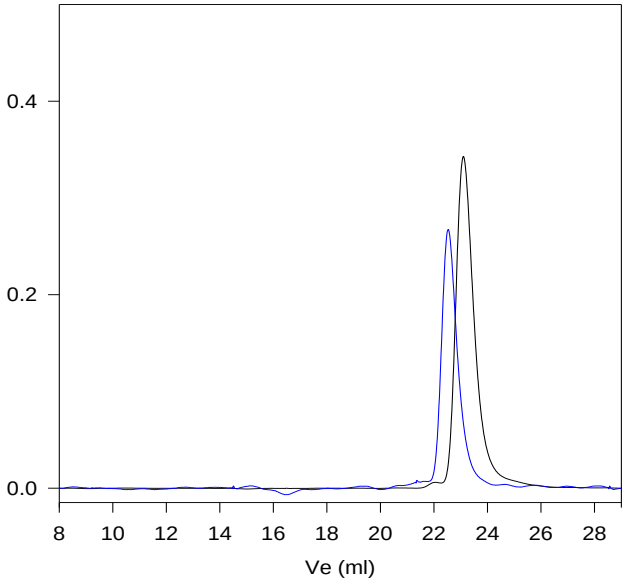
Poly(styrene-b-ethyl methyl siloxane) is soluble in CHCl3, toluene, THF.

^{1}H NMR spectrum of the sample



SEC profile of the block copolymer

P10116-SDMS



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

Polystyrene, M_n=26,000, M_w=27,200, M_w/M_n=1.05

Poly(styrene-b-ethyl methylsiloxane)

M_n: PS(26,000)-b-PDMS(12,000) M_w/M_n=1.05

DSC thermogram for PS block: