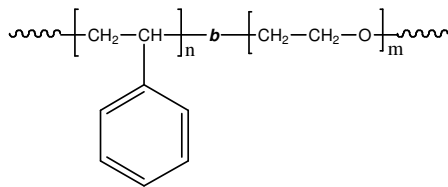


Sample Name: Poly(styrene-*b*-ethylene oxide)

Sample #: P15018-SEO

Structure:



Composition:

Mn x 10 ³ S- <i>b</i> -EO	PDI
20.0- <i>b</i> -13.0	1.16

Synthesis Procedure:

Poly(styrene-*b*-ethylene oxide) diblock copolymer is prepared by living anionic polymerization.

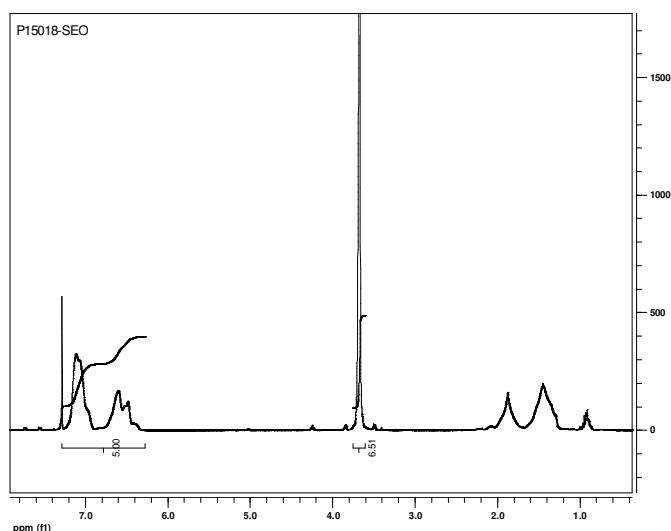
Characterization:

The molecular weight and polydispersity index (PDI) of the block copolymer are characterized by size exclusion chromatography (SEC). The composition of the block copolymer was calculated from ¹H-NMR by comparing the peak area of the phenyl polystyrene protons between 6.4 to 7.2 ppm and the ethylene oxide protons at 3.65 ppm.

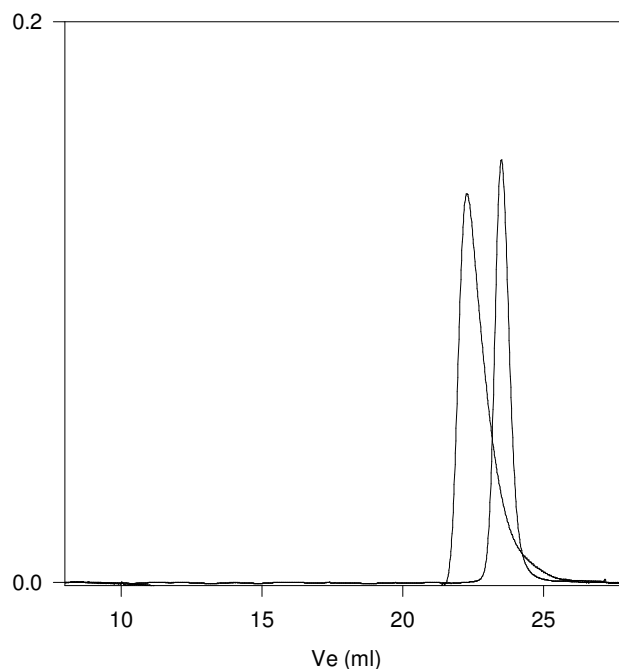
Solubility:

The polymer is soluble in THF (at 35 °C), CHCl₃, benzene, toluene, dioxane. Low molecular weight SEO with high contents of the polyethylene oxide block can also be solubilized in methanol and water.

¹H NMR spectrum of the sample



SEC profile of the block copolymer
P15018-SEO



Size Exclusion Chromatography:

- Polystyrene, M_n=20,000, M_w=21,000, PI=1.05
- Block Copolymer Polystyrene-*b*-Poly(ethylene oxide)
Mw: PS(20,000)-*b*-PEO(13,000), PI=1.16

Thermal analysis of the sample# P15018-SEO

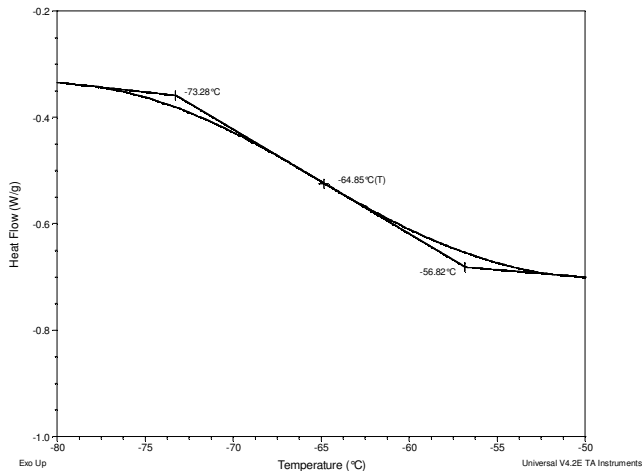
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 20°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

Thermal analysis results at a glance

For PS block T_g : 107°C		
For PEO block		
T_g : -65°C	T_m : 63°C	T_c : 43°C

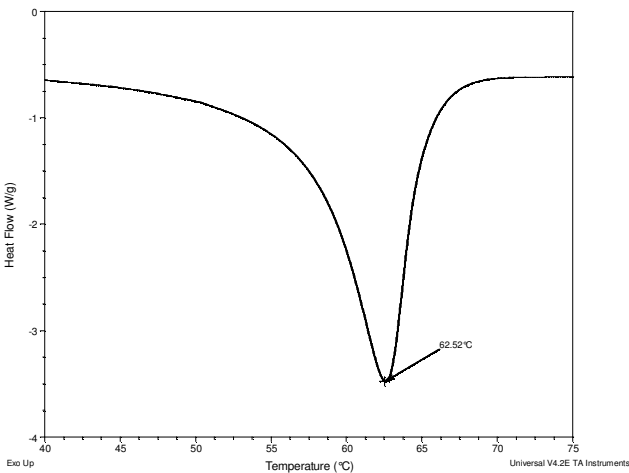
Thermogram for the sample

For PEO block:



Melting and crystallization curve for the PEO block

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.



For PS block

