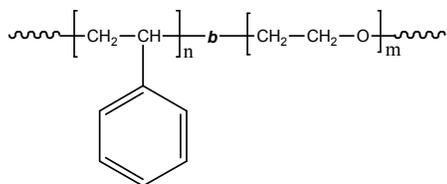


Sample Name: Poly(styrene-b-ethylene oxide)

Sample #: P4377-SEO

Structure:



Composition:

$M_n \times 10^3$ S-b-EO	PDI
62.0-b-16.0	1.08

Synthesis Procedure:

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

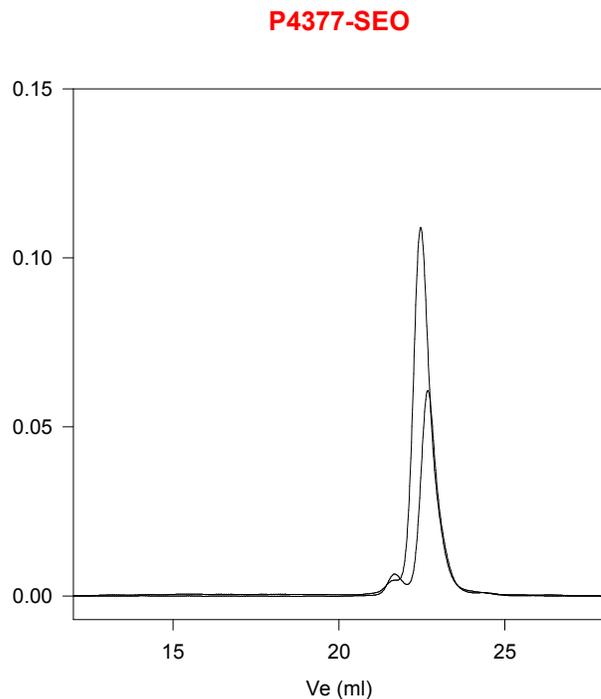
Characterization:

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 $^1\text{H-NMR}$ 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), CHCl_3 , benzene, toluene, dioxane. Low molecular weight SEO with high contents of the polyethylene oxide block can also be solubilized in methanol and water.

SEC profile of the block copolymer



Size exclusion chromatography of poly(styrene-b-ethylene oxide)

- Poly(styrene), $M_n=62000$, $M_w=65000$, $PI=1.05$
- Block Copolymer $\text{PSt}(62000)\text{-b-PEO}(16000)$, $PI=1.08$
Composition from $^1\text{H NMR}$

Thermal analysis of the sample# P4377-SEO

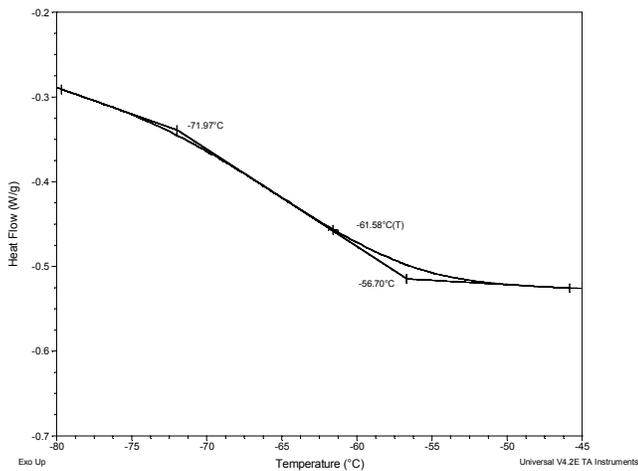
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 20°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

Thermal analysis results at a glance

For PS block T_g : 100°C		
For PEO block		
T_g : -62°C	T_m : 49°C	T_c : -29°C

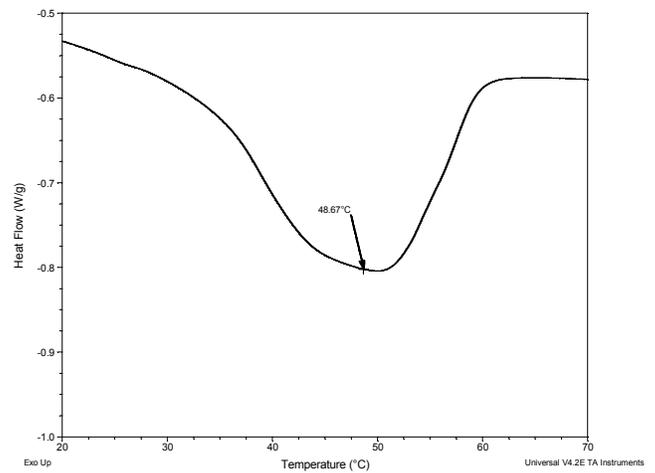
Thermogram for the sample

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

