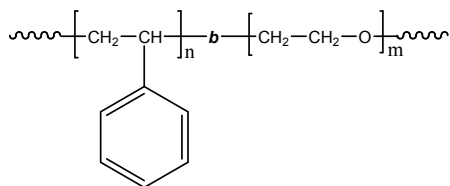


Sample Name: Poly(styrene-*b*-ethylene oxide)

Sample #: P11118C-SEO

Structure:



Composition:

Mn x 10 ³ S- <i>b</i> -EO	PDI
3.2- <i>b</i> -11.0	1.08

Synthesis Procedure:

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

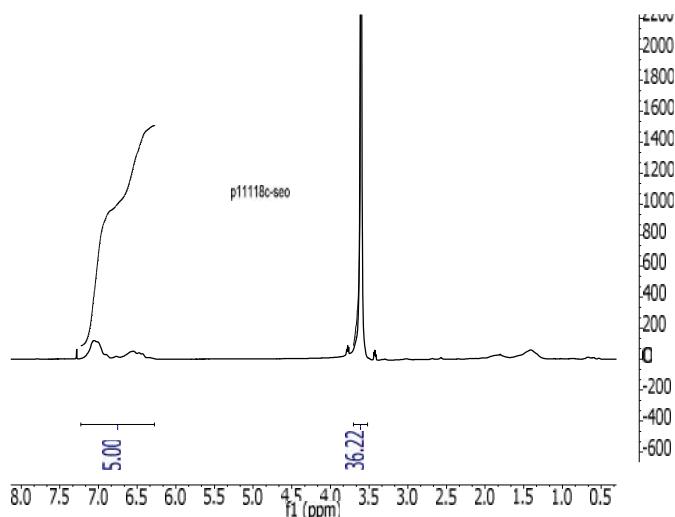
Characterization:

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 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:

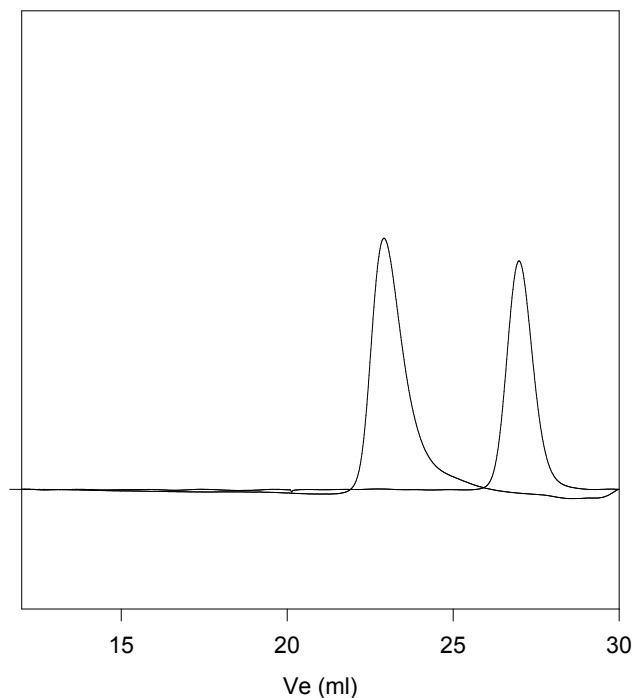
The polymer is soluble in THF (at 35 °C), CHCl₃, benzene, toluene, dioxane. Low molecular weight SEO with high contents of the polyethylene oxide block can also be solubilized in methanol and water.

¹H NMR spectrum of the sample



SEC profile of the block copolymer

P11118C-SEO



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

—— Poly(styrene), M_n=3200, M_w=3500, PI=1.10
—— Block Copolymer PSt(3200)-*b*-PEO(11,000), PI=1.08
The composition determined from HNMR.

Thermal analysis of the sample# P11118C-SEO

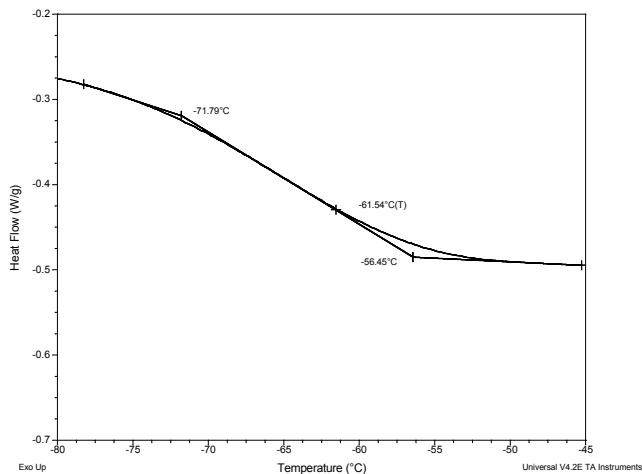
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 20°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

Thermal analysis results at a glance

For PS block T_g : 94°C		
For PEO block		
T_g : -62°C	T_m : 52°C	T_c : 20 and -27°C

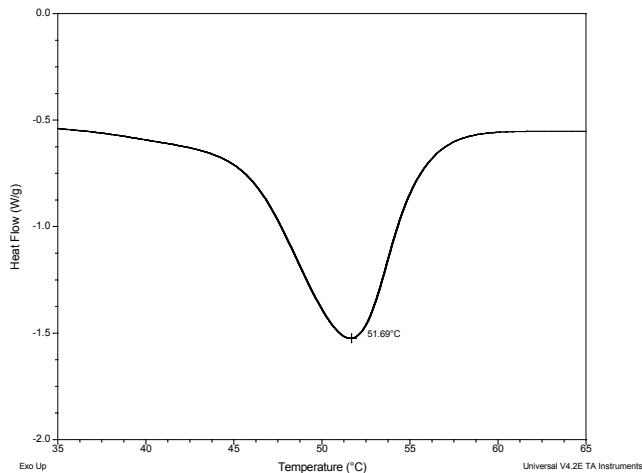
Thermogram for the sample

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

