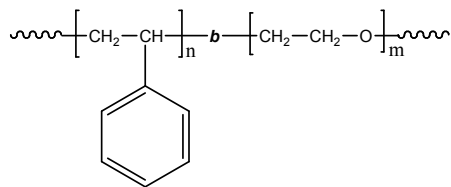


## Sample Name: Poly(styrene-b-ethylene oxide)

Sample #: P11403-SEO

### Structure:



### Composition:

Mn x 10 <sup>3</sup> S-b-EO	PDI
59.0-b-72.0	1.09

### Synthesis Procedure:

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

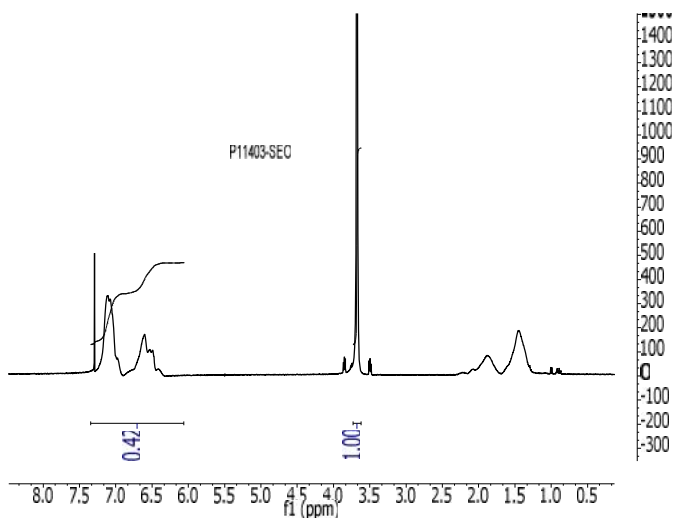
### Characterization:

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 <sup>1</sup>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:

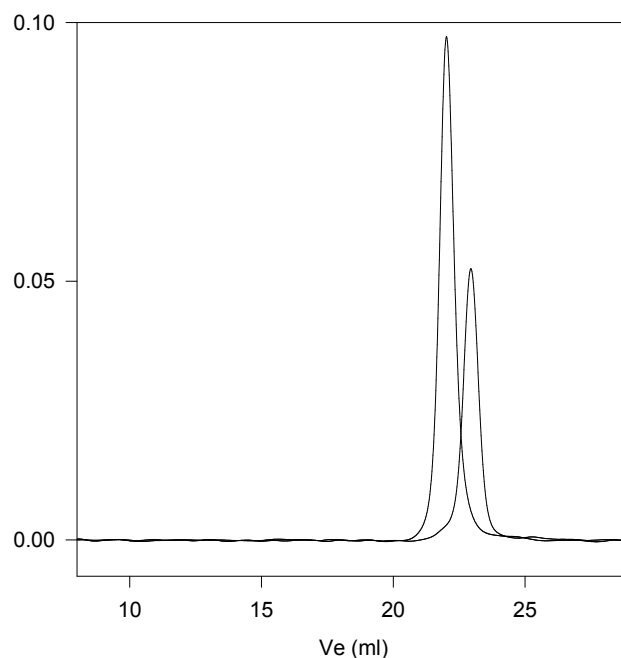
The polymer is soluble in THF (at 35 °C), CHCl<sub>3</sub>, benzene, toluene, dioxane. Low molecular weight SEO with high contents of the polyethylene oxide block can also be solubilized in methanol and water.

### <sup>1</sup>H NMR spectrum of the sample



### SEC profile of the block copolymer

**P11403-SEO**



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

—— Poly(styrene), M<sub>n</sub>=59,000, M<sub>w</sub>=62,400, PI=1.06

—— Block Copolymer PSt(59,000)-b-PEO(72,000), PI=1.09  
Composition from <sup>1</sup>H NMR

Thermal analysis of the sample# P11403-SEO

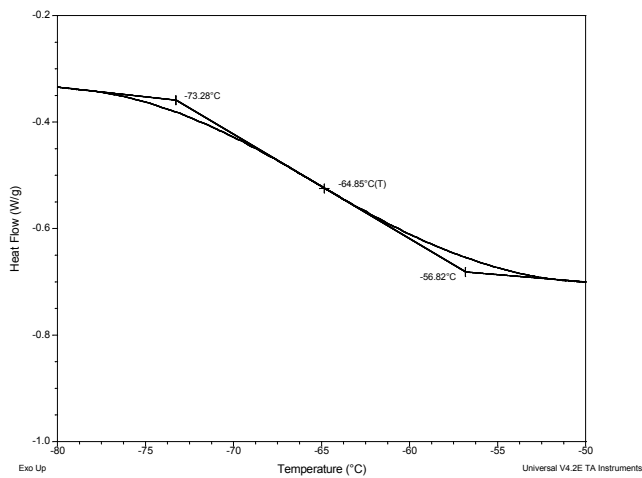
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 20°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature ( $T_g$ ).

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

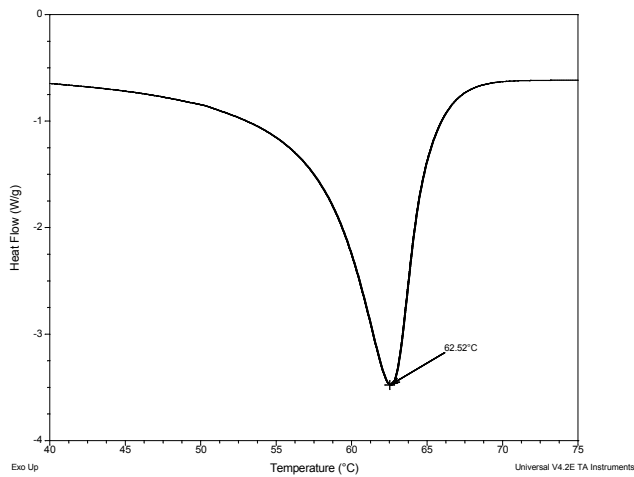
Thermogram for the sample

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

