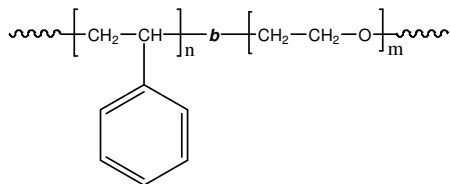


**Sample Name:** Poly(styrene-*b*-ethylene oxide)

**Sample #:** P11440P-SEO

**Structure:**



**Composition:**

$M_n \times 10^3$ S- <i>b</i> -EO	PDI
205.0- <i>b</i> -100.0	1.18

**Synthesis Procedure:**

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

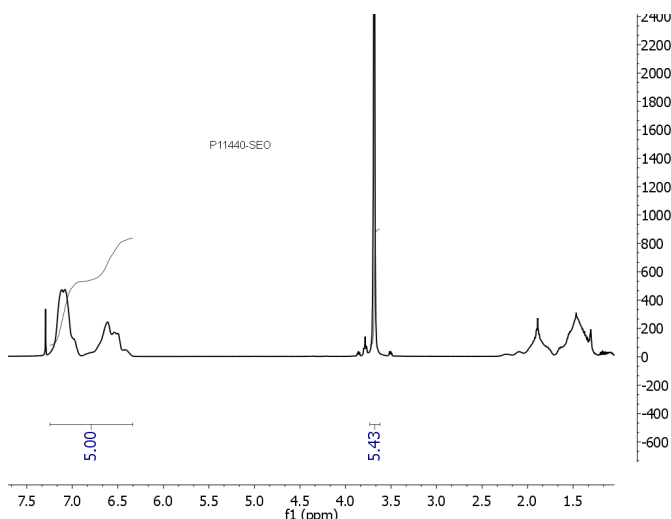
**Characterization:**

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.

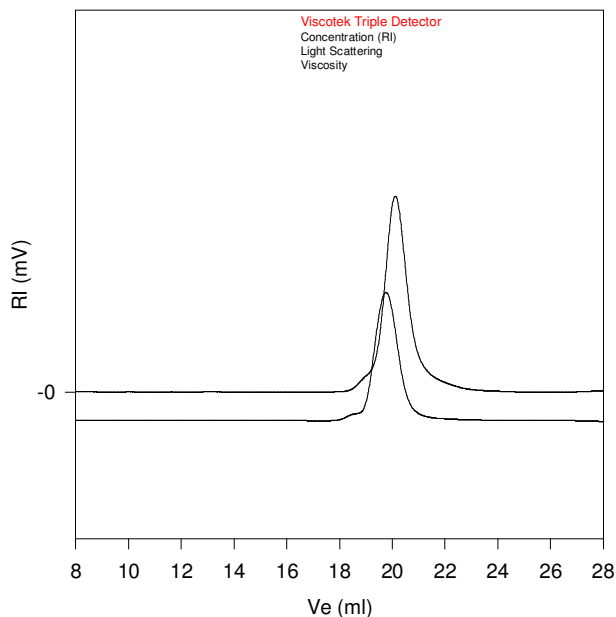
**Solubility:**

The polymer is soluble in THF (at 35 °C),  $CHCl_3$ , benzene, toluene, dioxane. Low molecular weight SEO with high contents of the polyethylene oxide block can also be solubilized in methanol and water.

**$^1H$  NMR spectrum of the sample**



**P11440-SEO**



Size Exclusion Chromatography of Poly Styrene-*b*-MMA

— PS block  $M_n = 205,000$ ,  $M_w = 215,500$ ,  $M_w/M_n = 1.05$   
PS-*b*-EO:  $M_n$  205,000-*b*-100,000 PI: 1.18

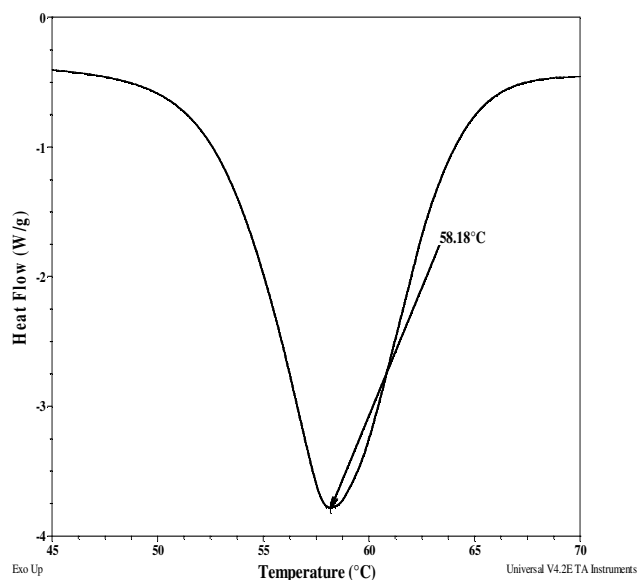
## Thermal analysis of the sample# P11440-SEO

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 of the second heating scan was considered as the glass transition temperature ( $T_g$ ).

### 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.

#### Melting curve for PEO block:



## Thermal analysis results at a glance

For PS block $T_g$ : Not distinct		
For PEO block		
$T_g$ : Not distinct	$T_m$ : 58 °C	$T_c$ : 19 °C

#### Crystallization curve for PEO block:

