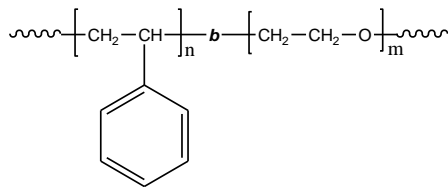


**Sample Name:** Poly(styrene-*b*-ethylene oxide)

**Sample #:** P11464P-SEO

**Structure:**



**Composition:**

Mn x 10 <sup>3</sup> S- <i>b</i> -EO	PDI
90.0- <i>b</i> -66.0	1.25

**Synthesis Procedure:**

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

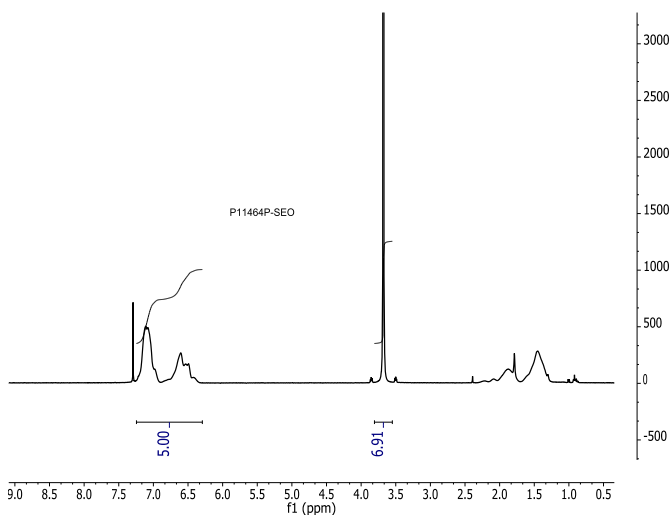
**Characterization:**

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:**

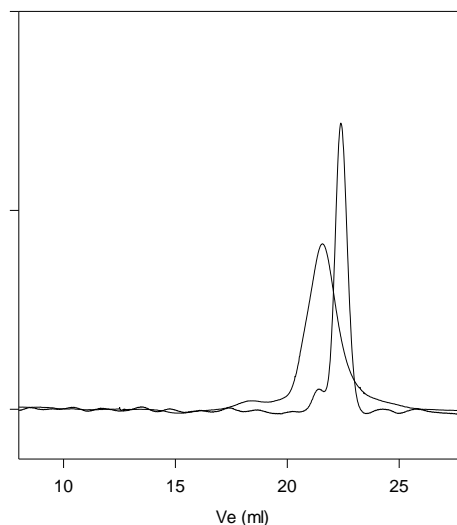
The polymer is soluble in THF (at 35 °C), CHCl<sub>3</sub>, benzene, toluene, dioxane. Low molecular weight SEO with high contents of the polyethylene oxide block can also be solubilized in methanol and water.

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



**SEC profile of the block copolymer**

**P11464P-SEO**



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

— Poly(styrene), M<sub>n</sub>=90,000, M<sub>w</sub>=99,000, PI=1.10

Block Copolymer PS(90,000)-*b*-PEO(66000), PI=1.25

## Thermal analysis of the sample# P11464P-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 ( $T_g$ ).

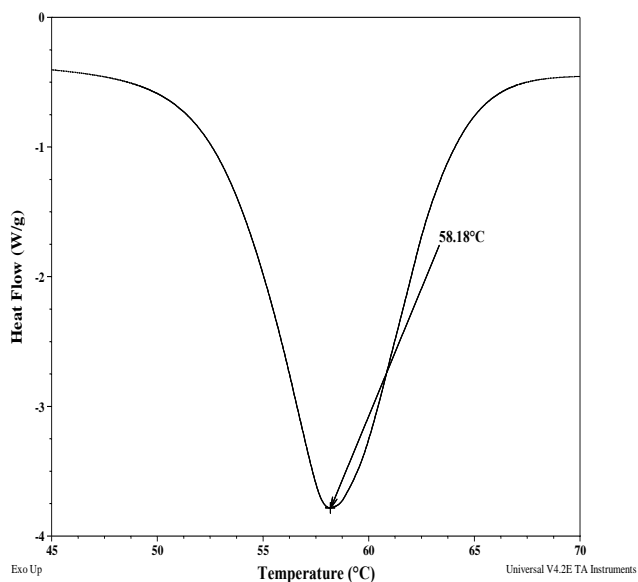
## Thermal analysis results at a glance

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

## 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:



### Crystallization curve for PEO block:

