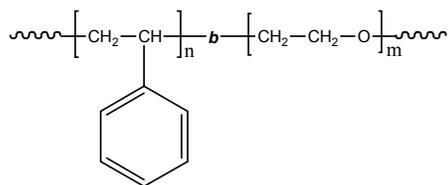


Sample Name: Poly(styrene-b-ethylene oxide)

Sample #: P372-SEO

**Structure:**



**Composition:**

$M_n \times 10^3$ S-b-EO	PDI
71.0-374.2	1.05

**Synthesis Procedure:**

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

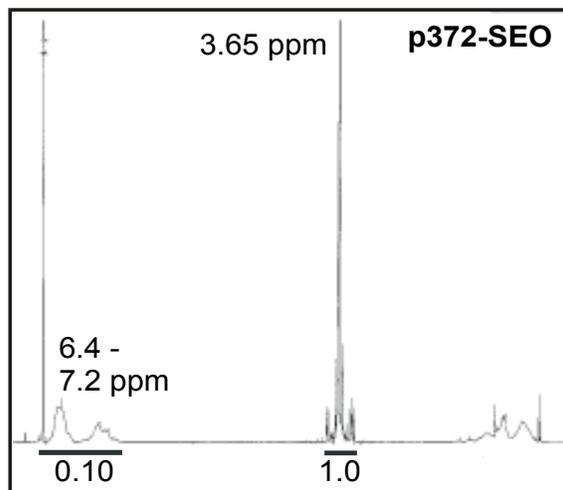
**Characterization:**

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.

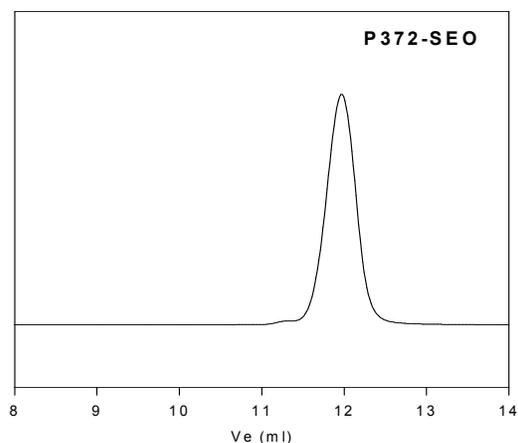
**Solubility:**

The polymer is soluble in THF (at 35 °C),  $\text{CHCl}_3$ , benzene, toluene, dioxane. Low molecular weight SEO with high contents of the polyethylene oxide block can also be solubilized in methanol and water.

$^1\text{H}$  NMR spectrum of the sample



**SEC profile of the block copolymer**



Size Exclusion Chromatography:

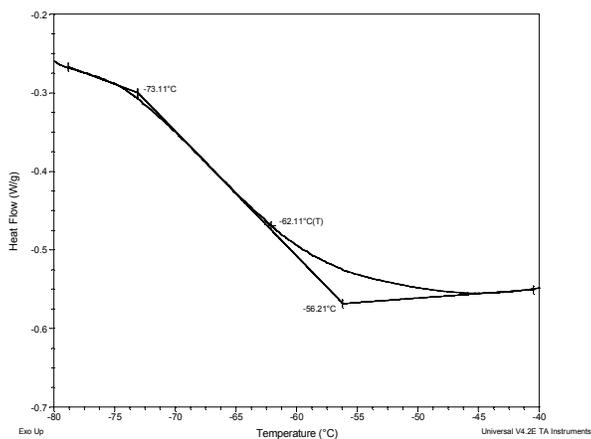
- Polystyrene,  $M_n=71000$ ,  $M_w=74500$ ,  $PI=1.05$
- Polystyrene-b-Poly(ethylene oxide) sample # P372-SEO was not eluted in our SEC columns due to the high PEO block content (Composition determined by H nmr only).

## Thermal analysis of the sample# P372-SEO

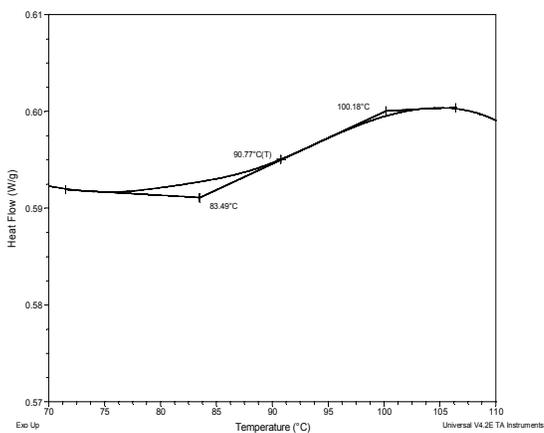
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 20°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature ( $T_g$ ).

### Thermogram for the sample

For PEO block:



For PS block



## Thermal analysis results at a glance

For PS block $T_g$ : 91°C		
For PEO block		
$T_g$ : -62°C	$T_m$ : 62°C	$T_c$ : 46°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.

