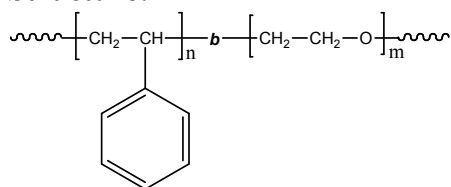


**Sample Name:** Poly(styrene-*b*-ethylene oxide)

**Sample #:** P10091-SEO

**Structure:**



**Composition:**

$M_n \times 10^3$ S-b-EO	PDI
125.0-b-177.0	1.18

**Synthesis Procedure:**

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

**Characterization:**

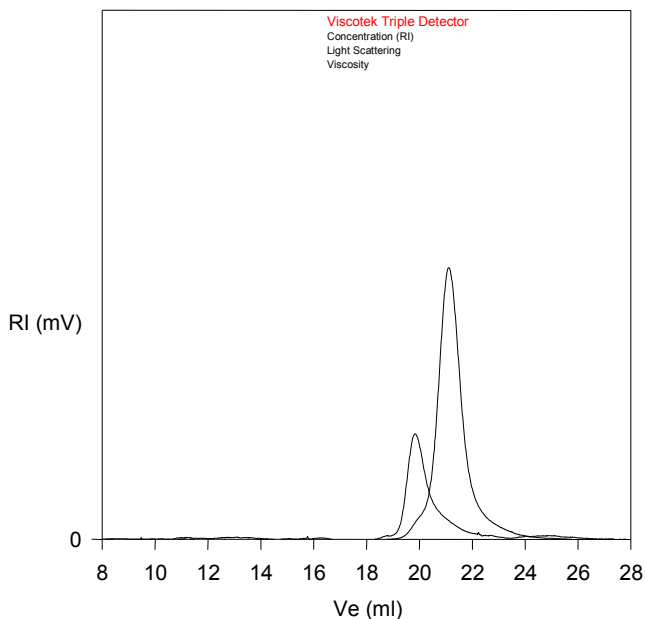
The molecular weight and polydispersity index (PDI) of the block copolymer are characterized by size exclusion chromatography (SEC). The composition of the block copolymer was calculated from  $^1\text{H-NMR}$  by comparing the peak area of the phenyl polystyrene protons between 6.4 to 7.2 ppm and the 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.

**SEC profile of the block copolymer**

**P10091-SEO**



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

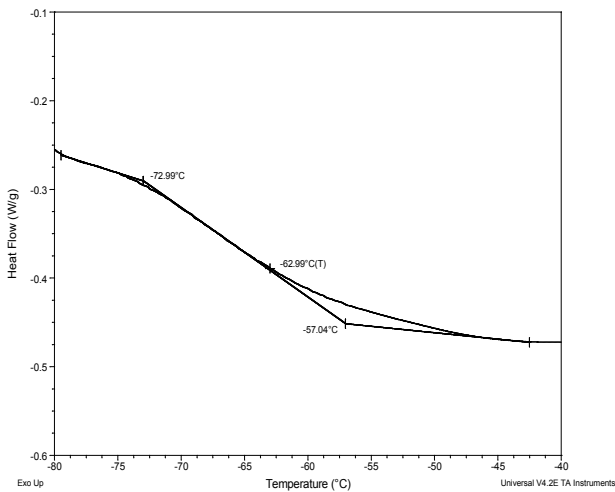
— PS block  $M_n$  =125,000,  $M_w$  = 143,500,  $M_w/M_n$  = 1.15  
PS-*b*-EO:  $M_n$  125,000-*b*-177,000 PI: 1.18

Thermal analysis of the sample# P10091-SEO

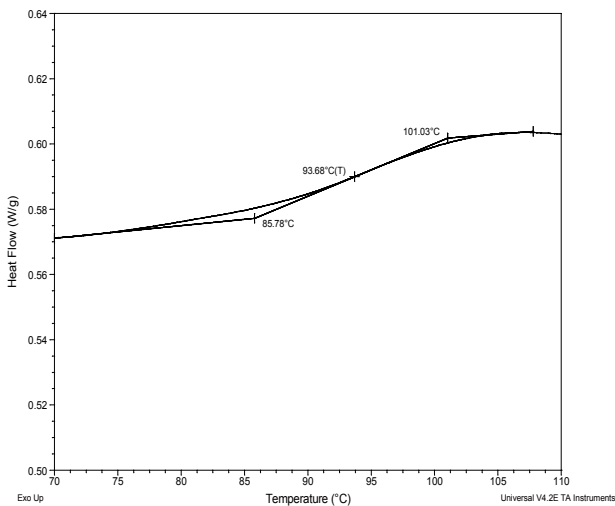
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 20°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature ( $T_g$ ).

Thermogram for the sample

For PEO block:



For PS block



Thermal analysis results at a glance

For PS block $T_g$ : 94°C		
For PEO block		
$T_g$ : -63°C	$T_m$ : 63°C	$T_c$ : 44°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.

