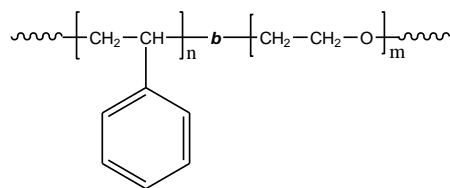


**Sample Name:** Poly (styrene-b-ethylene oxide)

**Sample #:** P11157-SEO

**Structure:**



**Composition:**

Mn x 10 <sup>3</sup> S-b-EO	PDI
20.0-b-7.0	1.08

**Synthesis Procedure:**

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

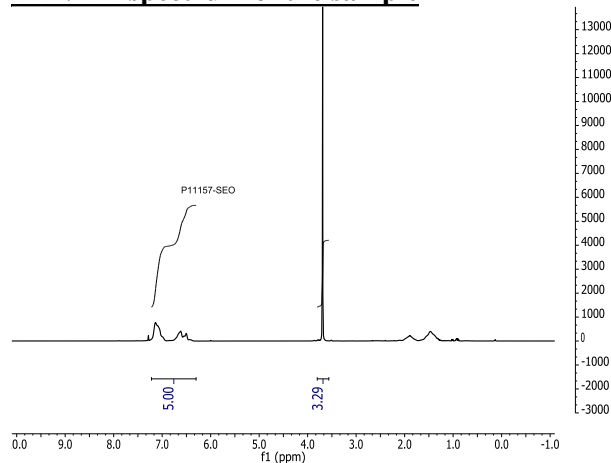
**Characterization:**

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:**

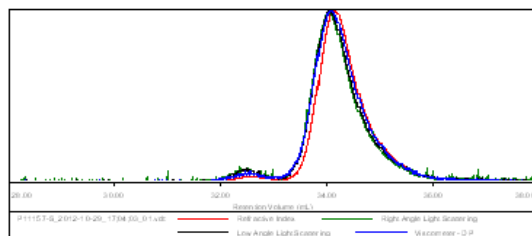
The polymer is soluble in THF (at 35 °C), CHCl<sub>3</sub>, benzene, toluene, dioxane. Low molecular weight SEO with high contents of the polyethylene oxide block can also be solubilized in methanol and water.

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

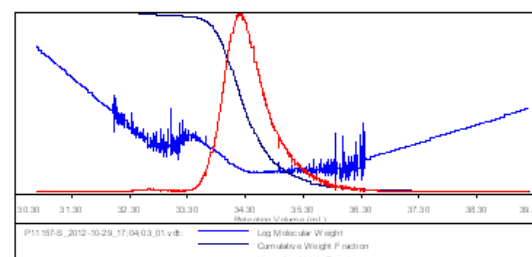


**Sample ID:** P11157-S

Concentration (mg/mL)	4.6771
Sample dn/dc (mL/g)	0.1850
Method File	PSS016_Oct-2012-0002.v cm
Column Set	3x PL 1113-6300
System	System 1

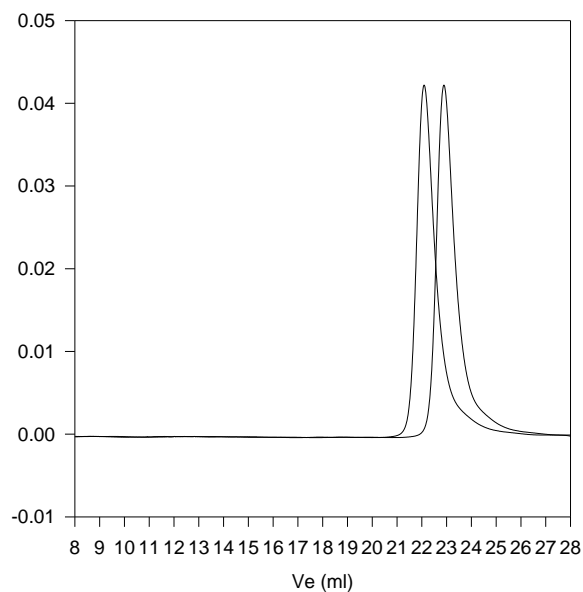


Sample	Mn (Da)	Mw (Da)	Mp (Da)	Mw/Mn	IV (dL/g)
P11157-S_2012-10-29_17:04:03_01.v d	19,909	21,401	19,351	1.075	0.2254



**SEC profile of the block copolymer:**

**P11157-SEO**



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

— Poly(styrene), M<sub>n</sub>=20,000, M<sub>w</sub>=21400, PI=1.07

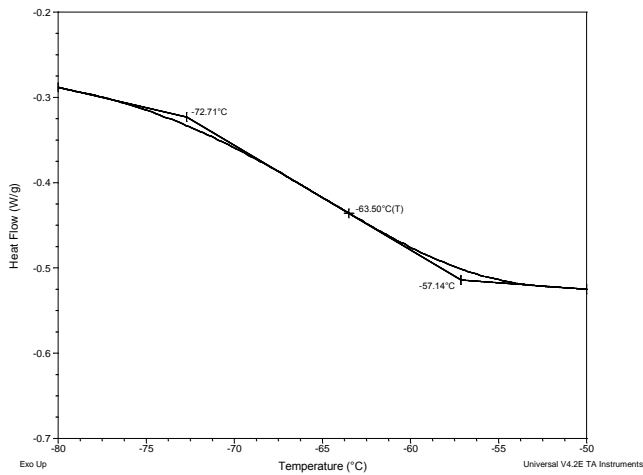
— Block Copolymer PSt(20,000)-b-PEO(7,000), PI=1.08

Thermal analysis of the sample# P11157-SEO

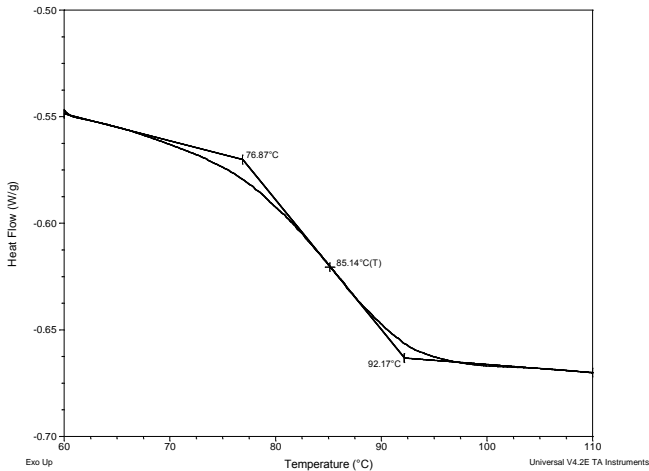
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 20°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature ( $T_g$ ).

Thermogram for the sample

For PEO block:



For PS block



Thermal analysis results at a glance

For PS block $T_g$ : 85°C		
For PEO block		
$T_g$ : -63°C	$T_m$ : 37°C	$T_c$ : -18 & -45°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.

