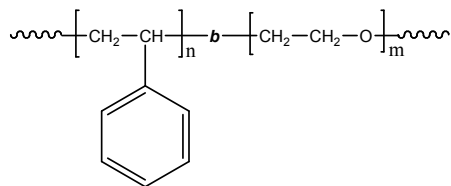


Sample Name: **Poly(styrene-b-ethylene oxide)**

Sample #: **P11155A-SEO**

Structure:



Composition:

$M_n \times 10^3$	PDI
S-b-EO	
20.5-b-7.0	1.05

Synthesis Procedure:

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

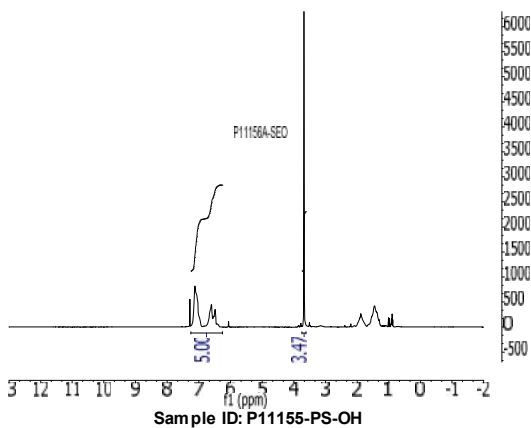
Characterization:

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 ^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.

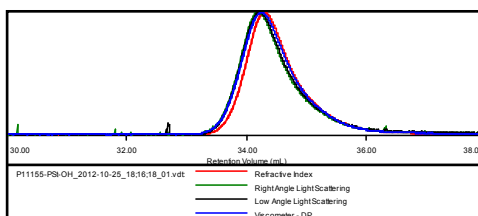
Solubility:

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.

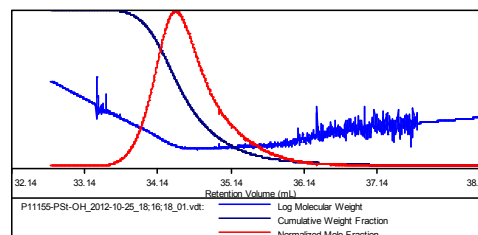
^1H NMR spectrum of the sample



Concentration (mg/mL)	9.0852
Sample dn/dc (mL/g)	0.1850
Method File	PS80K-Oct-2012-0002.vcm
Column Set	3x PL 1113-6300
System	System 1

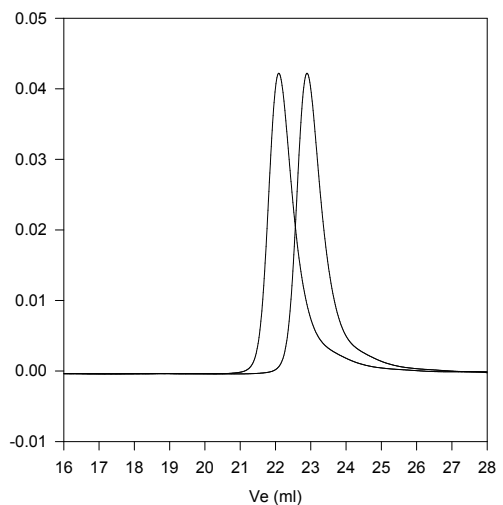


Sample	M_n (Da)	M_w (Da)	M_p (Da)	M_w/M_n	IV (dL/g)
P11155-PS-OH_2012-10-25_18;16;18_01.vd	20,538	21,761	19,890	1.060	0.2138



SEC profile of the block copolymer:

P11155A-SEO



Size exclusion chromatography of poly(styrene-b-ethylene oxide)
— Poly(styrene), $M_n=20,500$, $M_w=21100$, $\text{PI}=1.06$
— Block Copolymer $\text{PSt}(20,500)\text{-b-PEO}(7,000)$, $\text{PI}=1.05$

Thermal analysis of the sample# P11155A-SEO

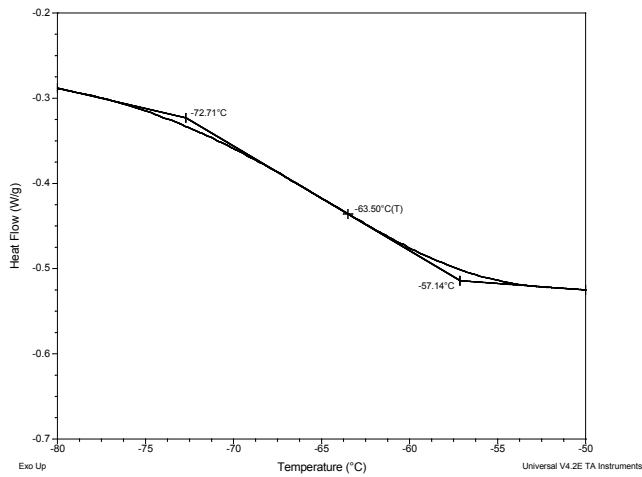
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 20°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

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

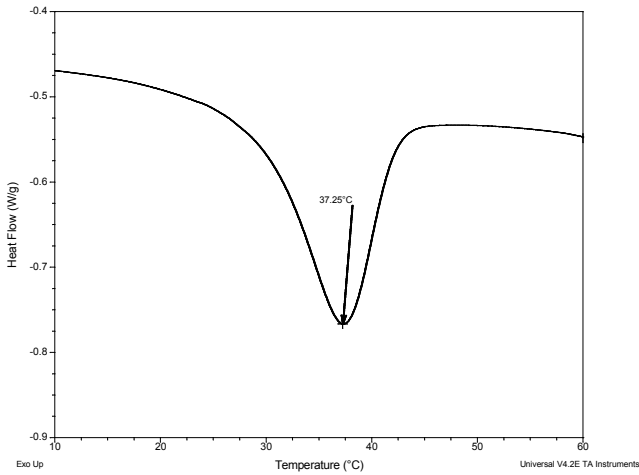
Thermogram for the sample

For PEO block:



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.



For PS block

