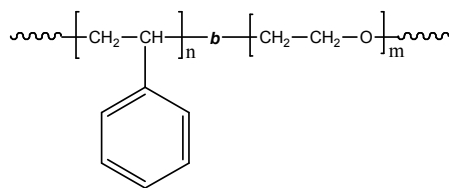


**Sample Name:** Poly(styrene-b-ethylene oxide)

**Sample #:** P5524--SEO

**Structure:**



**Composition:**

$M_n \times 10^3$ S-b-EO	PDI
0.6-b-0.6	1.10

**Synthesis Procedure:**

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

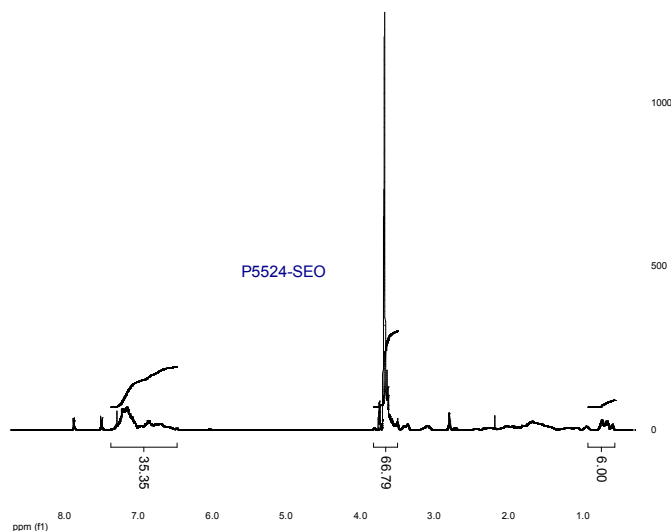
**Characterization:**

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 and 7.2 ppm and the ethylene oxide protons at 3.65 ppm.

**Solubility:**

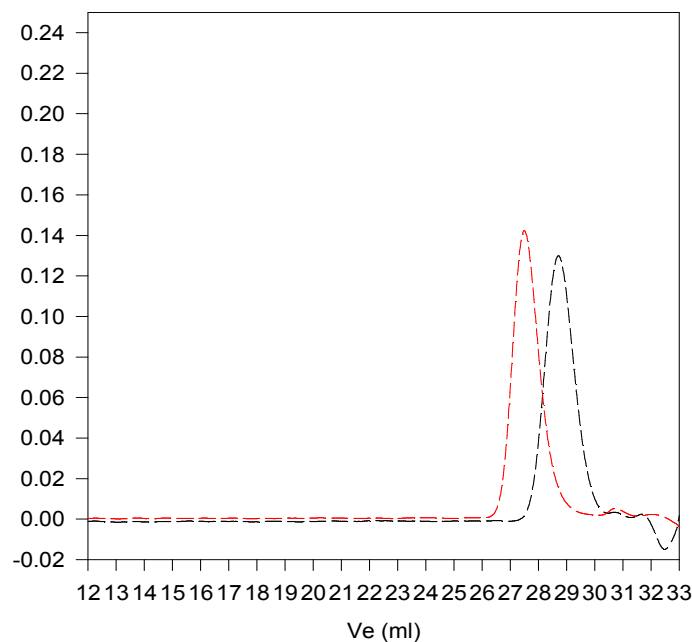
The polymer is soluble in THF (at 35°C),  $\text{CHCl}_3$ , benzene, toluene and dioxane. Low molecular weight SEO with high contents of the polyethylene oxide block can also be solubilized in methanol and water.

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



**SEC profile of the block copolymer**

**P5524-SEO**



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

— Poly(styrene),  $M_n=600$ ,  $M_w=650$ ,  $PI=1.09$   
- - - Block Copolymer PSt(600)-b-PEO(600),  $PI=1.10$   
The composition determined from HNMR.

Thermal analysis of the sample P5524 SEO:

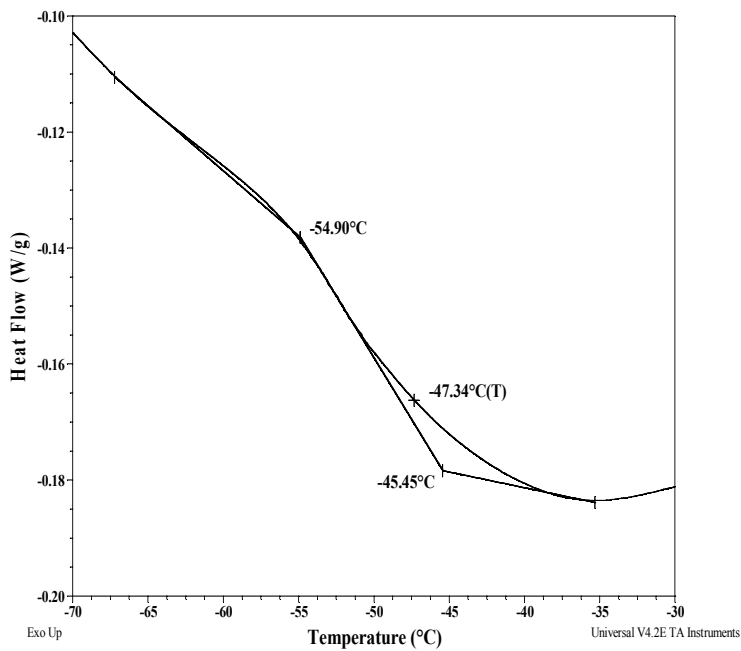
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature ( $T_g$ ).

Melting & crystallization curves 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.

Thermogram for the sample

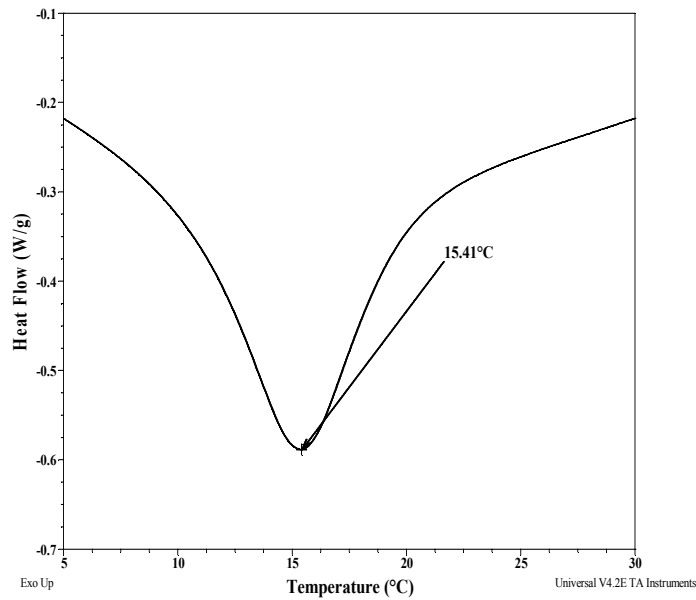
For PEO block:



Thermal analysis results at a glance

For PS block $T_g$ : Not distinct		
For PEO block		
$T_g$ : -47°C	$T_m$ : 15°C	$T_c$ : -06

Melting curve:



Crystallization curve:

