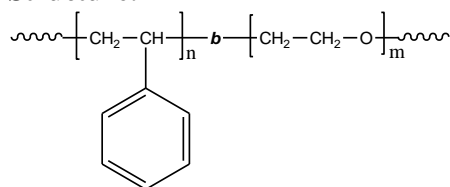


Sample Name: Poly (styrene-b-ethylene oxide)

Sample #: P40821-SEO

Structure:



Composition:

Mn x 10 ³ S-b-EO	PDI
12.5-b-7.5	1.09

Synthesis Procedure:

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

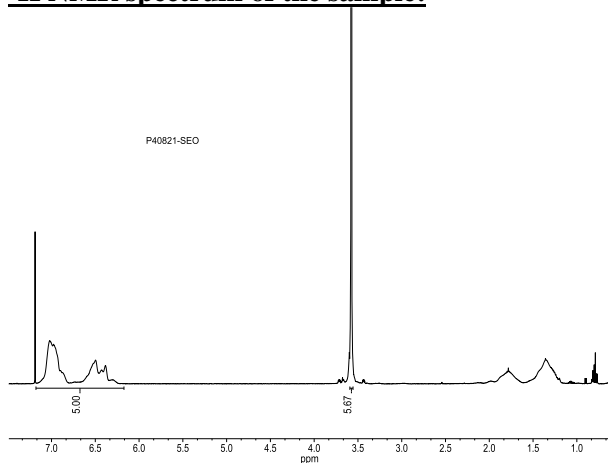
Characterization:

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:

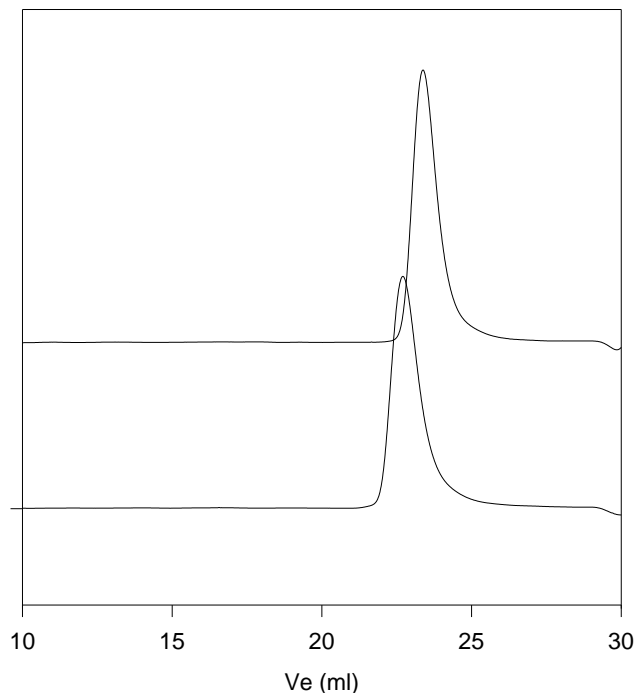
The polymer is soluble in THF (at 35 °C), CHCl₃, benzene, toluene, dioxane. Low molecular weight SEO with high contents of the polyethylene oxide block can also be solubilized in methanol and water.

¹H NMR spectrum of the sample:



SEC profile of the block copolymer:

P40821-SEO



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

—— Poly(styrene), M_n=12,500, M_w=13,600, PI=1.06
—— Block Copolymer PSt(12,500)-b-PEO(7,500), PI=1.09
The composition determined from HNMR.

Thermal analysis of the sample# P40821-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).

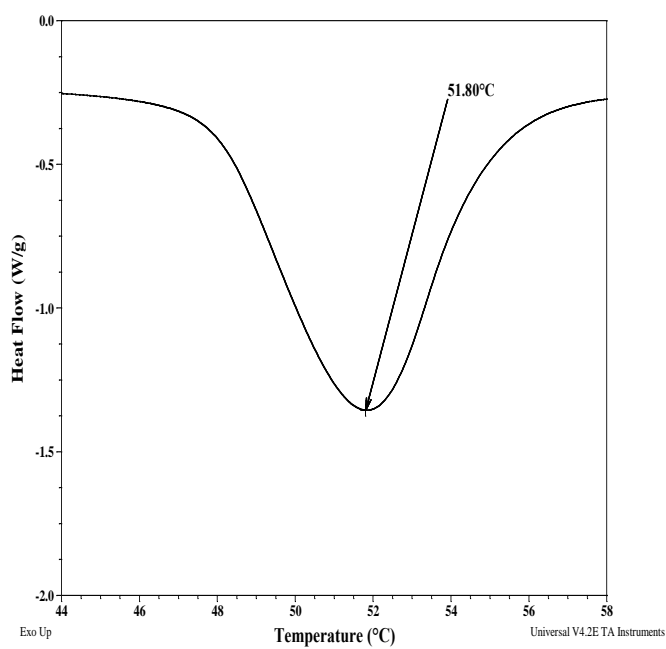
Thermal analysis results at a glance

For PS block T _g : 82 °C		
For PEO block		
T _g : Not distinct	T _m : 52 °C	T _c : 19 °C

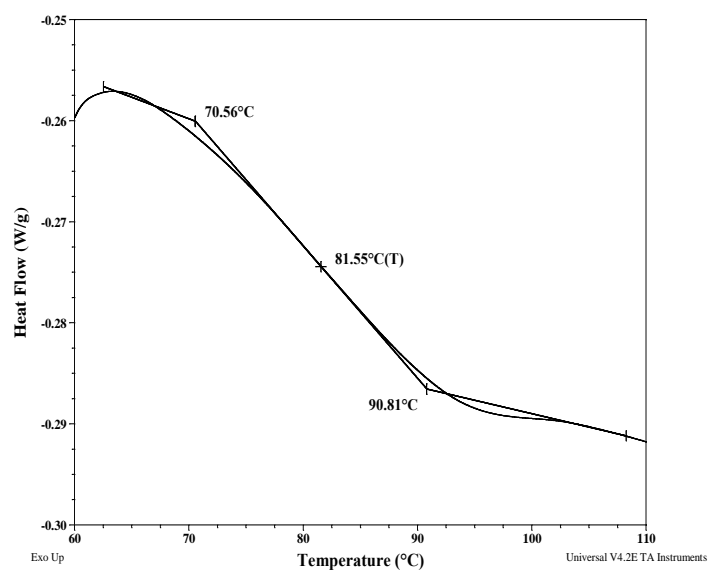
Melting and crystallization curve for the PEO block

The melting temperature (T_m) was taken as the maximum of the endothermic peak whereas the crystallization temperature (T_c) was considered as the minimum of the exothermic peak.

Melting curve for PEO block:



Thermogram for For PS block:



Crystallization curve for PEO block:

