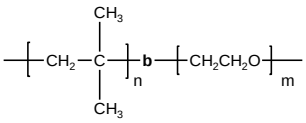
Sample Name: Poly(isobutylene -b- ethylene oxide)

Sample #: P9542a-IbEO

Structure:

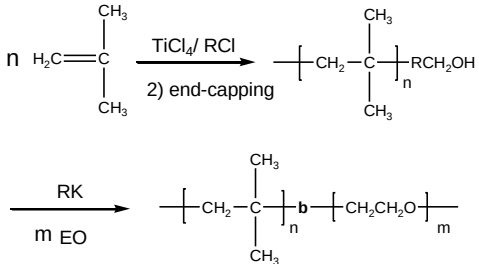


Composition:

Mn × 10^3 PIb-b-PEO	PDI
5.0-b-26.0	1.20

Synthesis Procedure:

Poly(isobutylene-b-ethylene oxide) is prepared by living anionic polymerization with sequence addition of ethylene oxide followed by propylene oxide. The scheme of the reaction is illustrated below:



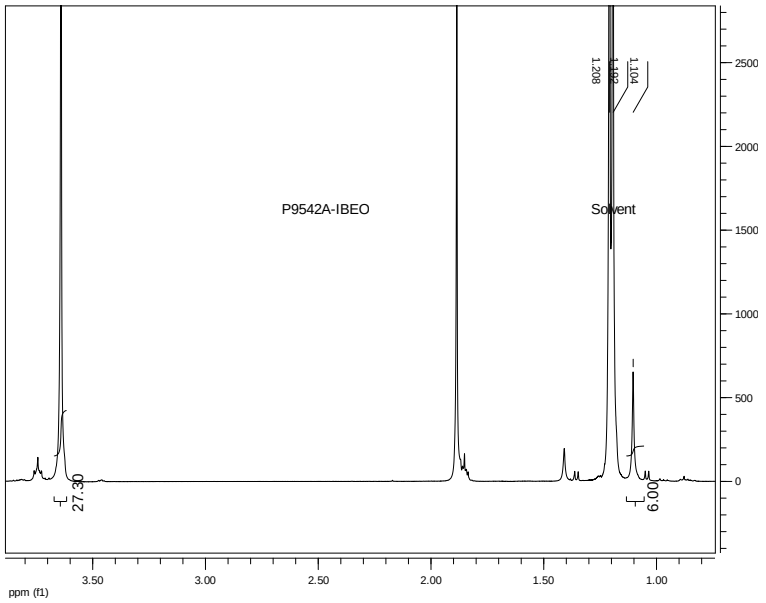
Characterization:

An aliquot of the poly(isobutylene) block was terminated before addition of ethylene oxide and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from ^{1}H-NMR spectroscopy by comparing the peak area of the isobutylene protons at about 1.1 ppm with the ethylene oxide protons at about 3.6 ppm.

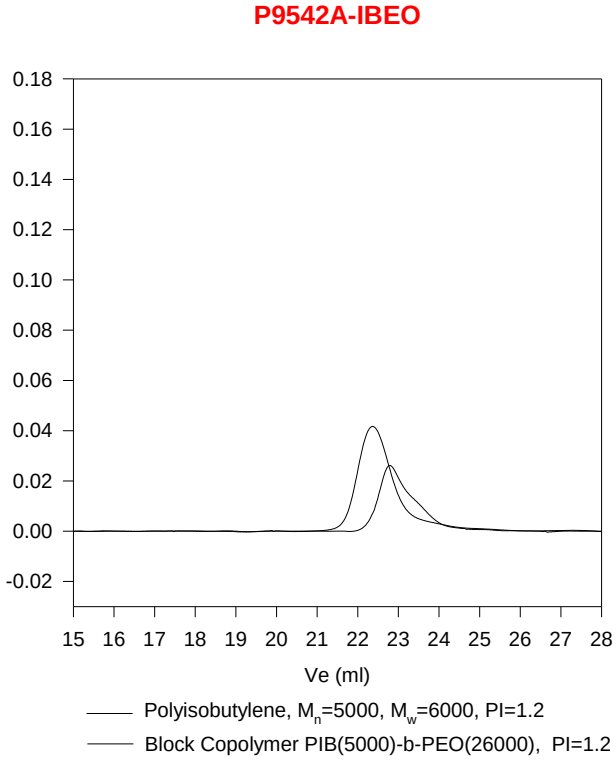
Solubility:

Poly(isobutylene -b- ethylene oxide) is soluble in CHCl3, THF, Dioxane, Toluene and precipitated in Hexane (cold) and ethanol (cold), ether.

^{1}H-NMR Spectrum of the block copolymer:



SEC of the block copolymer:



Thermal analysis of the sample# P9542a-IbEO

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).

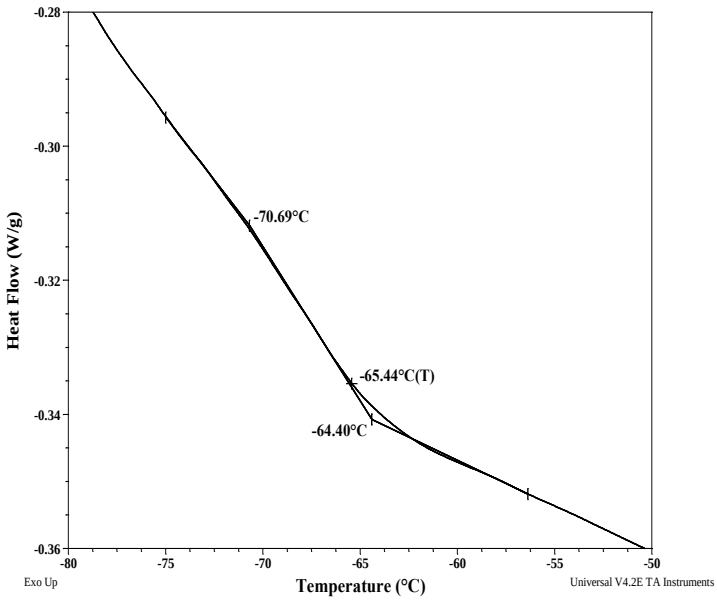
Melting and crystallization curve for the sample

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.

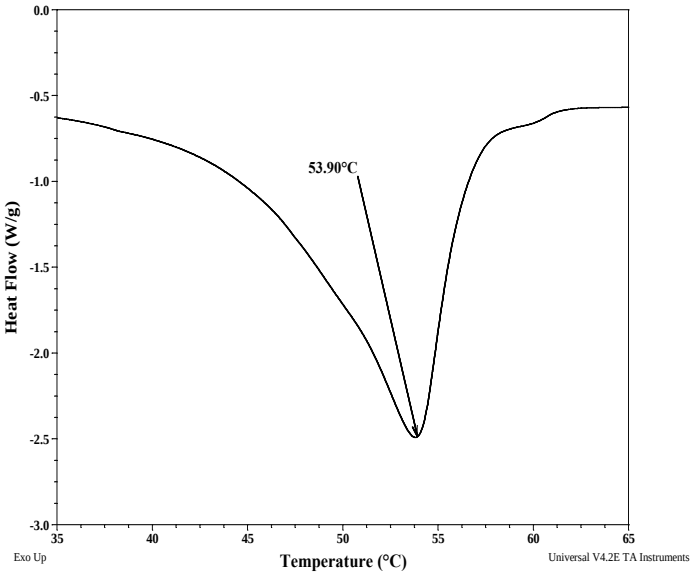
Thermal analysis results at a glance

Sample	T_m (°C)	T_c (°C)	T_g (°C)
EO	54	32	-65
Ib	-	-	Not distinct

Thermogram for the sample



Melting curve for PEO block:



Crystallization curve for PEO block: