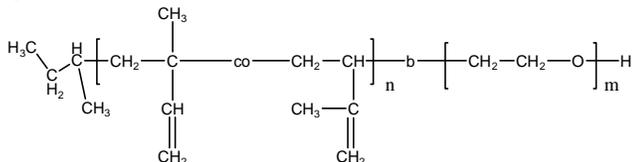


Sample Name: Poly(isoprene-b-ethylene oxide)

Sample #: P4125-IPEO

(polyisoprene block rich in 1,2- & 3,4-microstructure):

Structure:



Composition:

Mn x 10 ³ PIP-b-EO	Mw/Mn (PDI)
1.80-b-0.30	1.08

T _g for Ip block: -12°C	T _g for EO block: not distinct
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Synthesis Procedure:

Poly(Isoprene 1,4 addition or 1,2 addition)-b-ethylene oxide can be prepared by the different routes as reported in the literature (Ref: *Macromolecules* 1996, 29, 6994). The direct synthesis of diblock copolymer using lithium counter ion in the presence of **Phosphazene Base t-BuP₄** is interesting as reported in *Macromolecules*, **32** (8), 2783 -2785, 1999. These polymers can also be successfully synthesized using different end functionalized polymers as investigated in our laboratory which are proprietary.

Characterization:

OH terminated isoprene was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from ¹HNMR spectroscopy by comparing the peak area of the vinylic butadiene protons at about 5.4 ppm with the ethylene oxide protons at 3.6 ppm. Block copolymer PDI is determined by SEC.

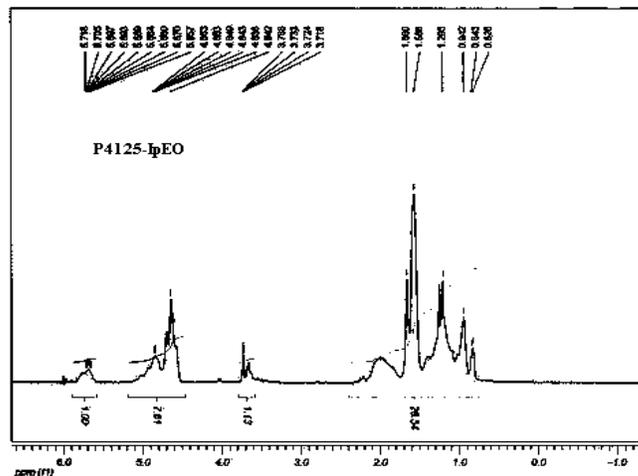
Thermal analysis:

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). 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.

Solubility:

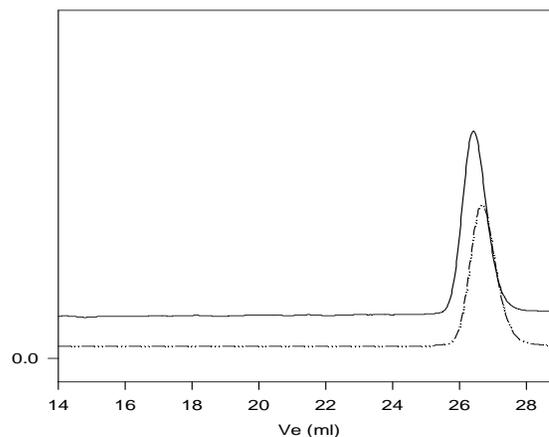
Poly(isoprene-b-ethylene oxide) is soluble in THF, CHCl₃, and toluene. The polymer has variable solubility in hexane, methanol, ethanol and water depending on its composition.

¹H NMR spectrum of the block copolymer:



SEC elugram of the block copolymer:

P4125
Poly isoprene rich in 1,2 and 3,4 addition



Size exclusion chromatography of poly(Isoprene-b-ethylene oxide):
— OH terminated polyisoprene (1,2 and 3,4 addition)
M_n=1800, M_w=2000, PI=1.09

DSC thermogram for polyisoprene block:

