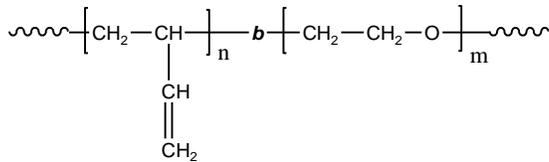


Sample Name: Poly(butadiene-b-ethylene oxide)
Poly butadiene rich in 1,2 microstructures

Sample #: P41337-BdEO

Structure:



Composition:

Mn x 10 ³ Bd-b-EO	Mw/Mn (PDI)	% 1,2 addition Butadiene
3.7-b-2.7	1.09	95%
Dp: of each block: 68-b-61		

Synthesis Procedure:

Poly(butadiene(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 the different end functionalized polymers as investigated in our lab. These methodologies are proprietary.

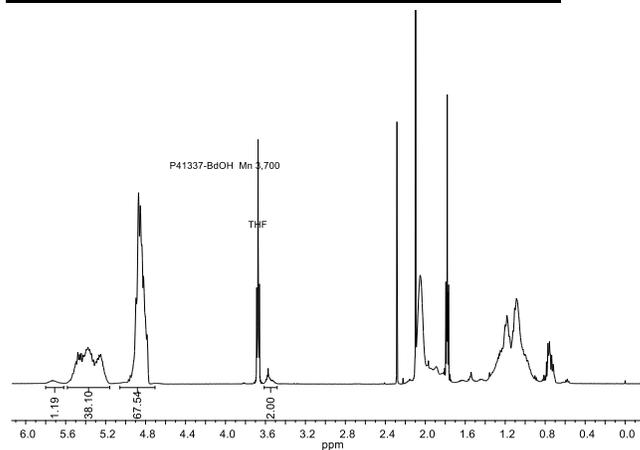
Characterization:

polybutadiene polymer was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from ¹H-NMR spectroscopy by comparing the peak area of the vinylic butadiene protons between about 5.0-5.4 ppm with the ethylene oxide protons at 3.6 ppm. Block copolymer PDI is determined by SEC. Note: The ¹H-NMR of 1,2-polybutadiene is composed of 1 proton signal at 5.4 ppm and 2 proton signals at 5.0 ppm. Signals due to vinylic 1,4-polybutadiene are also present at 5.4 ppm.

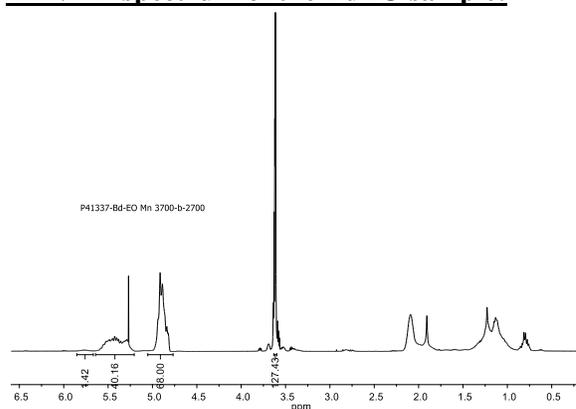
Solubility:

Poly(butadiene-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 BdOH terminated:

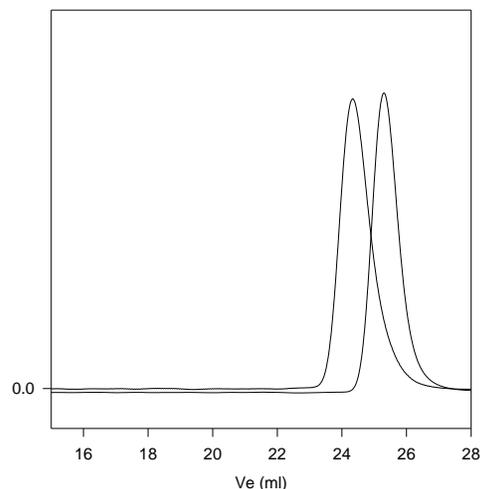


¹H NMR spectrum of the BdEO sample:



SEC profile of the block copolymer:

P41337-BdEO



Size exclusion chromatography of poly(butadiene-b-ethylene oxide):

- OH terminated 1,2 polybutadiene M_n=3,700, M_w=4,000, PI=1.09
- Block Copolymer PBd(3,700)-b-PEO(2,700), PI=1.09
(Chemical composition From ¹H-NMR)