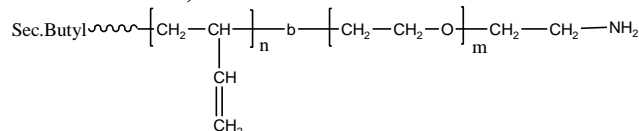


Sample Name: Amino end functionalized
Poly(butadiene-b-ethylene oxide)

Sample #: P10191A-BdEONH₂
(poly butadiene block rich in 1,2 microstructure)

Structure of 1,2-rich microstructure:



Composition:

Mn x 10 ³ Bd-b-EO	Mw/Mn (PDI)	% 1,2 addition Butadiene
1.2-b-0.6	1.09	95

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:

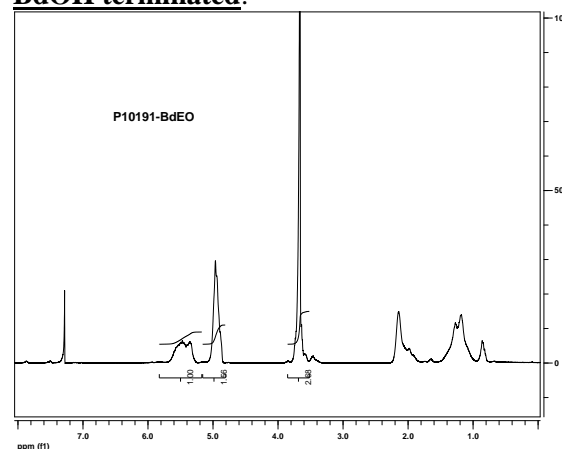
Polybutadiene polymer was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from ¹H-NMR spectroscopy by comparing the peak area of the vinylic butadiene protons between about 5.0-5.4 ppm 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:

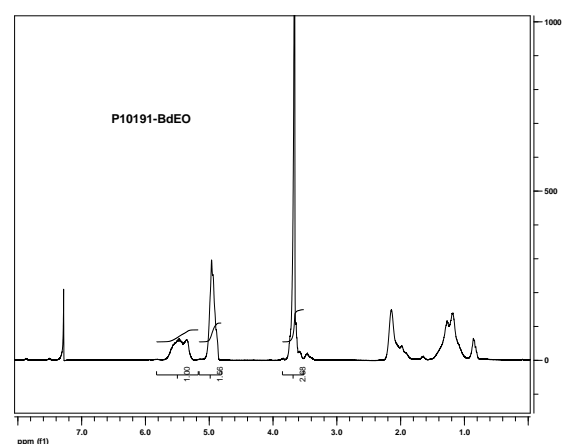
Amino end functionalized Poly(butadiene-b-ethylene oxide) is soluble in THF, CHCl₃, and toluene. The polymer has variable solubility in hexane, methanol, ethanol and water depending on its composition.

Titration: the degree of functionality was confirmed by titration with HClO₄ using crystal violet as the indicator.

¹H NMR spectrum of the sample at different steps:
BdOH terminated:

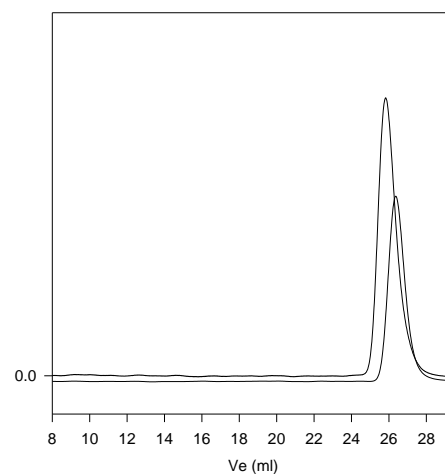


PBd-EO:



SEC profile of the BDEO before converting to NH₂ end functional group:

P10191-BdEO



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

— OH terminated 1,2 polybutadiene M_n=1200, M_w=1300, PI=1.09
— Block Copolymer PBd(1200)-b-PEO(600), PI=1.09
(Chemical composition From ¹H-NMR)