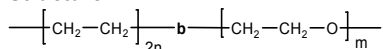


Sample Name:

Poly(ethylene -b- ethylene oxide)

Sample #: P4603A-EEO

Structure:

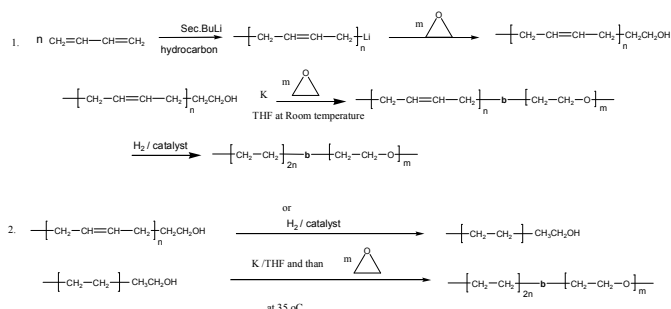


Composition:

Mn x 10 ⁻³ PE-b-PEO (k)	PDI
5.0-b-5.8	1.04

Synthesis Procedure: (this product is synthesized by route #1)

Poly(ethylene -b- ethylene oxide) is prepared by living anionic polymerization with sequence addition of butadiene followed by ethylene oxide and hydrogenation of the butadiene block after recovery of the polymer. or First preparation of OH terminated polyethylene followed by conversion to its potassium salt and then addition of ethylene oxide. The scheme of the reactions are illustrated below:



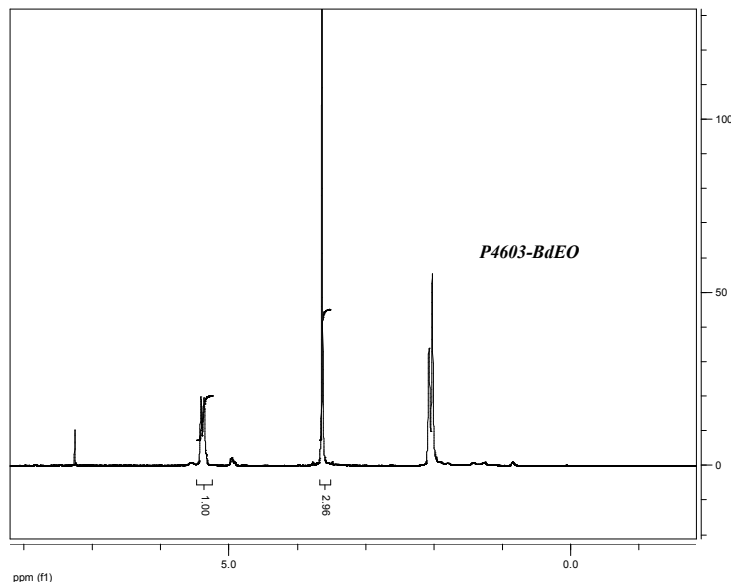
Characterization:

An aliquot of the anionic poly(butadiene) 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 ¹H-NMR spectroscopy before hydrogenation by comparing the peak area of the vinylic butadiene protons between about 5.0-5.4 ppm with the ethylene oxide protons at about 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 present at 5.4 ppm.

Solubility:

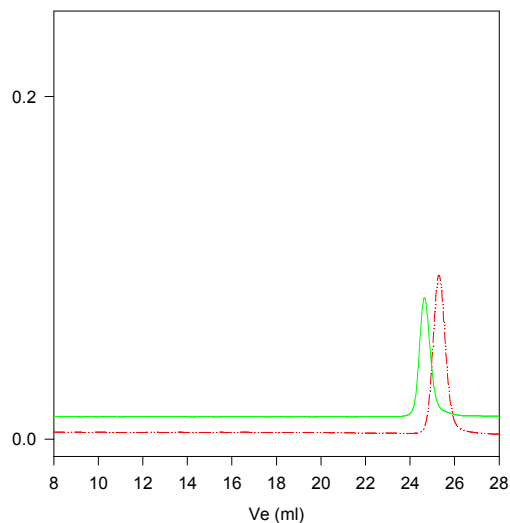
Polymer is soluble in hot THF, toluene and also in hot ethanol depending on the composition of ethylene block vs poly ethylene oxide block.

¹H NMR spectrum of the product:



SEC of the block copolymer:

**P4603-BdEO
Precursor for P4603A-EEO**



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

--- OH terminated 1,4 polybutadiene M_n=4800, M_w=5000 PI=1.03
— Block Copolymer PBd(4800)-b-PEO(5800), PI=1.04
(Composition from ¹H NMR)
After Hydrogenation of PEO block:
PE-b-EO 5000-b-5800 PI= 1.04