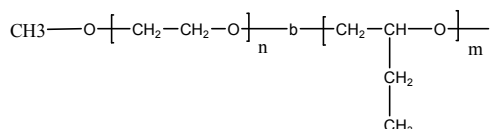


**Sample Name:** Poly(ethylene oxide-b-butylene oxide)

**Sample #:** P10220-EOBO

**Structure:**

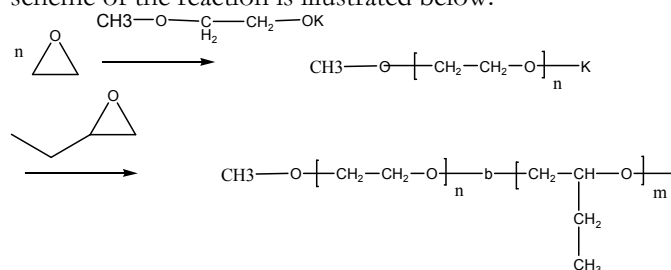


**Composition:**

$M_n \times 10^3$ PEO-b-PBO	PDI
1.9-b-0.240	1.05
In terms of Dp 43-b-3 units	

**Synthesis Procedure:**

Poly(ethylene oxide -b- butylenes oxide) is prepared by living anionic polymerization with sequence addition of ethylene oxide followed by butylene oxide or vice versa depending on the chemical compositions. The scheme of the reaction is illustrated below:



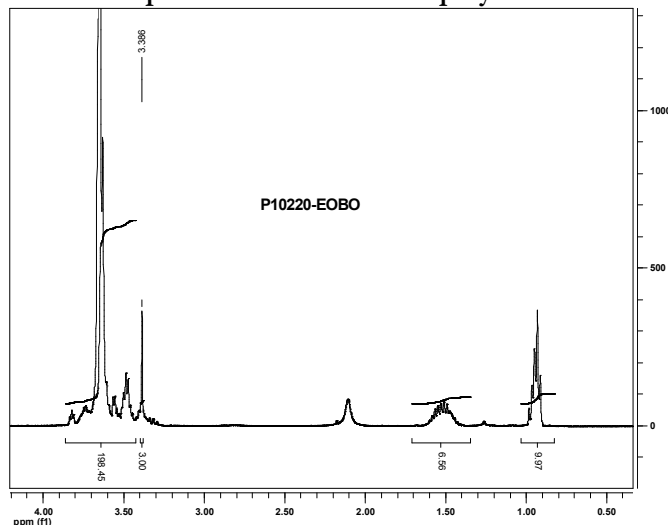
**Characterization:**

An aliquot of the anionic poly(ethylene oxide) block was terminated before addition of butylene 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  $^1\text{H}$ -NMR spectroscopy by comparing the peak area of the ethylene oxide protons at about 3.6 ppm with the butylene oxide protons ( $-(\text{CH}_3)$ ) at about 1.08 ppm.

**Solubility:**

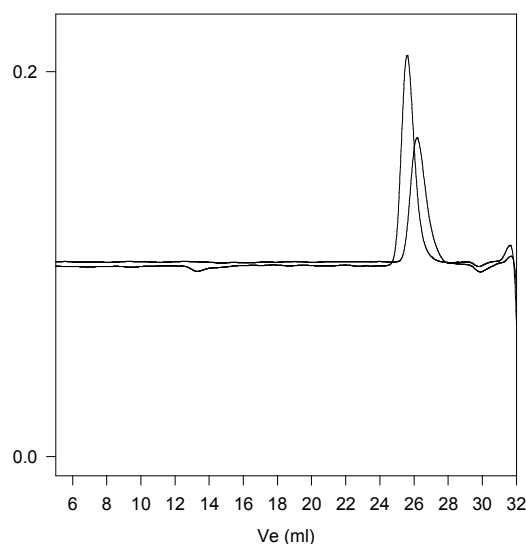
Poly(ethylene oxide -b- butylene oxide) is soluble in  $\text{CHCl}_3$ , THF and methanol ethanol. The polymer is precipitated out from hexane and ether if PEO chain is enough long.

**$^1\text{H}$ -NMR Spectrum of the block copolymer:**



**SEC of the block copolymer:**

**P10220-EOBO**



Size exclusion chromatography of poly(ethylene oxide-b-butylene oxide)

— PEO,  $M_n=1900$ ,  $M_w=2000$ ,  $M_w/M_n=1.07$

— Poly(ethylene oxide-b-butylene oxide)

Mn: PEO(1900)-b-PBO(240)  $M_w/M_n=1.05$

Degree of Polymn: PEO(43)-b-PBO(3) by NMR