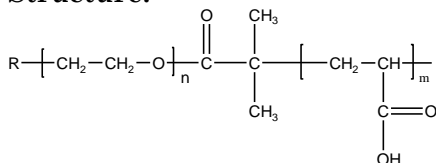


Sample Name:

## Poly(ethylene oxide -b- acrylic acid)

Sample #: P6351-EOAA

**Structure:**

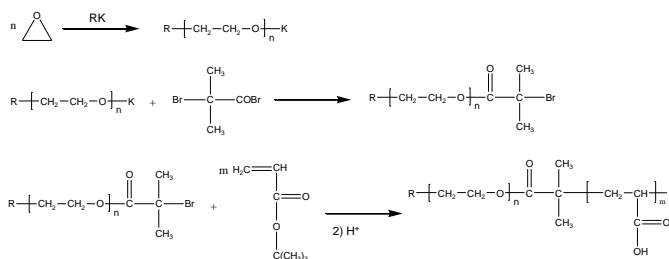


**Composition:**

Mn x 10 <sup>3</sup> PEO-b-PAA (k)	PDI
2.0-b-5.0	1.70

**Synthesis Procedure:**

Poly(ethylene oxide -b- acrylic acid) is prepared by living anionic polymerization of ethylene oxide and controlled radical polymerization of-butyl acrylate followed by hydrolysis of the t-butyl group. The scheme of the reaction is illustrated below:



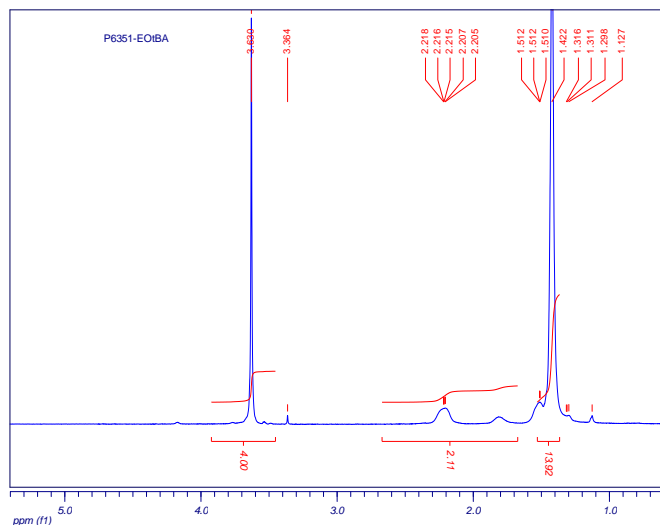
**Characterization:**

An aliquot of the anionic poly(ethylene oxide) block was terminated before addition of t-butyl acrylate and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from <sup>1</sup>H-NMR spectroscopy by comparing the peak area of the ethylene oxide protons at about 3.6 ppm with the t-butyl protons (before hydrolysis) at about 1.43ppm.

**Solubility:**

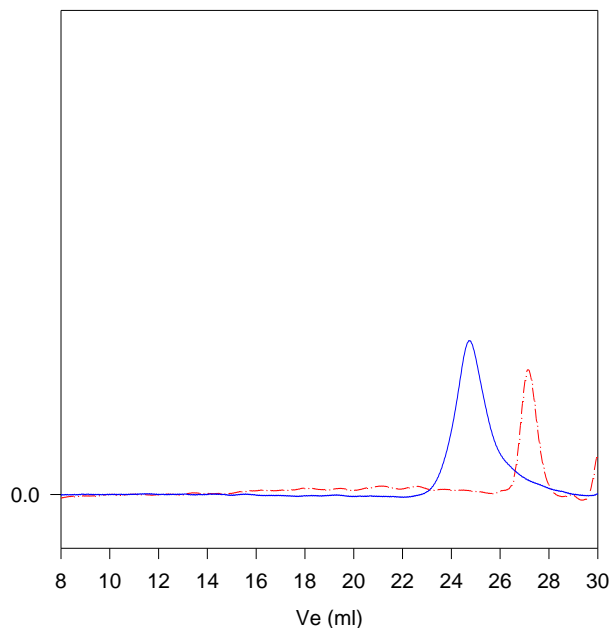
Poly(ethylene oxide -b- acrylic acid) is soluble in water and methanol. It precipitates from hexanes, ether and acetone, dependant on the composition.

## <sup>1</sup>H-NMR Spectrum of the block copolymer:



## SEC of the block copolymer:

**P6351-EOtBA**  
**(Precursor of P6351-EOAA)**



Size exclusion chromatography of poly(EO-b-tBA)

--- PEO, Mn=2000, Mw=2100, Mw/Mn=1.05

— Poly(ethylene oxide-b-tert-butylacrylate)

Mn: PEO(2000)-b-PtBA(9000) Mw/Mn=1.70

After hydrolysis: PEO(2000)-b-PAA(5000)