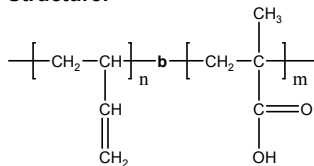


Sample Name: Poly(1,2-butadiene -b- methacrylic acid)

Sample #: P2342-BdMAA

Structure:

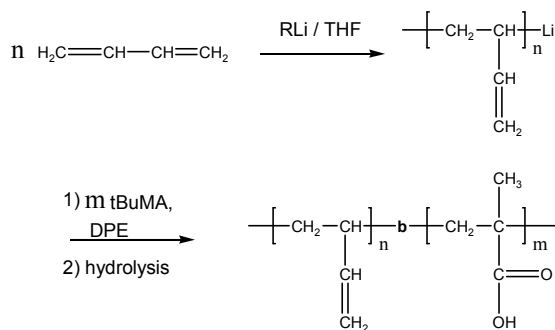


Composition:

Mn x 10 ³ PBd-b-MAA	PDI
88.0-b-192.0	1.16

Synthesis Procedure:

Poly(1,2-butadiene -b- methacrylic acid) is prepared by living anionic polymerization with sequence addition of butadiene followed by t-butyl methacrylate and hydrolysis of the t-butyl group. The scheme of the reaction is illustrated below:



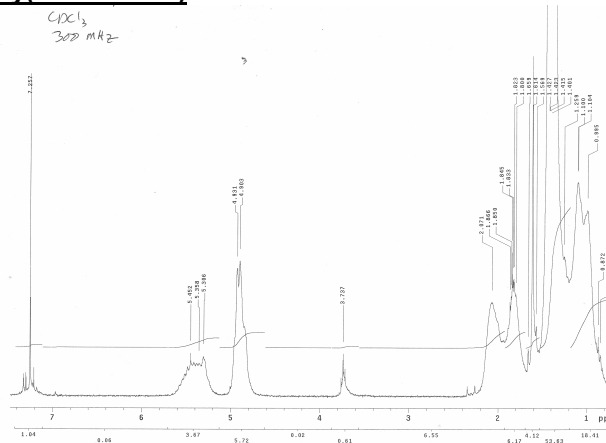
Characterization:

An aliquot of the anionic poly(butadiene) block was terminated before addition of t-butyl methacrylate 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 by comparing the peak area of the vinylic butadiene protons between about 5.0-5.4 ppm with the t-butyl methacrylate protons at 1.43 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.

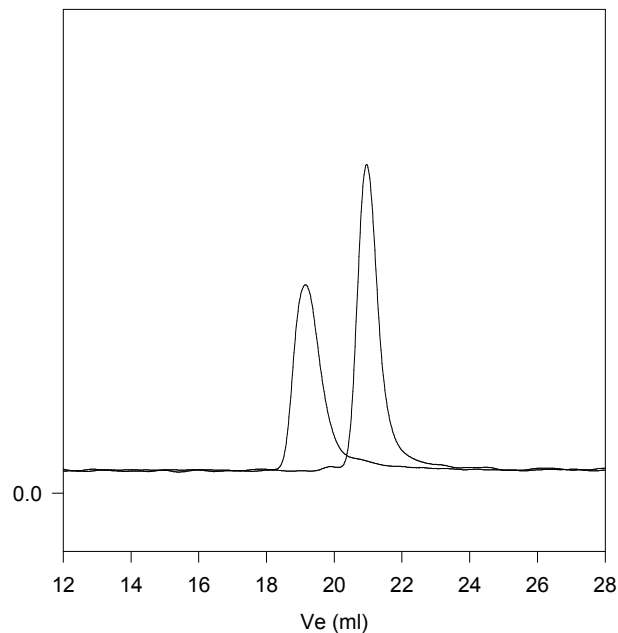
Solubility:

Poly(butadiene -b- methacrylic acid) is soluble in THF, dioxane.

¹H-NMR Spectrum of the block copolymer: Poly(bd-btBuMA)



SEC of the block copolymer: P2342-BdtBuMA



SEC profile of the polymer:

— Polybutadiene block, M_n=88000, M_w=93300, PI=1.06

— Diblock Copolymer PBd(88000)-b-PtBuMA(316400), PI=1.08
Final molecular weight from Light scattering:
After The Hydrolysis of tert.butyl ester: Mn: 88000-b-192000