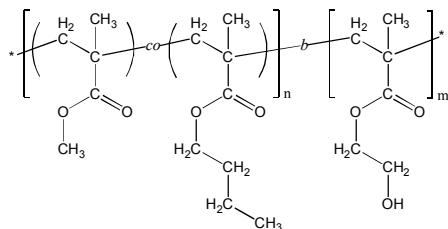


Sample Name:

**Poly(methyl methacrylate-*co*_(random)-n-butyl methacrylate)
-*block*-poly(2-hydroxyethyl methacrylate)**

Sample #: P10596-MMA_nBuMA_ran-b-HEMA**Structure:****Composition:**

$M_n \times 10^{-3}$ (g/mol)	22.0- <i>b</i> -14.5
M_w/M_n	1.5
Molar ratio MMA : nBuMA	60 : 40 (mol/mol)
Weight ratio MMA:nBuMA:HEMA	31 : 29 : 40 (wt%)
T_g (MMA _n BuMA)	65 °C
T_g (HEMA)	112 °C

Synthesis Procedure:

Poly([methyl methacrylate-*co*-n-butyl methacrylate]-*b*-2-hydroxyethyl methacrylate) block copolymer was synthesized by living anionic polymerization. First, methyl methacrylate (MMA) and n-butyl methacrylate (n-BuMA) were co-polymerized; and then 2-[trimethylsilyloxy]ethyl methacrylate (hydroxyprotected HEMA monomer) was added. The obtained block copolymer was precipitated in acidic methanol solution to deprotect the hydroxyl group.

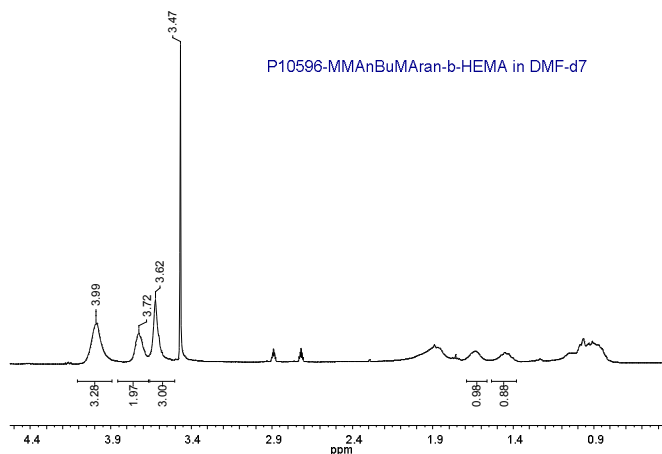
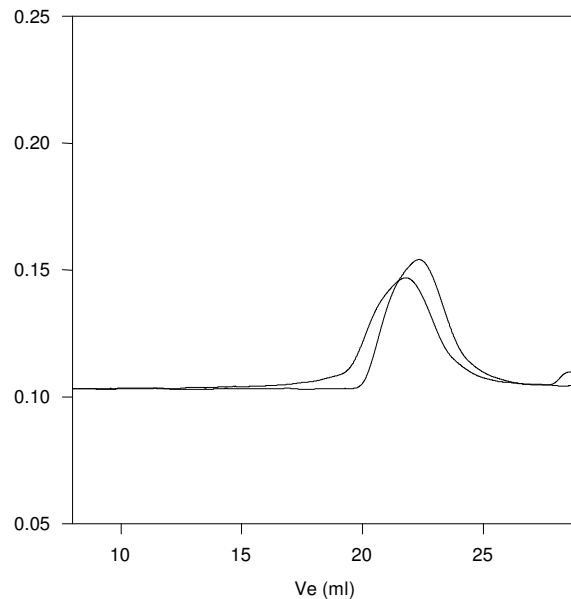
Solubility: The polymer is soluble in THF, DMF.

Characterization:

The polymer composition was determined by ^1H NMR. MMA:nBuMA molar ratio was calculated by comparing the integration of the $-\text{OCH}_2-$ protons of nBuMA (at $\delta = 3.9$ ppm) to the integration of methoxy group of MMA (at $\delta = 3.6$ ppm). Molecular weight of the second (HEMA) block was calculated by comparing the integration of $-\text{OCH}_2-$ protons of HEMATMS to the integration of methoxy group of MMA and using SEC data for the first (MMA_nBuMA) block.

The average molecular weight and polydispersity index were determined by size exclusion chromatography (SEC). For SEC analysis, the MMA_nBuMA-*b*-HEMA block copolymer can be treated with acetic anhydride in presence of pyridine to convert the hydroxy-groups to acetate groups.

Thermal analysis of the sample was done on a TA Q100 differential scanning calorimeter (DSC) at a heating rate of 10°C/min. The glass transition temperature (T_g) was determined as a midpoint of step change in heat flow curve for the second heating scan.

 ^1H NMR of MMA_nBuMA_ran-b-HEMA diblock copolymer:**SEC of MMA_nBuMA_ran and MMA_nBuMA_ran-b-HEMATMS:****P10596-MMA_nBuMA_ranHEMA**

Size exclusion chromatography of

1. Poly MMA_nBuMA_ran: M_n 22,000 M_w : 35,000 M_w/M_n 1.6

Poly MMA_nBuMA_ran-b-HEMATMS: M_n 22,000 -*b*-22,500 M_w/M_n 1.5

After Deprotection : MMA_nBuMA_ran-b-HEMA M_n 22,000-*b*-14,500

It shows no micellization in THF