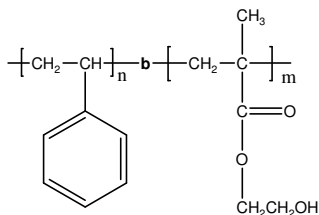


Sample Name:

Poly(styrene-b-hydroxyethyl methacrylate)

Sample #: **P13127-SHEMA**

Structure:



Composition:

Mn $\times 10^3$ S-b-HEMA	Mw/Mn (PDI)
7.0-b-24.5	1.25

Synthesis Procedure:

Poly(styrene-b-hydroxy ethyl methacrylate) is prepared by living anionic polymerization by sequence addition of styrene followed by trimethylsiloxy ethyl methacrylate (HEMA-TMS) and deprotection of the OH group.

Characterization:

An aliquot of the polystyrene block was terminated before addition of trimethylsiloxy ethyl methacrylate and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI).

SEC analysis of the obtained block copolymer in THF in presence of triethyl amine as eluent resulting in an ambiguity of the result because some of the trimethylsiloxy ethyl methacrylate units are deprotected to convert hydroxy ethyl methacrylate.

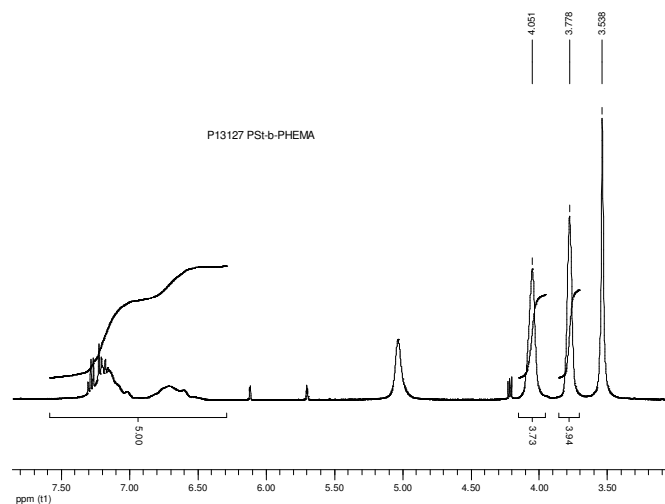
The SEC analysis of the final polymer is carried out after protecting OH groups of hydroxy ethyl methacrylate to acetate group was treated with acetic anhydride in presence of pyridine. The SEC analysis of the obtained polymer gives more reliable results.

The final block copolymer composition by $^1\text{H-NMR}$ spectroscopy in CdCl_3 also yield the uncertainty of the analysis because of poor solubility of poly HEMA block in CdCl_3 . The composition of the obtained polymer therefore, carried out in CdCl_3 after protecting the OH group with acetic anhydride by comparing the peak area of the styrene protons at 6.3-7.2 ppm with the peak area of ethyl methacrylate at 4.2-4.17 ppm. Block copolymer PDI is determined by SEC.

Solubility:

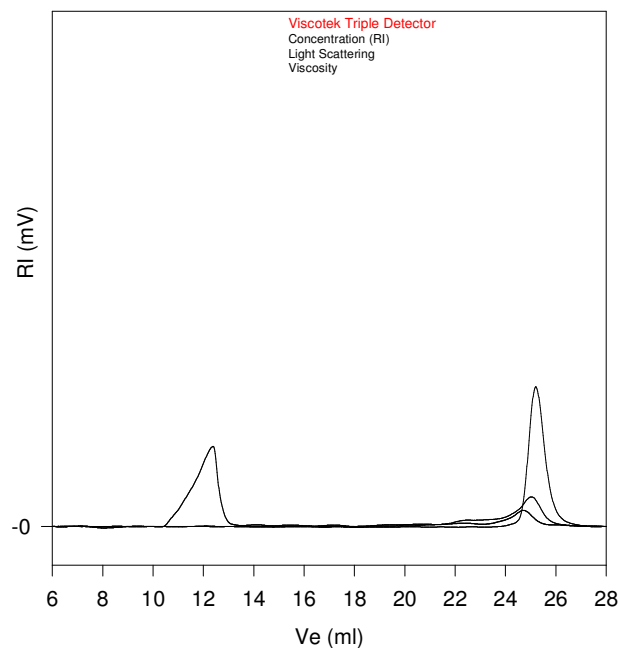
Poly(styrene-b-hydroxyethyl methacrylate) is soluble in DMF, and precipitated into hexanes.

^1H NMR spectrum of the Polymer in DMF:



SEC elugram of the block copolymer:

P13127-SHEMA



Size Exclusion Chromatography of the product
PS Mn : 7000 Mw/Mn 1.10

— PS-b-PHEMA-TMS: $M_n = 7000$ -b- 37500 $M_w/M_n = 1.25$
After deprotection of OH: PS-b-HEMA: 7000-b-24000
After deprotection completely HEMA TMS to HEMA the product shows micellization