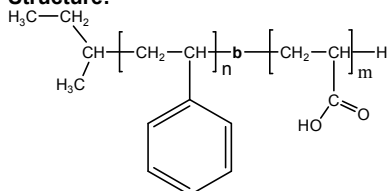


Sample Name: Poly(styrene -b- acrylic acid)

Sample #: P18029A-SAA

Structure:



Composition:

Mn x 10 ³ PS-b-PAA	PDI
19.5-b-2.3	1.10

Synthesis Procedure:

Poly(styrene-b-acrylic acid) is prepared by living anionic polymerization with sequence addition of styrene followed by t-butyl acrylate and hydrolysis of the t-butyl group.

Characterization:

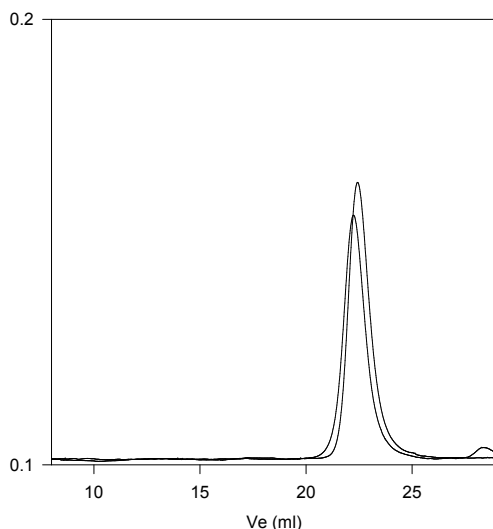
An aliquot of the polystyrene block was terminated before addition of t-butyl acrylate and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The hydrolysis of the tert. butyl ester to acid was followed by FT-IR spectroscopy by disappearance of characteristic absorbance at 1362cm⁻¹ of tert.butyl group.

Solubility:

Poly(styrene-b-acrylic acid) is soluble in THF, dioxane and also in methanol (depending on the compositions with a short segment of polystyrene with long segment of poly acrylic acid). The polymers is precipitated out from ether, hexane.

SEC for the sample :

P18029A-StBuA



Size exclusion chromatography of polystyrene-b-poly(t-butyl acrylate)

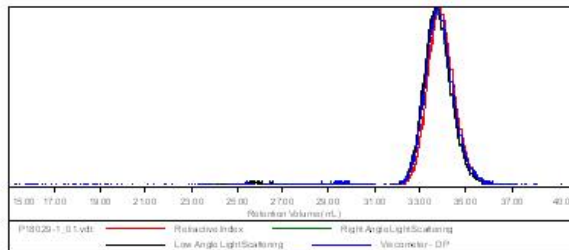
— Polystyrene, M_n=19,500, PI=1.05

— Block Copolymer PS(19,500)-b-PtBuA(4,000), PI=1.10

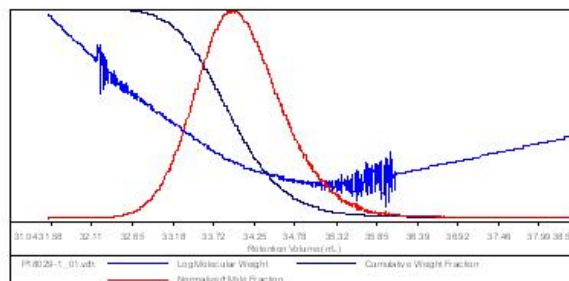
After Hydrolysis of tert.butyl ester Ps-b-AA Mn : 19,500-b-2300 Mw/Mn 1.10

Sample ID: P18029A-S

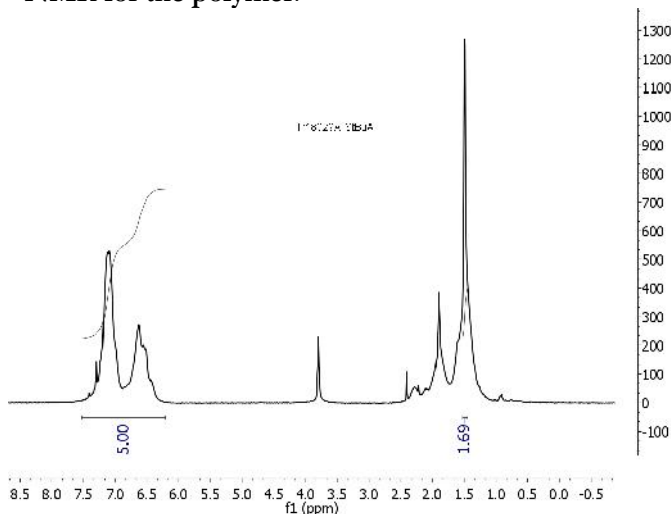
Concentration (mg/mL)	2.9418
Sample dilution (mL/g)	0.1950
Method File	PSS801-4May-2013-0000.vcm
Column Set	3x PL 1113-6300
System	System 1



Sample	Mn	Mw	Mp	Mw/Mn	IV
P18029-1_01.txt	19,620	20,725	19,792	1.056	0.4003



¹H NMR for the polymer:



References for further information:

1. S. K. Varshney, R. Fayt, Ph. Teyssie, and J.P. Hautekeer US Patent 5,264,527 (1993)
2. Ph. Teyssie, R. Fayt, S. K. Varshney, and C. Jacobs Eur. Pat. Appl., Jan 16, 1991 Eur.Pat.408420 Patent Assignees- Atochem S.A France. CA. Vol 114, 26, 247998." Star Block Copolymers based on Acrylates and Methacrylates and their Manufacture process".
3. Ph.Teyssie, R. Fayt, and S. K. Varshney, Eur. Pat. Appl. Dec. 12, 1990. Eur. Pat.402204 Patent Assignees-Norsolor S.A. France. CA Vol 114, 20, 186314."Catalyst for the the Anionic Living Polymerization (Meth)acrylates".