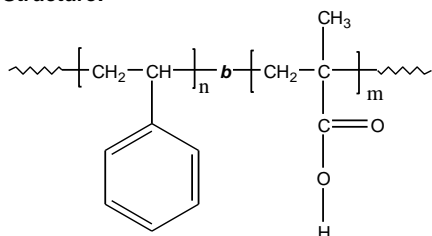


**Sample Name:** Poly(styrene-*b*- methacrylic acid)

**Sample #:** P11069-SMAA or their salt

**Structure:**

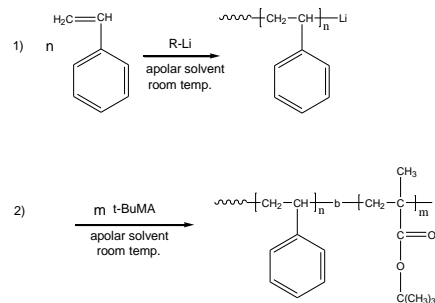


**Composition:**

Mn x 10 <sup>3</sup> PS- <i>b</i> -PMAA	PDI
55.0- <i>b</i> -78.0	1.10

**Synthesis Procedure:**

Poly(styrene-*b*- methacrylic acid) is prepared by living anionic polymerization with sequence addition of styrene followed by *t*-butyl methacrylate. The obtained polymer is hydrolysed in the presence of acid as catalyst. The reaction scheme is shown below:



3. Hydrolysis of tert.butyl ester:  $\longrightarrow$  PSt-*b*-Methacrylic acid

**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 final block copolymer composition was calculated from <sup>1</sup>H-NMR spectroscopy or on line SEC with light scattering detectors. Block copolymer PDI is determined by SEC.

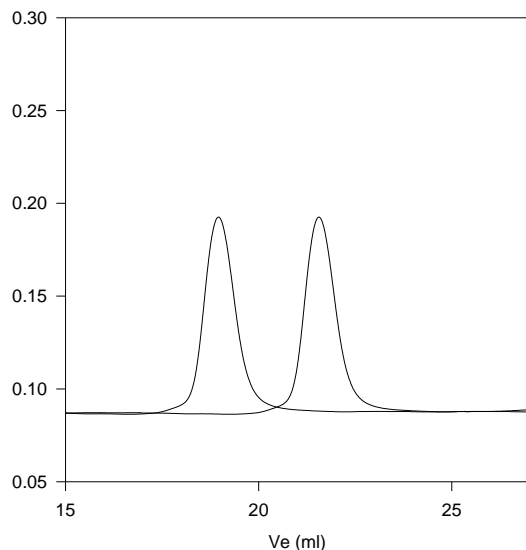
The hydrolysis of the tert. butyl ester to acid was followed by FT-IR spectroscopy by disappearance of characteristic absorbance at 1362cm<sup>-1</sup> of tert.butyl group.

**Solubility:**

Poly(styrene-*b*-methacrylic 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 meth acrylic acid). The polymers is precipitated out from ether, hexane.

**SEC of the block copolymer:**

**P11069-StBuMA**



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

— Polystyrene, M<sub>n</sub>=55,000, M<sub>w</sub>=61,000, PI=1.10

— Block Copolymer PS(55,000)-*b*-PtBuMA(115,000), PI=1.10  
After Hydrolysis of tert.BuMA ester  
Mn 55,000-*b*-MAA(78,000) Mw/Mn 1.10

**H NMR:**

