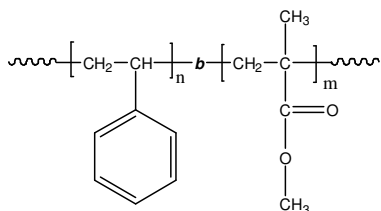


Sample Name: Poly(styrene-*b*-methyl methacrylate)
[poly(methyl methacrylate) is >78% syndiotactic]

Sample #: P10124-SMMA

Structure:



Composition:

Mn x 10 ³ (S- <i>b</i> -MMA)	PDI
66.0- <i>b</i> -62.5	1.09
T _g (PS block):	107°C
T _g (PMMA block):	129°C

Synthesis Procedure:

Poly(styrene-*b*-methyl methacrylate) was prepared by living anionic polymerization in THF at -78 °C using cumyl potassium initiator in presence of LiCl. Polystyrene macroanions were end-capped with a diphenyl ethylene (DPE) before adding methylmethacrylate (MMA) monomer. For further details please see our published articles.¹⁻⁴

Characterization:

An aliquot of the anionic polystyrene block was terminated before addition of MMA 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 poly(methyl methacrylate) protons (-OCH₃ at 3.6ppm) with aromatic protons of polystyrene (at 6.3–7.2 ppm).

Thermal analysis of the samples was done on TA Q100 differential scanning calorimeter (DSC) at a heating rate of 10°C/min shortly after creating a thermal history of the sample.

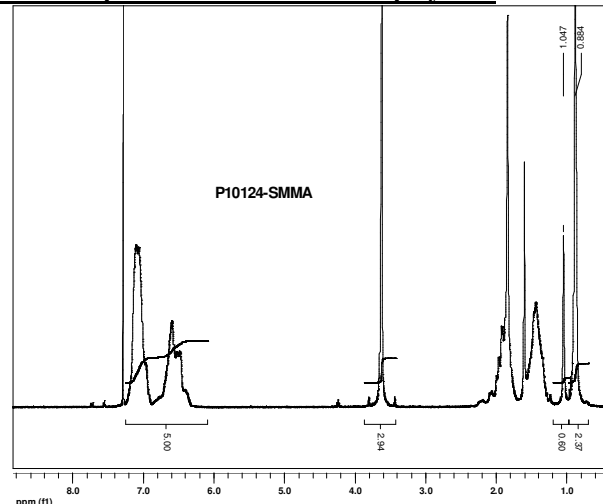
Solubility: Poly(styrene-*b*-methyl methacrylate) is soluble in chloroform, THF, toluene, dioxane; and it precipitates from methanol, ethanol, hexanes, and water.

References:

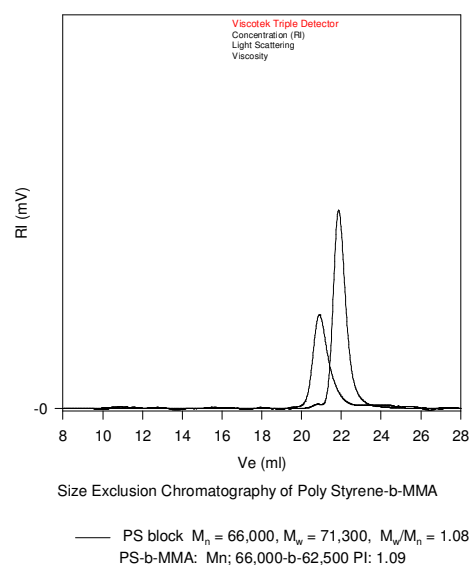
1. S. K. Varshney, R. Fayt, Ph. Teyssie, J.P. Hautekeer. US Patent 5,264,527 (1993)
2. Ph. Teyssie, Ph. Bayard, R. Jerome, S. K. Varshney, J. S. Wang. 35th IUPAC International Union of Pure & Applied Chemistry International Symposium on Macromolecules, 1994, 67.
3. Ph. Teyssie, R. Fayt, J. P. Hautekeer, C. Jacobs, R. Jerome, L. Leemans, S. K. Varshney. *Makromolekular Chemie, Macromol. Symp.*, 1990, 32, 61-73.

4. S. K. Varshney, J. P. Hautekeer, R. Fayt, R. Jerome, Ph. Teyssie. *Macromolecules*, 1990, 23, 2618-2622.

¹H-NMR spectrum of the diblock copolymer:



SEC elugrams of PS block and PS-PMMA in THF:
P10124-SMMA



DSC thermogram of the diblock copolymer:

