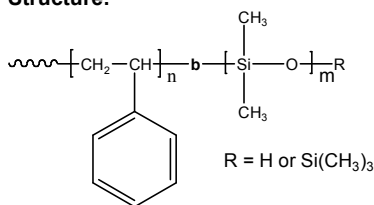


Sample Name:

Poly(styrene-b-dimethyl siloxane)

Sample #: P7518-SDMS (R=(Si(CH₃)₃))

Structure:



Composition:

Mn x 10 ³ S-b-DMS	Mw/Mn (PDI)
31.0-b-10.5	1.25

Synthesis Procedure:

Poly(styrene-b-dimethyl siloxane) is prepared by living anionic polymerization with sequence addition of styrene followed by hexamethyl cyclotrisiloxane. For the details please see the references.

Characterization:

An aliquot of the polystyrene block was terminated before addition of hexamethyl cyclotrisiloxane 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 styrene protons at 6.3-7.2 ppm with the peak area of siloxane protons near 0.13 ppm. Block copolymer PDI is determined by SEC.

Solubility:

Poly(styrene-b-dimethyl siloxane) is soluble in CHCl₃, toluene, THF.

¹H NMR spectrum of the sample

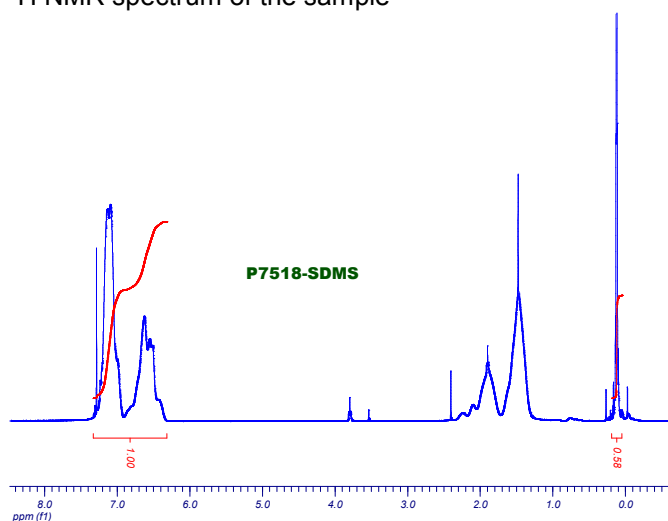
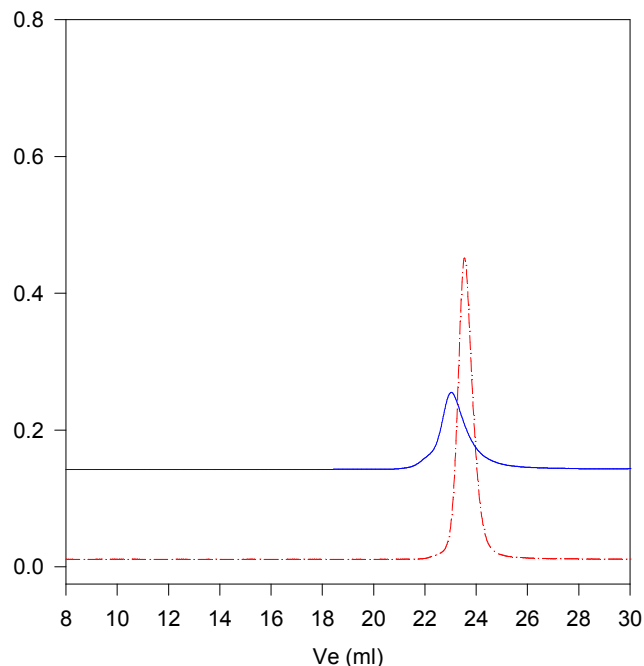


Figure: SEC profile of the block copolymer

P7518-SDMS



Size exclusion chromatography of poly(styrene-b-dimethylsiloxane)

--- Polystyrene, M_n=31000, M_w=33000, M_w/M_n=1.06

— Poly(styrene-b-dimethylsiloxane)

M_n: PS(31000)-b-PDMS(10500) M_w/M_n=1.25

References:

A) S. K. Varshney, D. N. Khanna "Hexamethylcyclotrisiloxane-Styrene Block Copolymers and their Chemical Composition" *CA Vol. 093*, 26, 240325. *J. Appl. Polym. Sci.*, 1980, 25, 2501-2511. B) P. Bajaj, S. K. Varshney, "Morphology and Properties of Poly(Dimethylsiloxane-b-Styrene-b-Dimethylsiloxane) Polymers" *CA Vol. 093*, 02, 008652, *Polymer*, 1980, 21, 201-206. (C) S. K. Varshney, C. L. Beatty "Synthesis and Characterization of Polymethylmethacrylate and Polydimethylsiloxane Block Copolymers Polymerizes with an Organometallic Initiator" *Org. Coat. Appl. Polym. Sci.*, 1981, 45, 151-157. d) S. K. Varshney, C. L. Beatty, and P. Bajaj "Morphology and Properties of Styrene and Dimethylsiloxane Triblock and Multiblock Copolymers" *CA Vol. 098*, 139, 017855, *Am. Chem. Soc. Polym. Prepr.*, 1981, 22, 321-323.