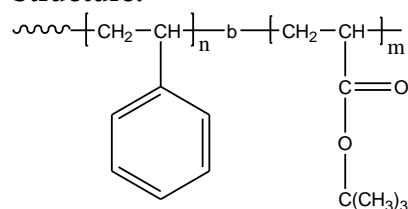


Sample Name: Poly(styrene-b-t-butyl acrylate)

Sample #: P1385-SBuA

Structure:



Composition:

Mn x 10 ³ S-b-tBuA	PDI
36.0-b-8.0	1.05

Synthesis Procedure:

Poly(styrene-b-t-butyl acrylate) is prepared by living anionic polymerization with sequence addition of styrene followed by t-butyl acrylate.

Characterization:

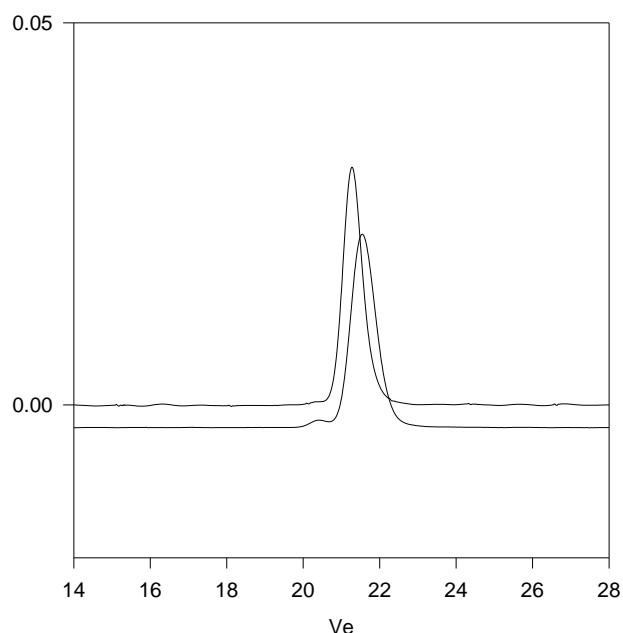
An aliquot of the polystyrene block was terminated before addition of methyl acrylate and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from ¹H-NMR spectroscopy by comparing the peak area of the styrene protons at 6.3-7.2 ppm with the peak area of t-butyl acrylate protons at 1.43 ppm. Block copolymer PDI is determined by SEC.

Solubility:

Poly(styrene-b-t-butyl acrylate) is soluble in CHCl₃, THF, dioxane, toluene and precipitated out from methanol/water.

SEC of the block copolymer:

P1385-StBuA



Size Exclusion Chromatography :

—— Polystyrene, M_n=36000, M_w=38200, M_w/M_n=1.06

—— Block Copolymer PS(36000)-b-PtBuA(8000), M_w/M_n=1.05

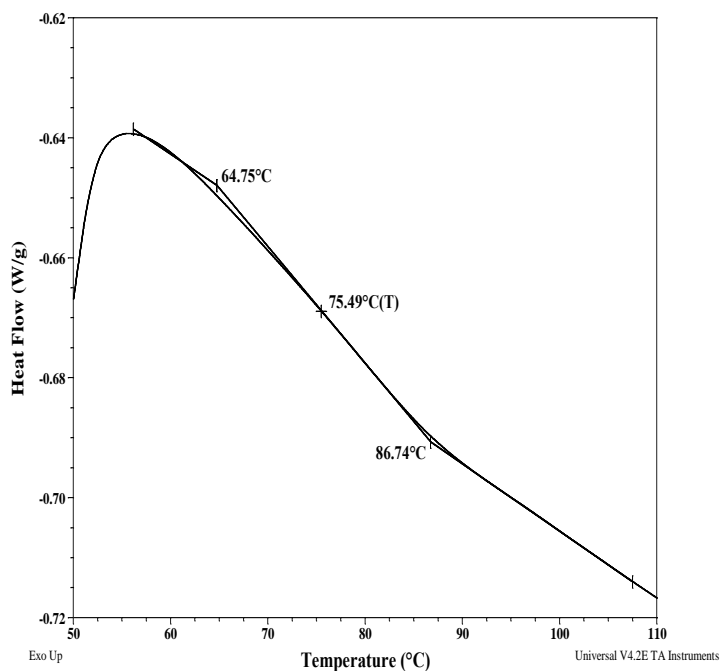
References for further information:

1. S. K. Varshney, R. Fayt, Ph. Teyssie, and J.P. Hautekeer US Patent 5,264,527 (1993)
2. Ph. Teyssie, R. Fayt, J. P. Hautekeer, C. Jacobs, R. Jerome, L. Leemans and S. K. Varshney *Makromolekular Chemie, Macromol. Symp.*, 1990, 32,61-73.
3. S. K. Varshney, J. P. Hautekeer, R. Fayt, R. Jerome, and Ph.Teyssie *Macromolecules*, 1990, 23, 2618-2622.
4. R. Jerome, R. Forte, S. K. Varshney, R. Fayt, and Ph. Teyssie "The Anionic Polymerization of Alkylacrylates:A Challenge" in the Recent Advances in Mechanistic and Synthetic Aspects of Polymerization: M. Fontanille and A. Guyot Ed., NATO ASI Series C 215,101 (1987), CA Vol. 108, 12, 094992.

Thermal analysis of sample P1385-StBuA

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

Thermogram of PS block:



Glass transition temperature at a glance

T_g for PS block	75°C
T_g for tBuA block	30°C

Thermogram for tBuA block

