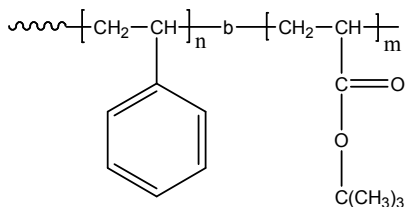


Sample Name: Poly(styrene-b-t-butyl acrylate)

SEC of the block copolymer:

Sample #: P1378-SBuA

Structure:



Composition:

| | |
|---------------------------------|------|
| Mn x 10 ³ S-b-BuA | PDI |
| 4.5-b-13.5 | 1.08 |

Synthesis Procedure:

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

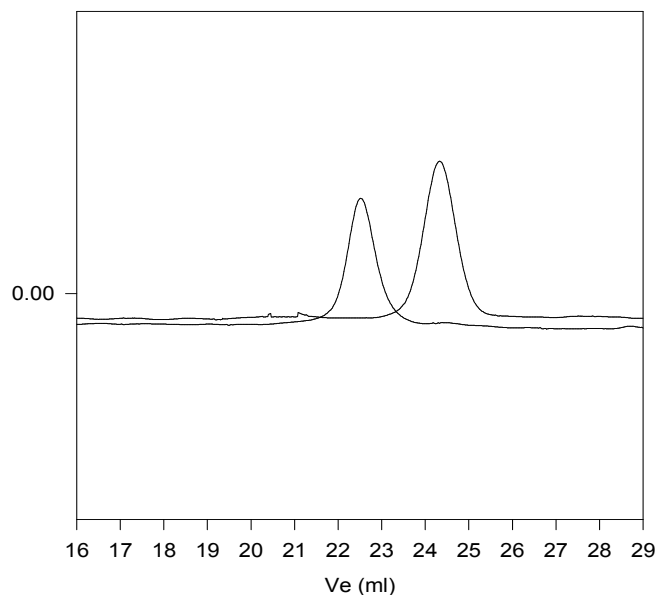
Characterization:

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 CH₂Cl₂, THF, Dioxane toluene and precipitated out from methanol/water.

P1378-StBuA



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

—— Polystyrene, M_n=4500, M_w=4800, PI=1.08

—— Block Copolymer PS(4500)-b-PtBuA(13500), PI=1.08

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.

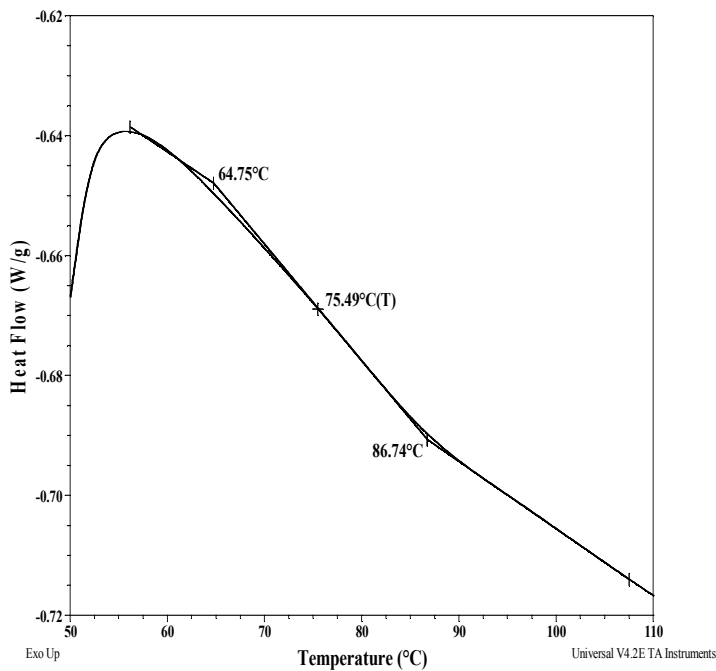
Thermal analysis of sample P1378-StBuA

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).

Glass transition temperature at a glance

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

Thermogram of PS block:



Thermogram for tBuA block

