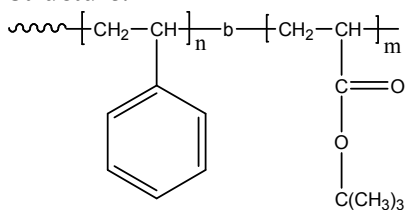


Sample Name: Poly(styrene-b-t-butyl acrylate)

Sample #: P822-StBuA

**Structure:**



**Composition:**

Mn x 10 <sup>3</sup> S-b-BuA	PDI
6.4-B-7.0	1.33

**Glass transition temperature at a glance**

T <sub>g</sub> for PS block	89°C
T <sub>g</sub> for tBuA block	°C

**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:**

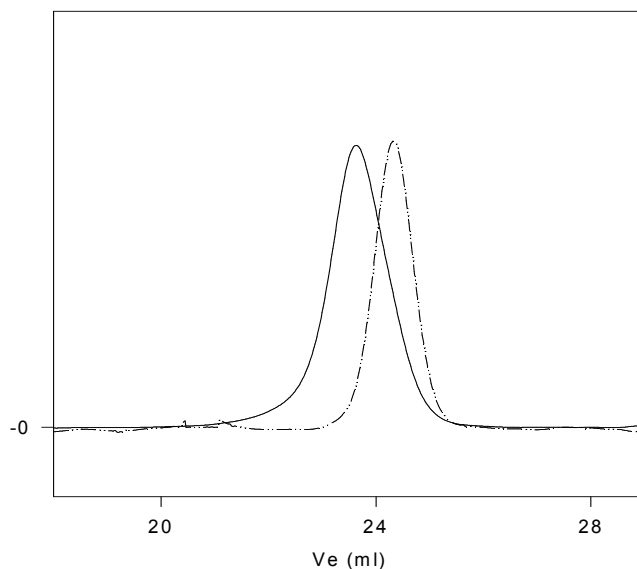
An aliquot of the polystyrene block was terminated before addition of methyl acrylate and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from <sup>1</sup>H-NMR spectroscopy by comparing 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 CH<sub>2</sub>Cl<sub>2</sub>, THF, Dioxane toluene and precipitated out from methanol/water.

**SEC of the block copolymer:**

**P822-StBuA**



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

----- Polystyrene, M<sub>n</sub>=6400, M<sub>w</sub>=7300, PI=1.14

———— Block Copolymer PS(6400)-b-PtBuA(7000), PI=1.33

**References:**

Ph.Teyssie, R. Fayt, and **S. K. Varshney**, *Eur. Pat. Appl. Dec. 12, 1990. Eur. Pat.402204*

Patent Assignees-Norsolor S.A. France. CA Vol 114, 20, 186314.Catalyst for the the Anionic Living Polymerization (Meth)acrylates".

**S. K. Varshney**, R. Fayt and Ph. Teyssie *Eur. Pat. Appl. Dec. 12, 1990. Eur. Pat. 402219*

Patent Assignees- Norsolor S.A France. CA Vol 114, 22, 208036. Procedure and Anionic Polymerization Catalyst for Acrylic Monomers

Ph.Teyssie, R. Fayt, C. Jacobs, R. Jerome and **S. K. Varshney** "New Developments in the "Living" Anionic Polymerization of (Meth)Acrylic Esters" *CA Vol. 115, 135, 184032, Am.Chem.Soc.,Polym.Prepr.,1991, 31,1,299.*

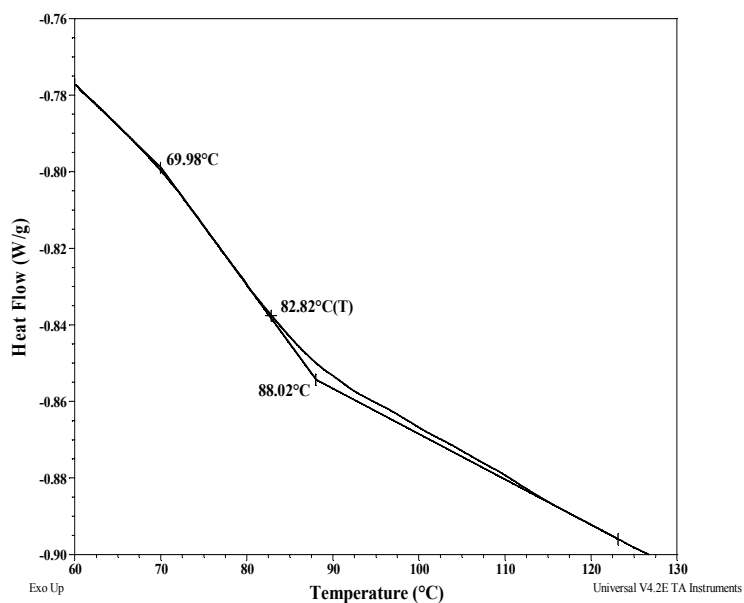
## Thermal analysis of sample P822 StBuA

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	83°C
$T_g$ for tBuA block	13°C

## Thermogram of PS block:



## Thermogram for tBuA block

