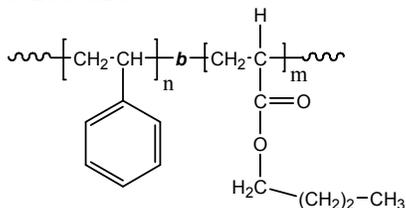


## Sample Name: Poly(styrene-b-n-butyl acrylate)

### Purified

### Sample #: P307-SnBuA

### Structure:



### Composition:

Mn x 10 <sup>3</sup> S-b-nBuA	PDI
236.6-b-566.0	1.13

### Synthesis Procedure:

Poly(styrene-b-n-butyl acrylate) is prepared by the transesterification of the poly (Styrene-b-tert.butyl acrylate) di block copolymer

**Purification** of the obtained polymer was carried out rigorously as follows to ensure the removal of the catalyst side product:

1. Dissolved the polymer in  $\text{CHCl}_3$  and wash with de-ionized distilled water to remove the any soluble organic catalyst side product.
2. Polymer extracted from water with chloroform.
3. Polymer solution in  $\text{CHCl}_3$  was dried over anhydrous sodium sulfate.
4. Solution filtered and than passed through a column packed with basic  $\text{Al}_2\text{O}_3$ .
5. Solution concentrated on rota-evaporator
6. Solution precipitated in cold methanol and redissolved in dioxane and freeze dried.
7. Final dried under vacuum for 48h at 50°C.

### Characterization:

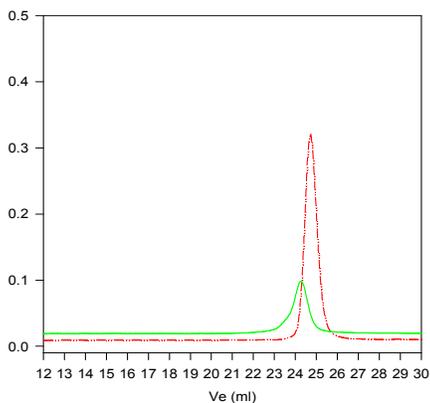
An aliquot of the polystyrene block was terminated before addition of methyl acrylate and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from  $^1\text{H-NMR}$  spectroscopy by comparing 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:

Polymer is soluble in  $\text{CHCl}_3$ , THF, Toluene.

### SEC of the block copolymer:

#### P4873B-SnBuA



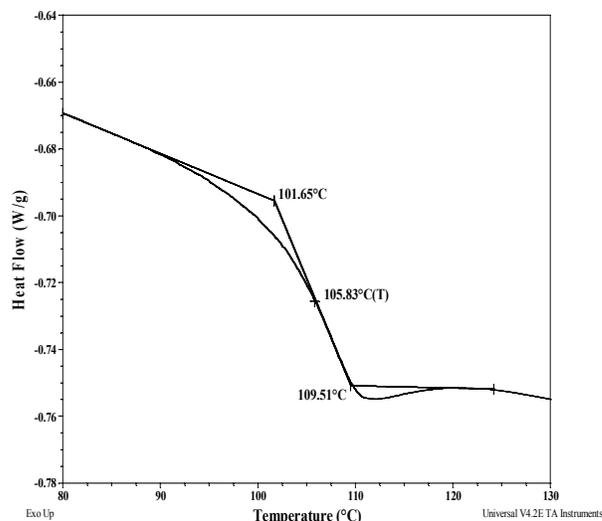
--- Polystyrene,  $M_n=16000$ ,  $M_w=17000$ ,  $PI=1.06$

— Block Copolymer PS(16000)-b-PtBuA(7500),  $PI=1.15$

## Thermal analysis of sample P307-SnBuA

Thermal analysis of the sample was carried out using a differential scanning calorimeter (TA Q100) at a heating rate of 10°C/min. The inflection glass transition temperature ( $T_g$ ) has been considered.

### Thermogram for PS block



### Glass transition temperature at a glance

MMA block	106°C
t-BuA block	-41°C

### Thermogram for nBuA block

