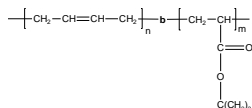


**Sample Name:**  
**Poly(1,4-butadiene -b- tert.butylacrylate)**

**Sample #: P44211-BdtBuA**

**Structure:**

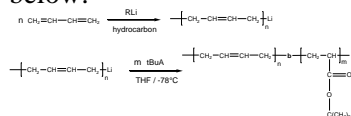


**Composition:**

Mn x 10 <sup>3</sup> PBd-b-tBuA	PDI
190.0-b-55.0	1.14
T <sub>g</sub> for tBuA block (°C):18	
T <sub>g</sub> for 1,4 Bd block (°C):Not distinct	
1,4 Addition :90%	

**Synthesis Procedure:**

Poly(1,4-butadiene-b-t-butyl acrylate) is prepared by living anionic polymerization with sequence addition of butadiene followed by t-butyl acrylate. The reaction scheme is shown below:



**Characterization:**

An aliquot of the anionic poly(butadiene) block was terminated before addition of t-butyl 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 vinylic butadiene protons at about 5.4 ppm with the t-butyl protons at 1.43 ppm. Block copolymer PDI is determined by SEC.

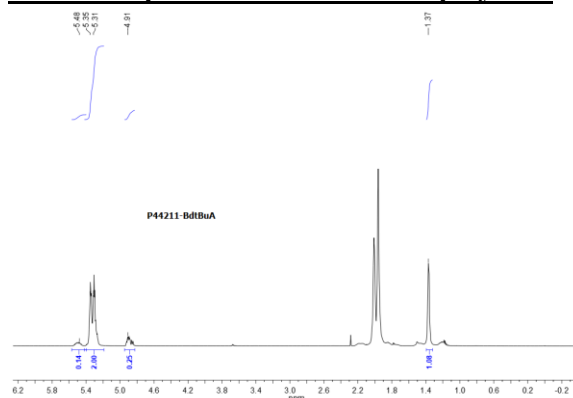
**Thermal analysis:**

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<sub>g</sub>).

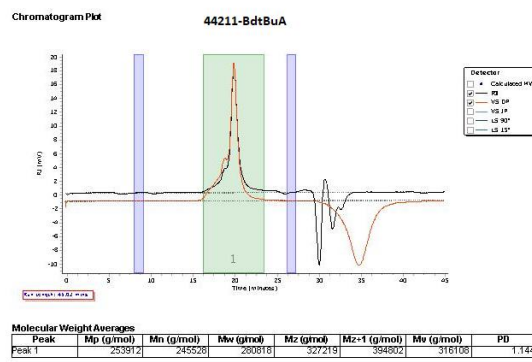
**Solubility:**

Polymer is soluble in THF, CHCl<sub>3</sub>, dioxane and benzene.

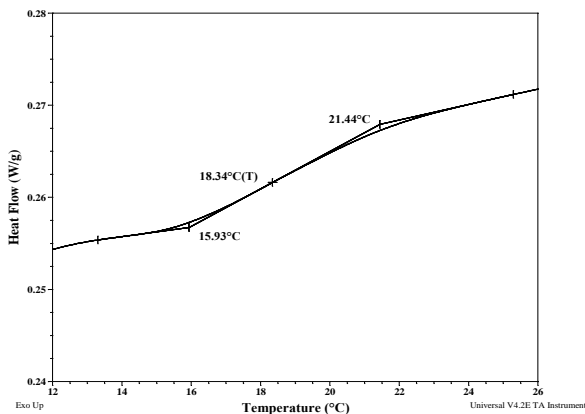
**<sup>1</sup>H-NMR Spectrum of the block copolymer:**



**SEC of the block copolymer:**



**DSC thermogram for the sample:**



**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, Ph. Bayard, R. Jerome, S. K. Varshney, and J. S. Wang, 35th IUPAC International Union of Pure & Applied Chemistry International Symposium on Macromolecules 1994, 67.
3. Ph. Teyssie, R. Fayt, J. P. Hautekeer, C. Jacobs, R. Jerome, L. Leemans and S. K. Varshney *Makromolekulare Chemie, Macromol. Symp.*, 1990, 32,61-73.
4. S. K. Varshney, J. P. Hautekeer, R. Fayt, R. Jerome, and Ph.Teyssie *Macromolecules*, 1990, 23, 2618-2622.