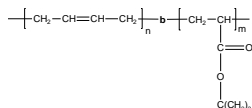


Poly(1,4-butadiene -b- tert.butylacrylate)

Sample #: **P44218-BdtBuA**

Structure:

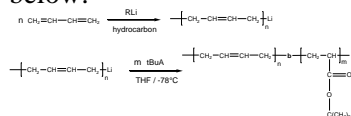


Composition:

Mn x 10 ³ PBd-b-tBuA	PDI
160.0-b-27.0	1.05
T _g for tBuA block (°C):18	
T _g 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 $^1\text{H-NMR}$ 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.

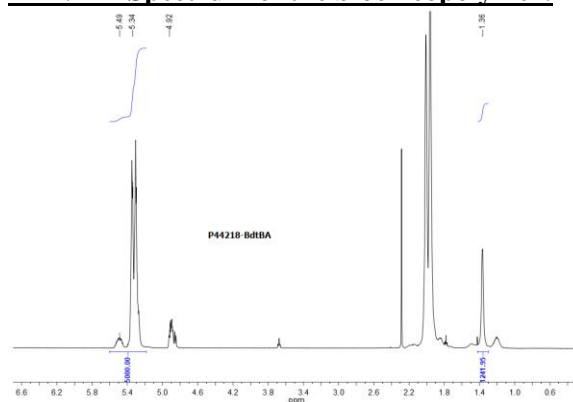
Thermal analysis:

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_g).

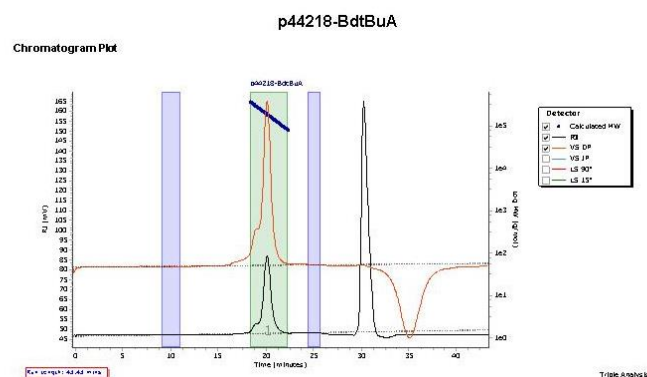
Solubility:

Polymer is soluble in THF, CHCl_3 , dioxane and benzene.

¹H-NMR Spectrum of the block copolymer:

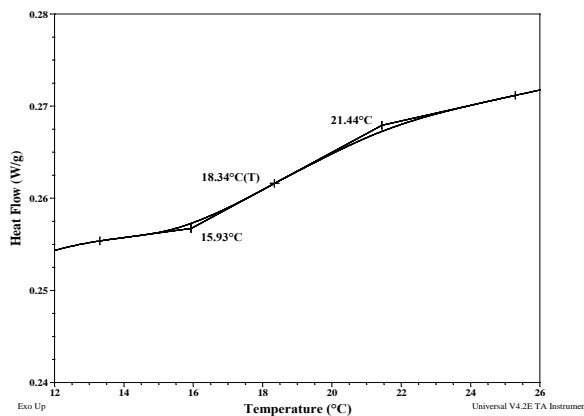


SEC of the block copolymer:



Peak	Mp (g/mol)	Mn (g/mol)	Mw (g/mol)	Mz (g/mol)	Mz+1 (g/mol)	Mv (g/mol)	PD
Peak 1	187095	186169	194825	204654	216002	203039	1.04

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 *Makromolekular 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.