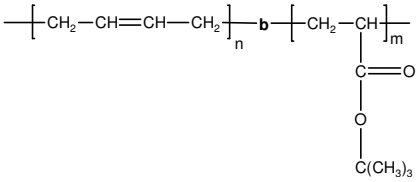
Sample Name:
Poly(1,4-butadiene -b- tert.butylacrylate)

Sample #: P5533-BdtBuA

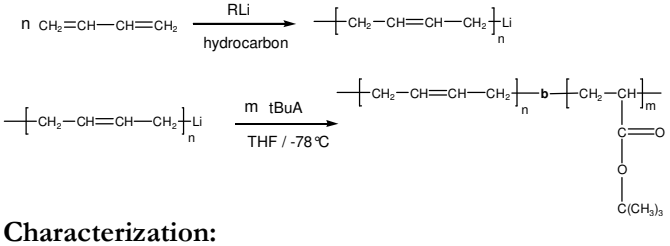
Structure:



Composition:

Mn x 10^3 PBd-b-tBuA	PDI
9.0-b-6.0	1.10
T_g for tBuA block (^oC)	18
T_g for 1,4 Bd block (^oC)	Not distinct

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:



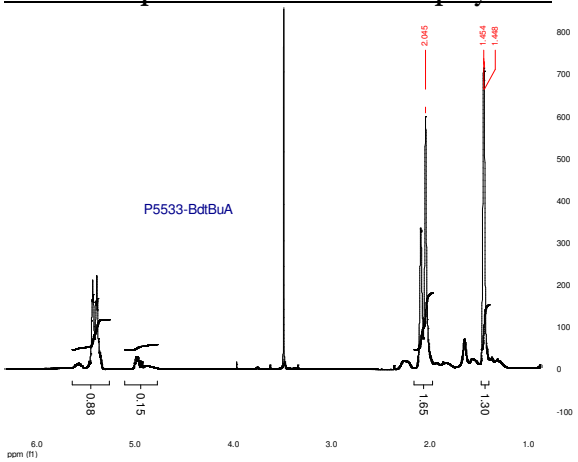
Characterization:

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}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^{o}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).

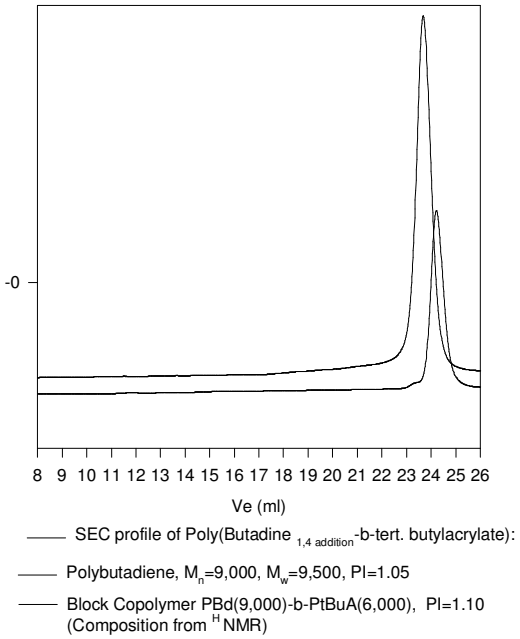
Solubility:
Polymer is soluble in THF, $CHCl_3$, dioxane and benzene.

^{1}H-NMR Spectrum of the block copolymer :

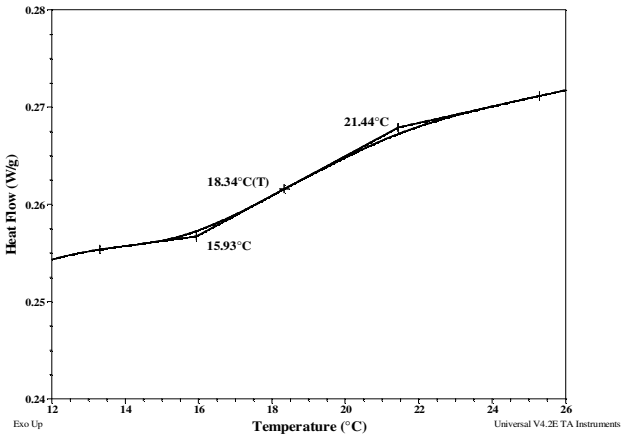


SEC of the block copolymer:

P5533-Bd $_{1,4\ rich\ addition}$tBuA



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.*