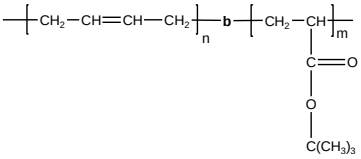
Sample Name:
**Poly (1, 4-butadiene -b- tert.butylacrylate)**

Sample #: **P2237-BdtBuA**

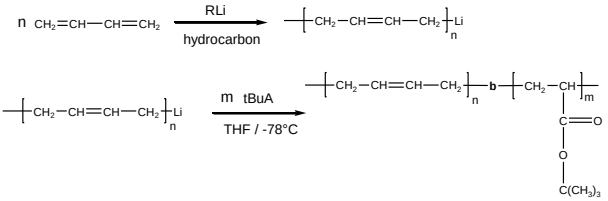
**Structure:**



**Composition:**

| Mn x $10^3$ PBd-b-tBuA | PDI |
|---|---|
| 76.0-b-14.5 | 1.07 |
| $T_g$ for tBuA block (°C) | 18 |
| $T_g$ for 1,4 Bd block (°C) | 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:

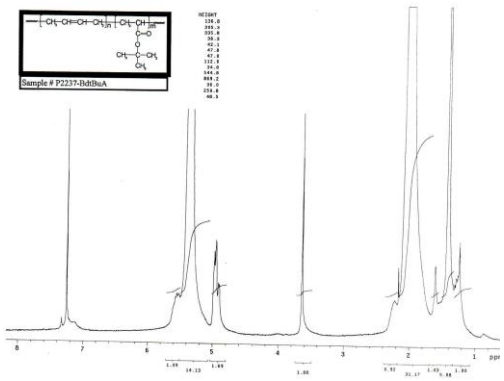


**Characterization:**
An aliquot of the anionic poly (butadiene) block was terminated before addition of t-butyl acrylate and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from $^1$H-NMR 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.

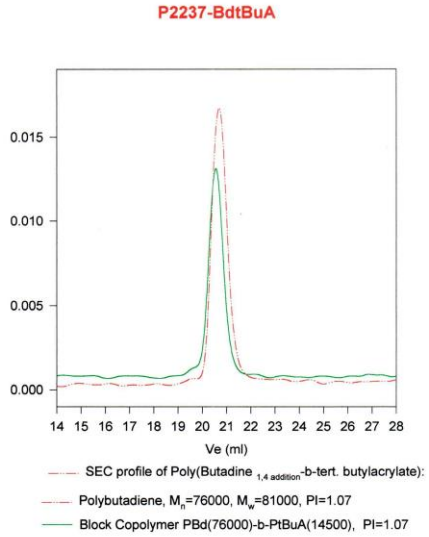
**Thermal analysis:**
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min.The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature ($T_g$).

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

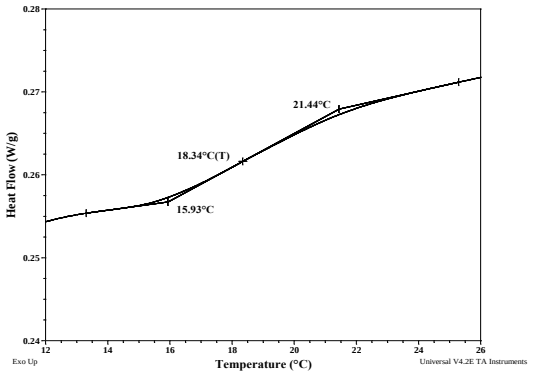
**$^1$H-NMR Spectrum of the block copolymer:**



**SEC of the block copolymer:**




**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.*