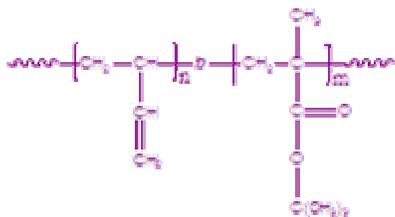


Sample Name: Poly(1,2-butadiene-b-t-butyl methacrylate)

Sample #: P2342-BdtBuMA

Structure:

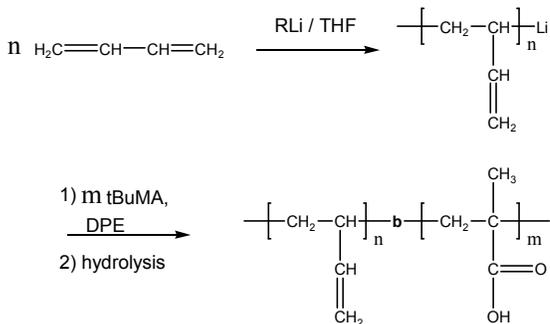


Composition:

Mn x 10 ³ Bd-b-tBuMA	Mw/Mn (PDI)
88.0-b-316.4	1.08
T _g for Bd block: -18°C	T _g for tBuMA block: 127°C

Synthesis Procedure:

Poly(1,2-butadiene-b-t-butyl methacrylate) is prepared by living anionic polymerization with sequence addition of butadiene followed by t-butyl methacrylate. The reaction scheme is shown below:



Characterization:

An aliquot of the anionic poly(butadiene) block was terminated before addition of s-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 ¹H-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:

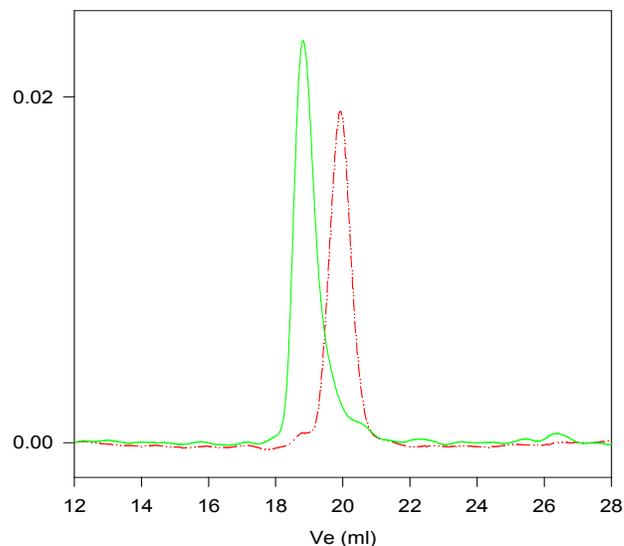
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

Solubility:

Poly(butadiene-b-sec Butyl methacrylate) is soluble in THF, CHCl₃, toluene, dioxane. The polymer can be precipitate out in ethanol, methanol.

SEC profile of the block copolymer

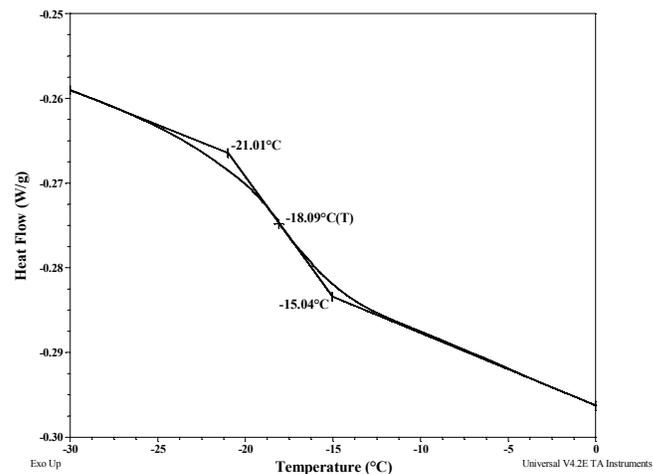
P2342-BdtBuMA



SEC profile of the polymer:

- Polybutadiene block, M_n=88000, M_w=93300, PI=1.06
- Diblock Copolymer PBd(88000)-b-PtBuMA(316400), PI=1.08
Final molecular weight from Light scattering

DSC thermogram for Bd block:



DSC thermogram for tBuMA block:

