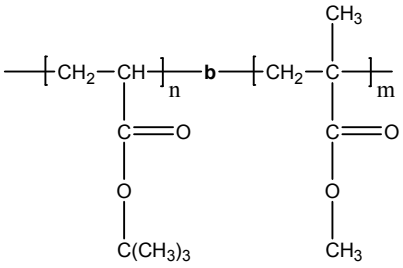
Sample Name: Poly(t-butyl acrylate-b-methyl methacrylate)

Sample #: P1090-tBuAMMA

Structure:



Composition:

Mn x 10^3 tBuA-b-MMA	PDI
71.8-b-86.3	1.09

Synthesis Procedure:

Poly(t-butyl acrylate-b-methyl methacrylate) is prepared by living anionic polymerization with sequence addition of t-butylacrylate followed by methyl methacrylate in THF using an RLi/LiCl adduct.

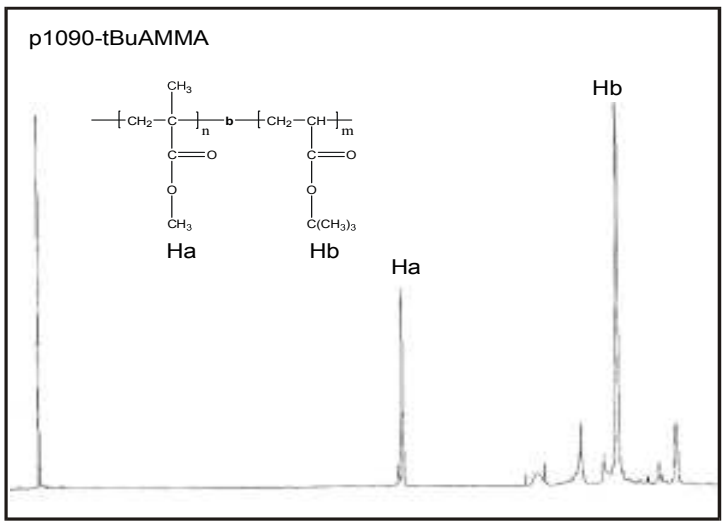
Characterization:

An aliquot of the anionic poly(t-butyl acrylate) block was terminated before addition of methyl methacrylate 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 methyl methacrylate protons at about 3.6 ppm with the peak area of t-butyl acrylate protons at about 1.43 ppm. Copolymer PDI is determined by SEC.

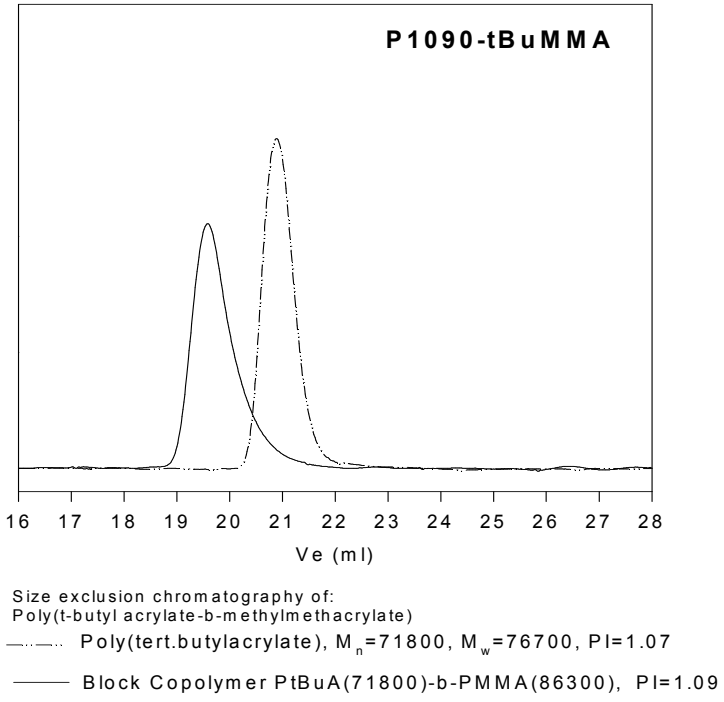
Solubility:

Poly(t-butyl acrylate-b-methyl methacrylate) is soluble in THF, $CHCl_3$, toluene, dioxane. The polymer can precipitate from ethanol/water or methanol/water mixtures.

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



SEC of the block copolymer:



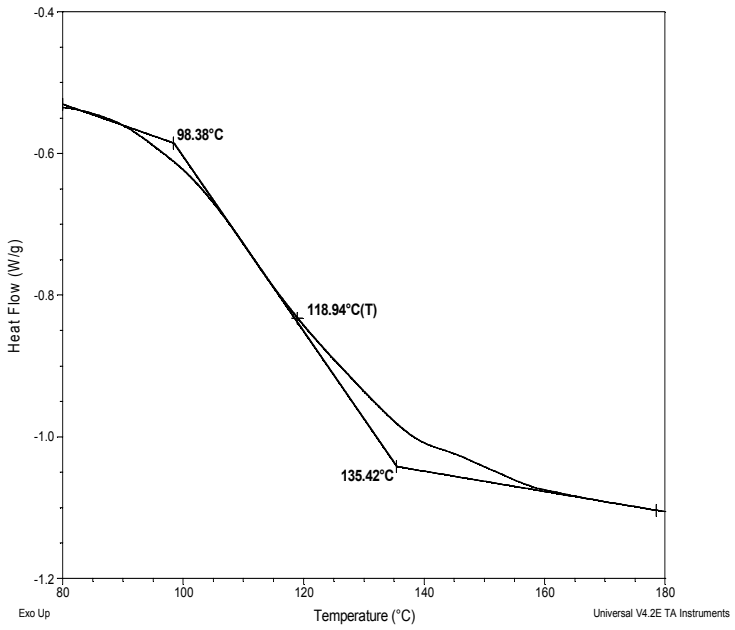
Thermal Analysis of sample P1090-tBuAMMA

Thermal analysis of the sample was carried out using a differential scanning calorimeter (TA Q100) at a heating rate of 10^{o}C/min.The inflection glass transition temperature (T_g) has been considered.

Glass transition temperature at a glance:

MMA block	tBuA block
119^{o}C	46^{o}C

DSC thermogram for MMA block:



DSC thermogram for tBuA block