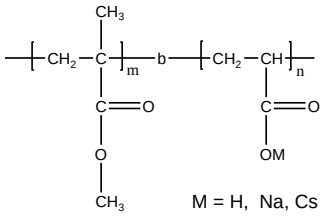
Sample Name: Poly(methyl methacrylate-b-acrylic acid)
Sample #: P8253A-MMAAA

Structure:



Composition:

Mn × 10^3 PMMA-b-PAA	PDI
12.0-b-2.0	1.10
T_g (°C) for MMA block: 125	T_g (°C) for AA block: Not distinct

Synthesis Procedure:

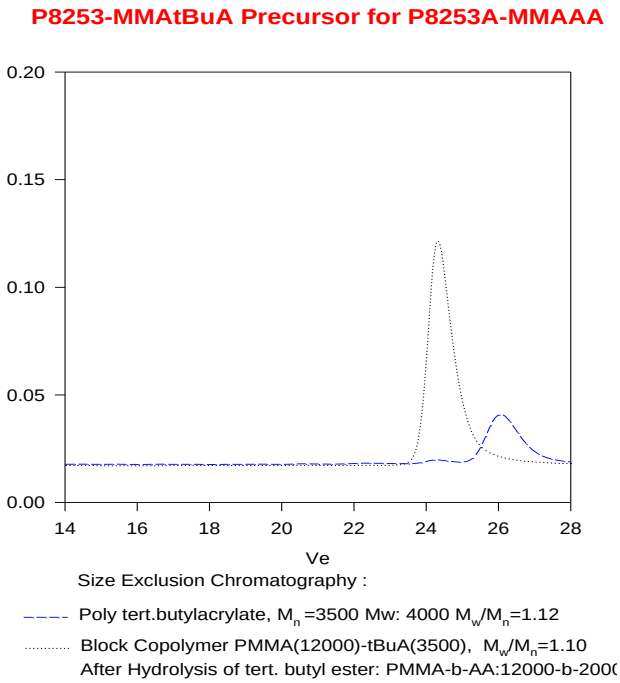
Poly(methyl methacrylate-b-acrylic acid) is prepared by living anionic polymerization with sequence addition of methyl methacrylate followed by t-butyl acrylate or vice versa and hydrolysis of the t-butyl group.

Characterization:
An aliquot of the anionic poly(methyl methacrylate) 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 t-butyl methacrylate protons at 1.43 ppm with the peak area of the methyl methacrylate protons at 3.6 ppm. Copolymer PDI is determined by SEC.

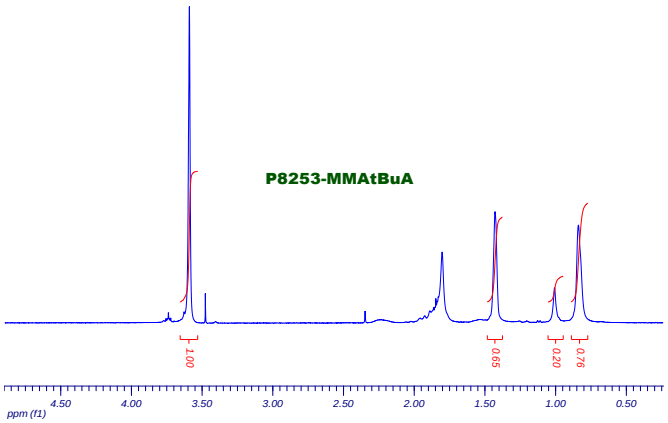
Thermal analysis:
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min.The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

Solubility:
Poly(methyl methacrylate –b- acrylic acid) is soluble in methanol depending on the compositions. It is precipitated out from ether and hexane.

SEC of the block copolymer:



NMR of the block copolymer:



DSC thermogram for MMA block: