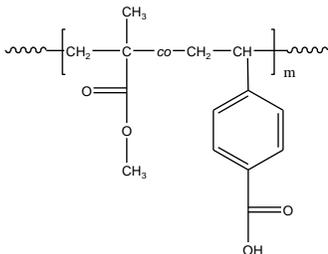


Sample Name:

Random Copolymer Poly(methyl methacrylate-co-vinylbenzoic acid)

Sample #: P7136-MMAVBArAn

Structure:



Composition:

PMMA (mol%) : 76

Mn x 10 ³ PS-co-PVBA	PDI
119.6	1.8
T _g for the random copolymer	156°C

Synthesis Procedure:

The copolymer was prepared by radical copolymerization of methyl methacrylate (MMA) and t-butyl vinylbenzoate (tBuVB), followed by a hydrolysis of t-butyl ester.

Characterization:

The polymer Poly(MMA-co-tBuVB) was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The copolymer composition was calculated from ¹H-NMR spectroscopy by comparing the peak area the methyl ester protons of MMA at about 3.6 ppm with the protons of t-butyl vinylbenzoate at about 6.8-8 ppm. The molecular weight of Poly(methyl methacrylate-co-vinylbenzoic acid) is calculated from Poly(MMA-co-tBuVB).

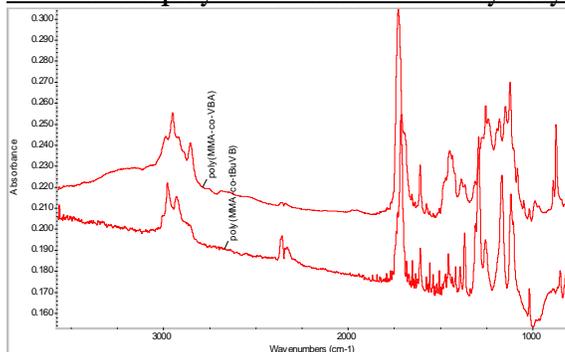
Thermal analysis:

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 20°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).

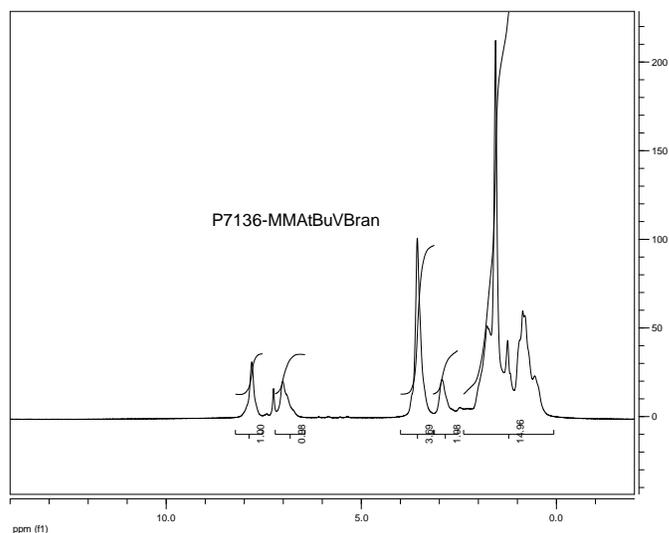
Solubility:

The polymer is soluble in dioxane, DMF and precipitated out from hexane.

FTIR of the polymer before and after hydrolysis:

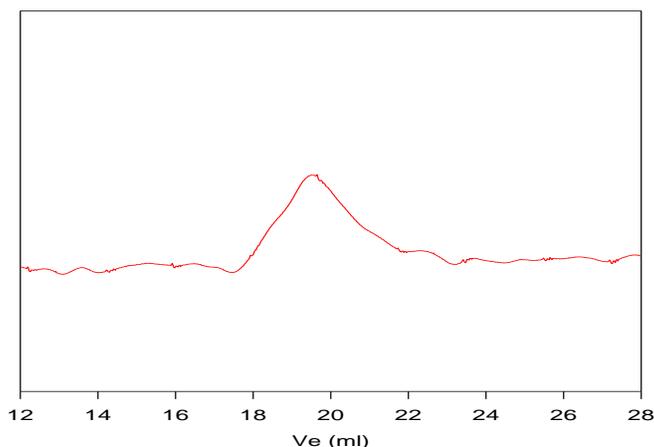


¹H-NMR of the copolymer Poly(MMA-co-tBVB):



SEC of the random copolymer Poly(MMA-co-tBVB):

p7136-1-MMAAtBVB



Size exclusion chromatograph of poly(MMA-co-tBVB):

M_n=134000, M_w=241000, PI=1.8
after hydrolysis M_n=119600, M_w=215300, PI=1.8
PMMA mol% 76%

DSC thermal analysis for the sample:

