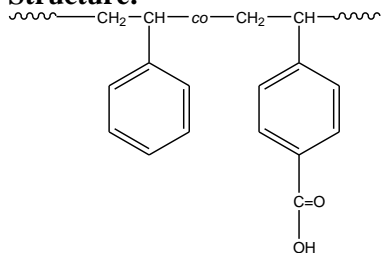


Sample Name: Random Copolymer Poly(styrene-co-vinyl benzoic acid)

Sample #: P7135-SVB Aran

Structure:



Composition:

PS (mol%) : 71

Mn x 10 ³ PS-co-VBA	PDI
7.9	1.30
T _g for random polymer	166°C

Synthesis Procedure:

The copolymer was prepared by TEMPO mediated copolymerization of styrene(St) and t-butyl vinylbenzoate, followed by a hydrolysis of t-butyl ester.

Characterization:

The polymer 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 aromatic protons of styrene at about 6.66-7.05 ppm with the protons of t-butyl ester at about 0.8-2.5 ppm that deducts the contribution of the styrene back bone protons.

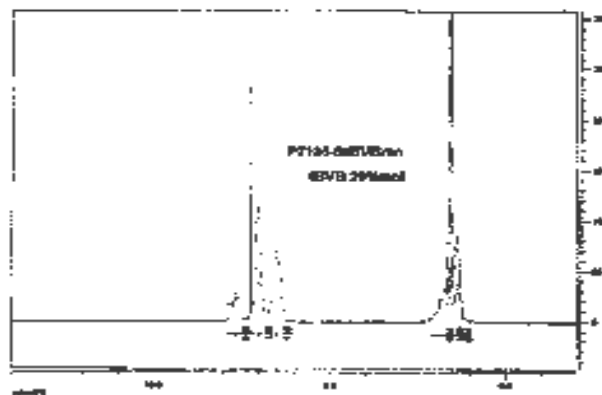
Thermal analysis:

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).

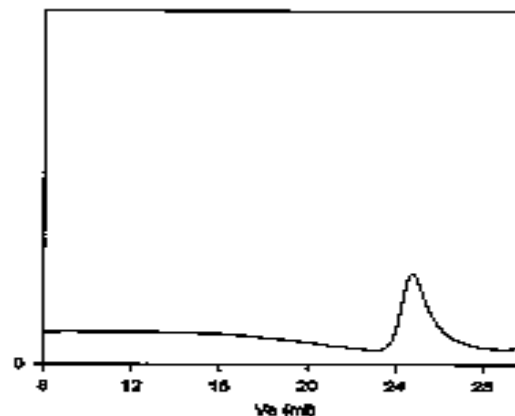
Solubility:

Random Copolymer poly(styrene-co-t-butyl vinylbenzoate) is soluble in THF, DMF and precipitated out from hexane ethers.

¹H-NMR Spectrum of the copolymer:
Poly(styrene-co-tert.butyl vinyl benzoate form



SEC of the random copolymer:



Size exclusion chromatograph of random copolymer: poly(S-co-tBVB)
M_n=8000, M_w=11700, M_w/M_n=1.3
After hydrolysis, M_n=7800, M_w=10300, M_w/M_n=1.3
Polystyrene content: 71%mol by NMR

DSC thermogram for the sample

