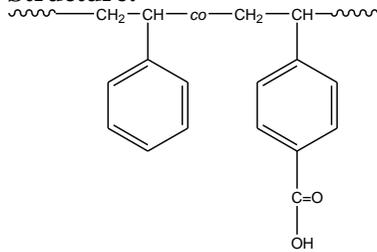


**Sample Name:** Random Copolymer Poly(styrene-co-vinyl benzoic acid )

**Sample #:** P7134-SVBAran

**Structure:**



**Composition:**

PS (mol%) : 85

Mn x 10 <sup>3</sup> PS-co-VBA	PDI
14.4	1.18
T <sub>g</sub> for random polymer	117°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 <sup>1</sup>H-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 backbone protons.

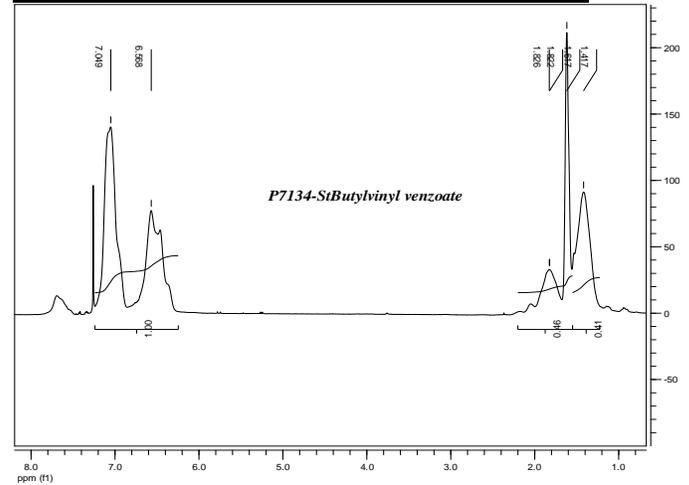
**Thermal analysis:**

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<sub>g</sub>).

**Solubility:**

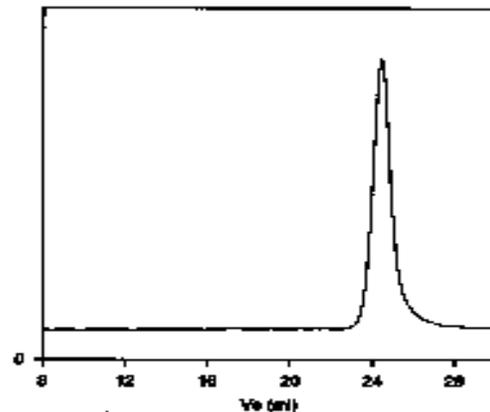
Random Copolymer poly(styrene-co-t-butyl vinylbenzoate) is soluble in THF, DMF and precipitated out from hexane ethers.

**<sup>1</sup>H-NMR Spectrum of the copolymer:  
Poly(styrene-co-tert.butyl vinyl benzoate form**



**SEC of the random copolymer:**

**SEC of the random copolymer Poly(S-co-tBuVB):  
P7134-1-S1BuVBrn**



Size exclusion chromatograph of random copolymer: poly(S-co-tBuVB):  
M<sub>n</sub>=15500, M<sub>w</sub>=18400, M<sub>w</sub>/M<sub>n</sub>=1.19  
M<sub>n</sub>=14400, M<sub>w</sub>=17100, M<sub>w</sub>/M<sub>n</sub>=1.19  
Polystyrene content: 85%mol by NMR

**DSC thermogram for the sample**

