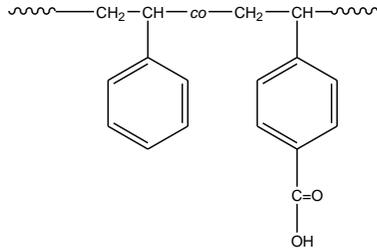


**Sample Name:** Random Copolymer Poly(styrene-co-vinyl benzoic acid )

**Sample #:** P7135-SVBArAn

**Structure:**



**Composition:**

PS (mol%) : 71

Mn x 10 <sup>3</sup> PS-co-VBA	PDI
7.9	1.30
T <sub>g</sub> 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 <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.

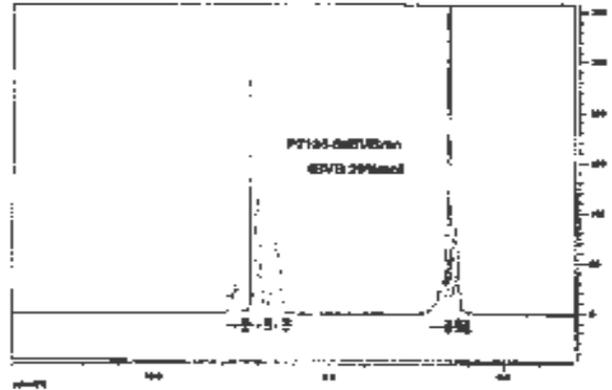
**Thermal analysis:**

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>).

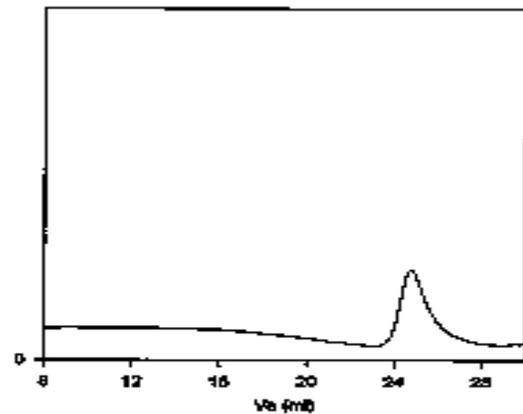
**Solubility:**

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:**



Size exclusion chromatograph of random copolymer: poly(S-co-tBVB)  
M<sub>n</sub>=8000, M<sub>w</sub>=11700, M<sub>w</sub>/M<sub>n</sub>=1.3  
After hydrolysis, M<sub>n</sub>=7800, M<sub>w</sub>=10300, M<sub>w</sub>/M<sub>n</sub>=1.3  
Polystyrene content: 71%mol by NMR

**DSC thermogram for the sample**

