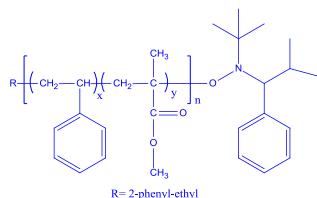


Sample Name: Random Copolymer Poly(styrene-co-methyl methacrylate)

Sample #: P6425-SMMArAn

Structure:



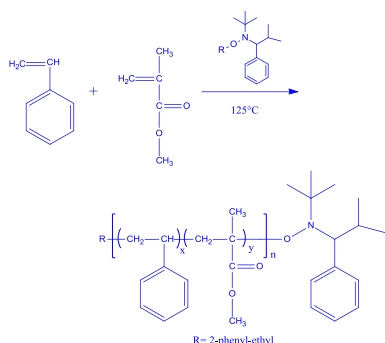
Composition:

PS (mol%) : 58.6%

Mn x 10 ³ PS-co-PMMA	PDI
14.3	1.17
T _g for random polymer	94°C

Synthesis Procedure:

Random Copolymer Poly(styrene-co-methyl methacrylate) is prepared by stable radical polymerization of styrene and methyl methacrylate. The scheme of the reaction is illustrated below:



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 6.66-7.05 ppm with the protons of methyl methacrylate at about 0.8-3.8 ppm that deducts the contribution of the styrene back bone protons.

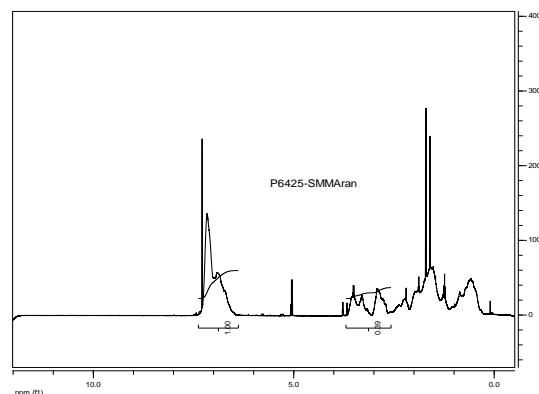
Thermal analysis:

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:

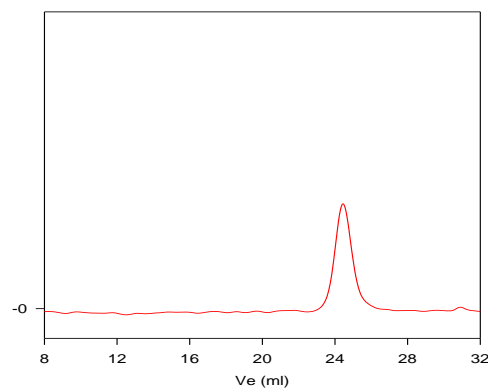
Random Copolymer Poly(styrene-co-methyl methacrylate) is soluble in CHCl₃, THF, DMF, toluene and precipitated out from methanol.

¹H-NMR Spectrum of the random copolymer:



SEC of the random copolymer:

P6425SMMArAn



Size exclusion chromatograph of random copolymer: poly(styrene-co-MMA):

M_n=14,300, M_w=16,800 M_w/M_n=1.17
Polystyrene content: 58.6 mol% by NMR

DSC thermogram for the sample:

