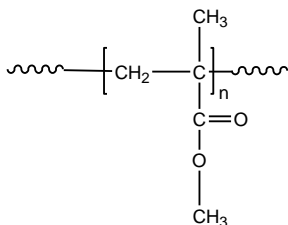


Sample Name: **Poly(methyl methacrylate)**

*Different microstructure*

Sample #: **P9141-MMA**

**Structure:**



**Composition:**

$M_n \times 10^3$	PDI
110.0	1.2
Syndio : Hetero : Isotactic	56 : 38 : 6

**Synthesis Procedure:**

Poly(methyl methacrylate) is obtained by free radical polymerization or ATRP using CuBr as a catalyst, or by GTP process in toluene or THF.

**Characterization:**

Tacticity of the polymer was determined by  $^1\text{H}$  NMR. The molecular weight and polydispersity index (PDI) were obtained by size exclusion chromatography (SEC) in THF. SEC analysis was performed on a Varian liquid chromatograph equipped with refractive and UV light scattering detectors. Three SEC columns from Supelco (G6000-4000-2000 HXL) were used with triple detectors from Viscotek Co.

Thermal analysis of the samples was carried out using a differential scanning calorimeter (TA Q100) at a heating rate of  $10^\circ\text{C}/\text{min}$ . The inflection glass transition temperature ( $T_g$ ) of the sample has been considered.

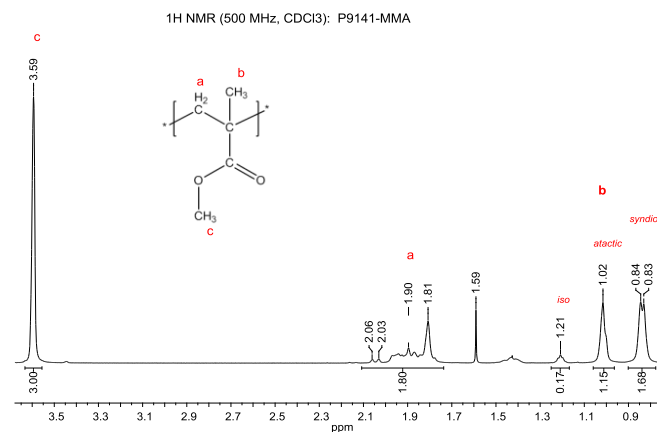
**Solubility:**

The polymer is soluble in THF,  $\text{CHCl}_3$ , toluene and dioxane. The polymer precipitates from cold methanol and ethanol.

**$T_g$  vs MW for selected atactic PMMA:**

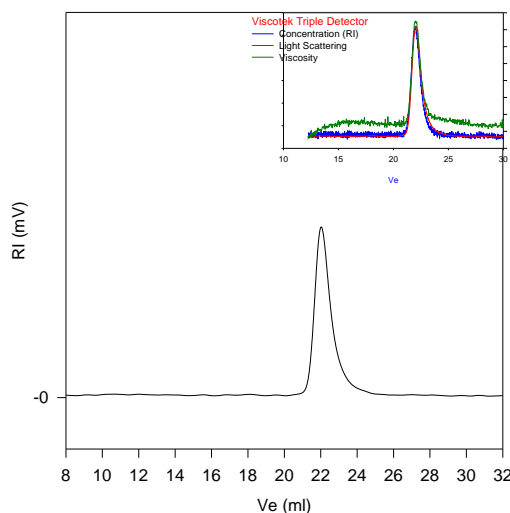
$M_n \times 10^3$	$T_g (^\circ\text{C})$	$M_n \times 10^3$	$T_g (^\circ\text{C})$
1.1	51	36	98
2.5	76	55	111
5.0	91	70	107
15	101	127	115
19	107	230	114
29	96	700	121

**$^1\text{H}$  NMR spectrum of PMMA:**



**SEC elugram of PMMA homopolymer:**

**P9141-MMA**



Size Exclusion Chromatography of poly(methyl methacrylate)-Atactic:

$M_n = 110,000$ ,  $M_w = 133,000$ ,  $M_w/M_n = 1.2$   
 Solution Viscosity in THF At  $35^\circ\text{C}$ : 0.516 dl/g  
 $R_g W$ : 13.33 nm  
 $dn/dc$  in THF at  $35^\circ\text{C}$ : 0.084 ml/g

**DSC:**

$T_g$  of atactic poly methyl methacrylate as function of molecular weight

