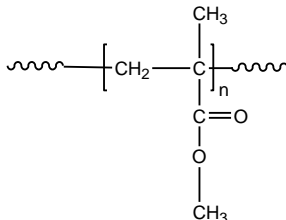


Sample Name: **Poly(methyl methacrylate)**

*Different Microstructure*

Sample #: **P5185-MMA**

**Structure:**



**Composition:**

$M_n \times 10^3$	PDI
24.0	2.3
Syndio : Hetero : Isotactic	56 : 39 : 5

**Synthesis Procedure:**

Poly(methyl methacrylate) is obtained by free radical polymerization (ATRP) using CuBr as catalyst.

**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.

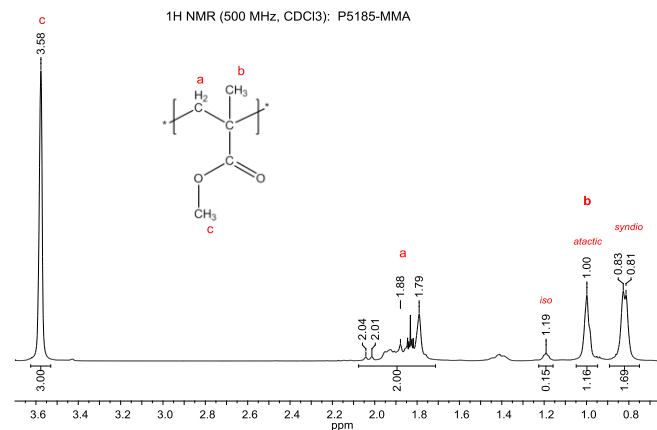
**Solubility:**

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:**

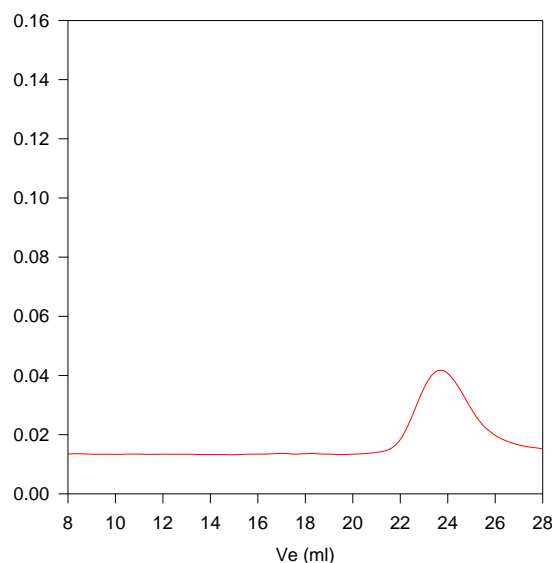
$M_n \times 10^3$	$T_g (^\circ\text{C})$	$M_n \times 10^3$	$T_g (^\circ\text{C})$
1.1	51	36	98
2.5	76	55	111
5.0	91	70	107
15	101	127	115
19	107	230	114
29	96	700	121

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



**SEC elugram of PMMA homopolymer:**

**P5185-MMA**



Size exclusion chromatograph of polymethylmethacrylate-rich in atactic:  $M_n=24,000$ ,  $M_w=55,000$ ,  $PI=2.3$

**DSC:**

*T<sub>g</sub> of atactic poly methyl methacrylate as function of molecular weight*

