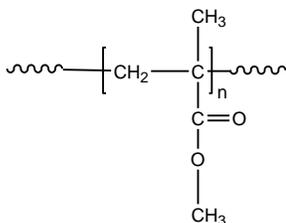


Sample Name: Poly(methyl methacrylate)

Different microstructure

Sample #: P10713B-MMA

Structure:



Composition:

$M_n \times 10^3$	PDI
24.0	1.4

Syndio : Hetero : Isotactic	55 : 39 : 6
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Synthesis Procedure:

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

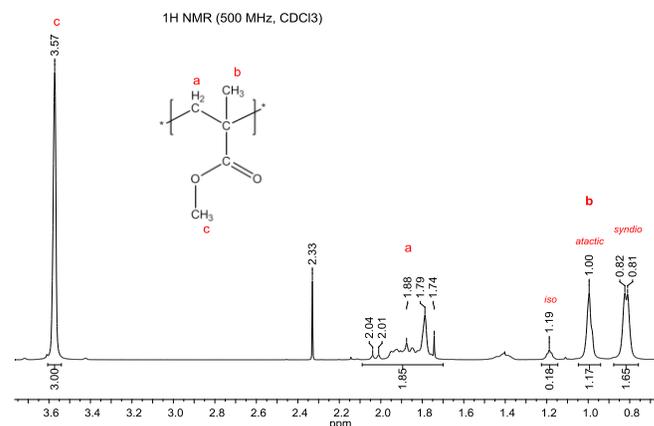
Solubility:

The polymer is soluble in THF, CHCl_3 , toluene and dioxane. The polymer precipitates from cold methanol and ethanol.

T_g vs MW for selected atactic PMMA:

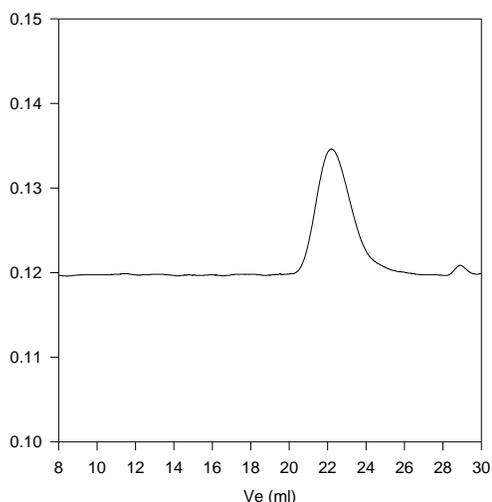
$M_n \times 10^3$	T_g ($^\circ\text{C}$)	$M_n \times 10^3$	T_g ($^\circ\text{C}$)
1.1	51	36	98
2.5	76	55	111
5.0	91	70	107
15	101	127	115
19	107	230	114
29	96	700	121

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



SEC elugram of PMMA homopolymer:

P10713B-MMA



Size exclusion chromatograph of polymethylmethacrylate-rich in atactic: $M_n=24,000$, $M_w=33,500$, $\text{PI}=1.4$

DSC:

T_g of atactic poly methyl methacrylate as function of molecular weight

