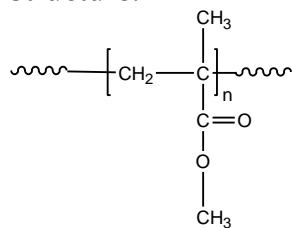


Sample Name: **Poly(methyl methacrylate)**
Isotactic Form

Sample #: **P3874A-iMMA**

Structure:



Composition:

$M_n \times 10^3$	PDI
769.0	1.15

Synthesis Procedure:

Isotactic Poly(methyl methacrylate) is obtained by living anionic polymerization in toluene using a Grignard initiator such as t-butylmagnesium bromide.

Characterization:

The molecular weight and polydispersity index (PDI) are 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 Viscocok Co. ^1H NMR analysis was carried out on Varian instrument at 500MHz.

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.

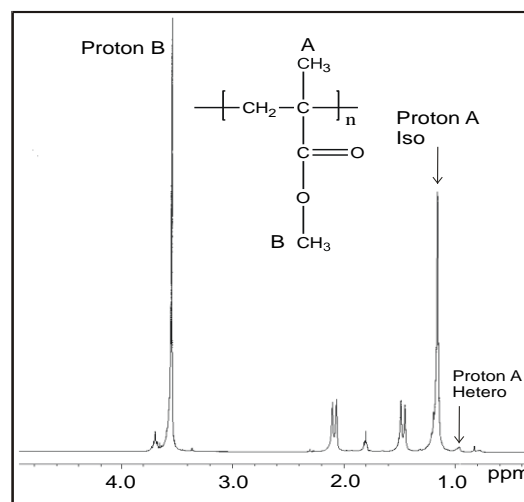
Solubility:

Poly(methyl methacrylate) is soluble in THF, CHCl_3 , toluene and dioxane. The polymer precipitates from hexanes, methanol and ethanol.

T_g vs MW for selected isotactic PMMA

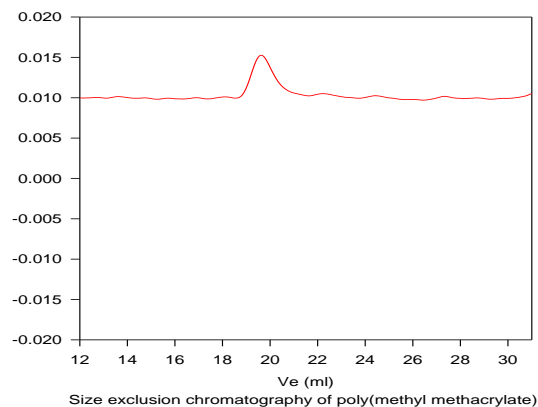
$M_n \times 10^3$	T_g ($^\circ\text{C}$)	$M_n \times 10^3$	T_g ($^\circ\text{C}$)
3.4	31	40	51
6.3	52	93	53
10	48	170	57
15	52	332	55
30	46	769	51

NMR of Isotactic PMMA



SEC of the Homopolymer:

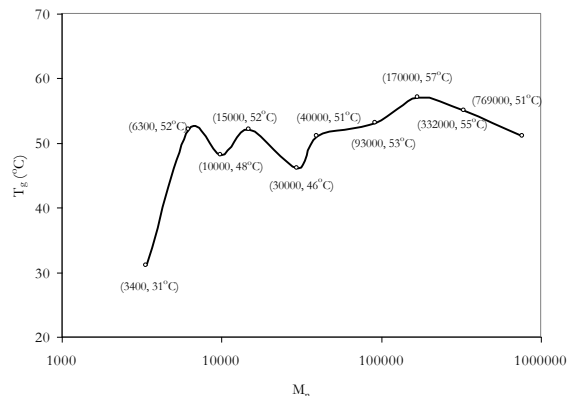
P3874A-iMMA



$M_n=769000$, $M_w=889000$ $PI=1.15$,
 Solution viscosity in THF at 30°C : 2.487 dl/g

Thermogram:

T_g of isotactic MMA as function of molecular weight



References for further information:

S. K. Varshney, R. Fayt, Ph. Teyssie, US Patent 5,629,393, 1997