

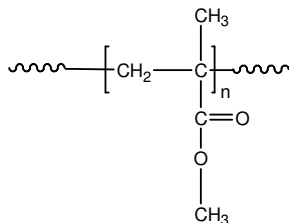
Sample Name:

**Poly(methyl methacrylate) Broad Distribution: over 79% syndiotactic content**

*Electronic grade*

Sample #: P88p-MMA

**Structure:**

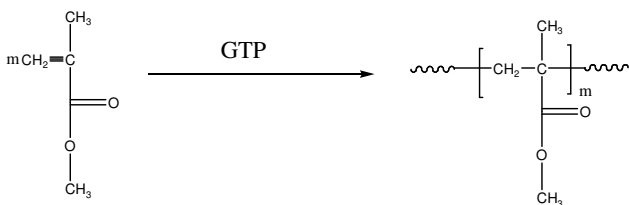


**Composition:**

Mn x 10 <sup>3</sup>	PDI
18.2	1.06

**Synthesis Procedure:**

Poly(methyl methacrylate) is prepared by group transfer radical polymerization of methyl methacrylate in the presence of 1-methoxy-1-(trimethylsiloxy)-2-methyl-1-propene and tetrabutylammonium bi(benzoate). The scheme of the reaction is illustrated below:



**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 Viscotek Co.

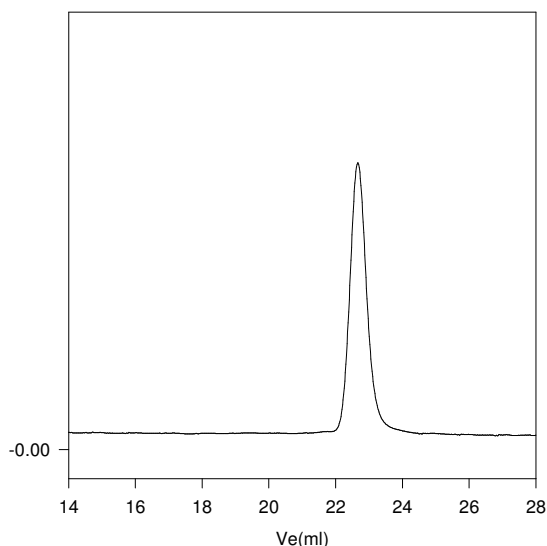
Thermal analysis of the samples was carried out using a differential scanning calorimeter (TA Q100) at a heating rate of 10°C/min. The inflection glass transition temperature (*T<sub>g</sub>*) of the sample has been considered.

**Solubility:**

Poly(methyl methacrylate) is soluble in THF, CHCl<sub>3</sub>, toluene and dioxane. The polymer precipitates from hexanes, methanol and ethanol.

**SEC elugram of the polymer**

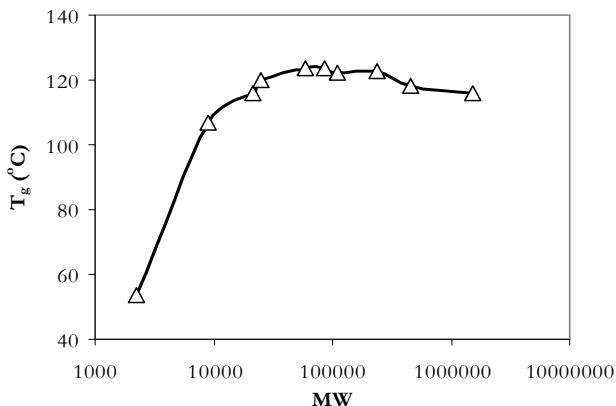
**P88-MMA**



Size exclusion chromatography of poly(methyl methacrylate):

$M_n=18200$ ,  $M_w=19300$ ,  $M_z=20500$ ,  $M_w/M_n=1.06$

***T<sub>g</sub>* of MMA as function of molecular weight**



***References for further information:***

1. (a) S. K. Varshney, R. Fayt, Ph. Teyssie, US Patent 5,629,393, 1997 (b) Ph. Bayard, R. Fayt, Ph. Teyssie and S. K. Varshney, Vuillemin B, Phillipe, H, US patent 5,677,387, 1997. (c) Ph. Bayard, R. Fayt, Ph. Teyssie and S. K. Varshney, B, Vuillemin, H. Phillipe, US patent 5,687,534, 1997. (d) S. K. Varshney, R. Fayt, Ph. Teyssie, US Patent 5,723,559, 1998. (e) Ph. Teyssie, S. K. Varshney, R. Jerome, R. Fayt US patent, 4,826,941., 1989.
2. Ph. Teyssie, Ph. Bayard, R. Jerome, S. K. Varshney, and J. S. Wang, *35th IUPAC International Union of Pure & Applied Chemistry International Symposium on Macromolecules* 1994, 67.
3. Ph. Teyssie, R. Fayt, J. P. Hautekeer, C. Jacobs, R. Jerome, L. Leemans and S. K. Varshney *Makromolekular Chemie, Macromol. Symp.*, 1990, 32, 61-73.
4. S. K. Varshney, J. P. Hautekeer, R. Fayt, R. Jerome, and Ph. Teyssie *Macromolecules*, 1990, 23, 2618-2622.