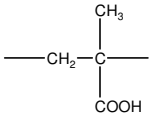
Sample Name:
Poly(methacrylic acid) rich in syndiotactic or isotactic contents

Sample #: **P4540A-MAA**
(rich in syndiotactic)

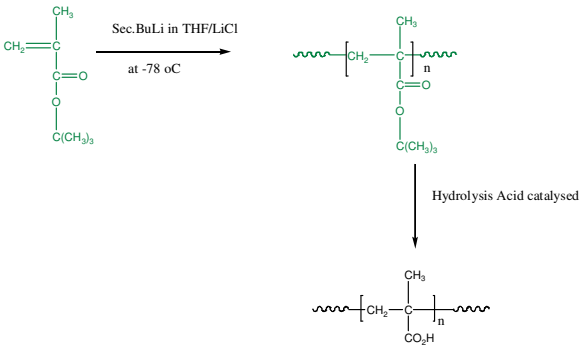
Structure:



Composition:

$Mn \times 10^3$	PDI
40.0	1.20
T_g (°C)	188

Synthesis Procedure:
Poly(methacrylic) is synthesized by living anionic polymerization of t-butyl methacrylate followed by hydrolysis of the t-butyl group. The reaction scheme is shown below.



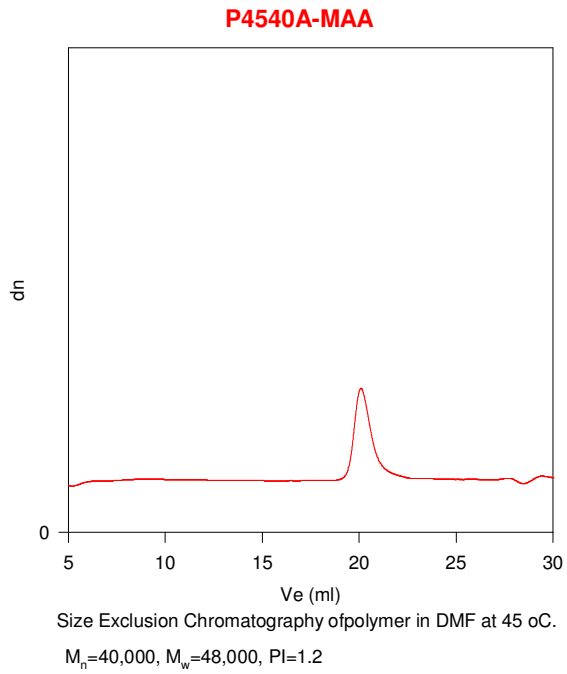
Characterization:
The molecular weight and polydispersity index (PDI) of Poly(methacrylic) are obtained by size exclusion chromatography based on its precursor in the ester form.

Hydrolysis:
The removal of tert.butyl ester moiety to COOH was checked by their FTIR, disappearance of characteristics at 1365cm^{-1}.

Thermal analysis:
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min.The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

Solubility:
Polymer is soluble in methanol and ethanol.

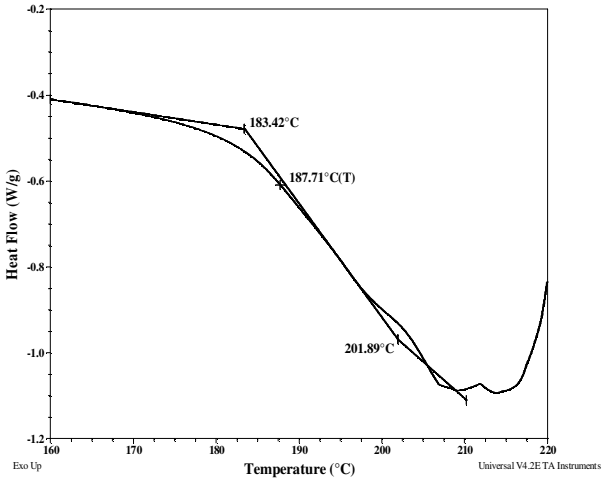
SEC of Homopolymer:



Size Exclusion Chromatography ofpolymer in DMF at 45 oC.

M_n=40,000, M_w=48,000, PI=1.2

DSC thermogram for the polymer:



References:

S.K. Varshney, R. Fayt, and Ph. Teyssie *Fr.appl.89-07374 (June 5,1989). Eur.Pat File# 90401496 and Fr.Appl.90-06351 (May 22, 1990).* Procedure and initiator System for the Anionic Polymerization of Acrylates and Methacrylates.

S. K. Varshney, Z. Gao, Xing Fu Zhong, A. Eisenberg Effect of Lithium Chloride on the "Living" Polymerization of tert-Butylmethacrylate and Polymer Microstructure Using Monofunctional Initiators" Macromolecules, 1994, 27, 1076.