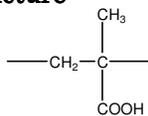


Sample Name:

Poly(methacrylic acid) rich in syndiotactic or isotactic contents

Sample #: **P3094-MAA (rich in syndiotactic)**

Structure:

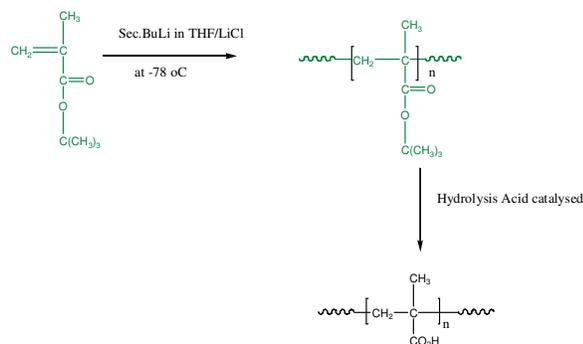


Composition:

Mn x 10 ³	PDI
30.0	1.08
T _g (°C)	160

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:

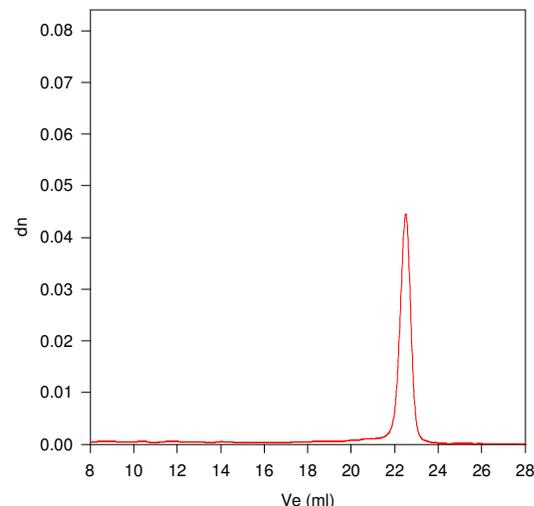
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

Solubility:

Polymer is soluble in methanol and ethanol.

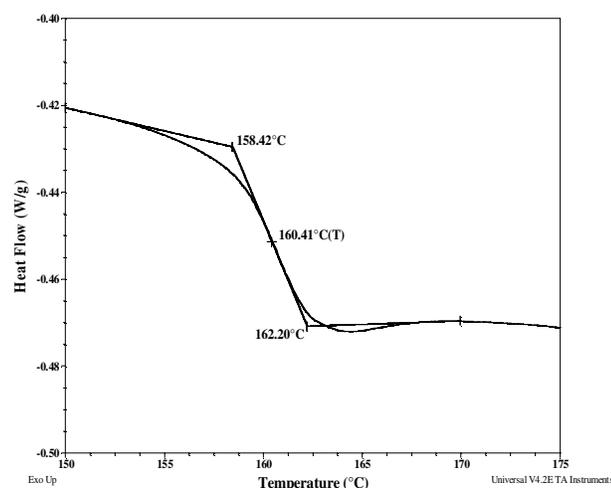
SEC of Homopolymer:

P3094-tBuMA Precursor for P3094-MAA



M_n=49500, M_w=53500, PI=1.08 After Hydrolysis of tert. Butyl ester:
PMAA: 30000 Mw/Mn 1.08

DSC thermogram for the polymer:



References:

1. 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.