

Product Profile

Identification

Product Name: POLY(METHYL METHACRYLATE), SYNDIOTACTIC (SYNDIO>HETERO)

CAS Number : 9011-14-7

Product Lot Number: P3603R-MMA

Synonym(s):

Isotactic PMMA, Isotactic methyl methacrylate polymer, Isotactic poly(methyl methacrylate)

Linear Formula: $(C_5H_8O_2)_n$

Product Chemical Architecture:

Composition:

| Mn x 10 ³ | Mw/Mn (PDI) | Microstructure of Polymer by ¹ H NMR (Synd: iso:hetero) |
|----------------------|-------------|---|
| 14.5 | 1.07 | 84:16:0 |

Method of Synthesis Using Grignard catalyst

Solubility in different solvents

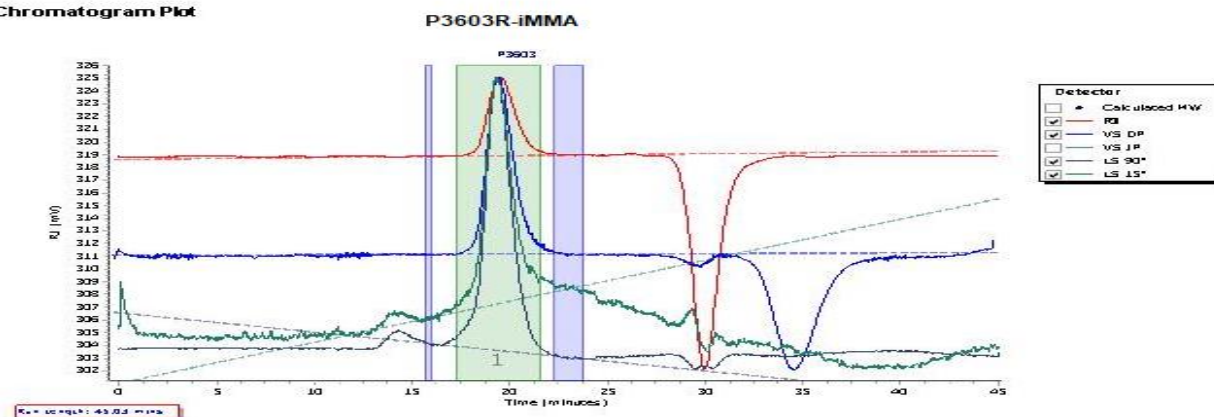
| | | | |
|-------------------|---|---------|---|
| THF | √ | | |
| CHCl ₃ | √ | Acetone | √ |
| Toluene-Hot | √ | | |

Purification of Polymer : By solvent-non solvent process and filtration to remove inorganic salt.

Validation of Architecture:

A. Gel Permeation Chromatography (GPC), SEC- Profile

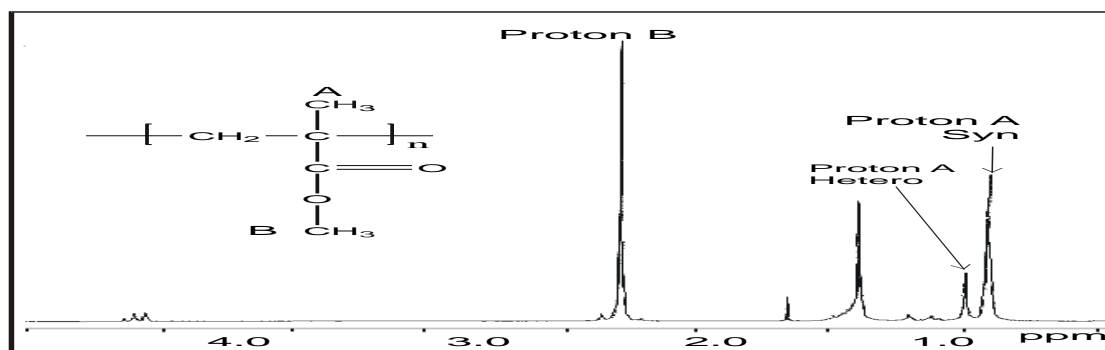
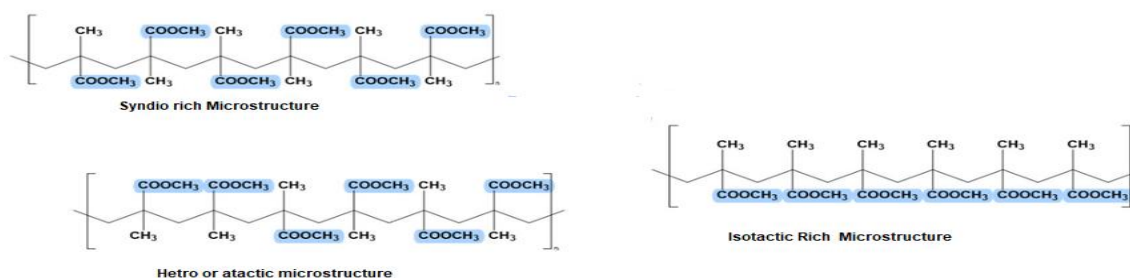
Chromatogram Plot



Molecular Weight Averages

| Peak | Mp (g/mol) | Mn (g/mol) | Mw (g/mol) | Mz (g/mol) | Mz+1 (g/mol) | Mv (g/mol) | PD |
|--------|------------|------------|------------|------------|--------------|------------|-------|
| Peak 1 | 15980 | 14539 | 15594 | 16649 | 17709 | 16317 | 1.073 |

B. NMR (HNMR) of polymer:



C. Summary of DSC results for PMMA of different tacticity:

| PMMA microstructure | Tacticity Syndio : Iso : Hetero | T_g (°C) |
|---------------------|------------------------------------|------------|
| Syndiotactic >79% | 79 : 19 : 2 | 120 |
| Syndiotactic >85% | 86 : 0 : 14 | 123 |
| Isotactic >97% | 0 : 97 : 3 | 44 |
| Atactic | 56 : 6 : 38 | 97 |