

# Product Profile

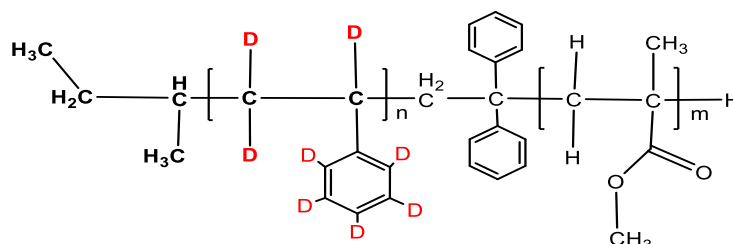
## Identification

**Product Name:** Poly(deuterated styrene (d8)-b-methylmethacrylate)

**Product Lot Number:** P44708-dPSMMA

**CAS #:** 25034-86-0 (protonated analog)

**Product Chemical Architecture:**



**Composition:**

|                                     |   |
|-------------------------------------|---|
| <b>Composition (dPS-b-MMA)</b>      | <b>44,000-b-88,000</b>                        |
| <b>MMA mole %</b>                   | <b>66.67 %</b>                                |
| <b>Tacticity (atac, iso, syn)</b>   | <b>PMMA &gt; 78 % syn</b>                     |
| <b>Mw/Mn</b>                        | <b>1.28</b>                                   |
| <b>dn/dc (mL/g) in THF at 30 °C</b> | <b>0.084-0.185 depends on its composition</b> |

## Method of Synthesis

The polymer is synthesized by anionic polymerization process.

**Solubility in different solvents:**

|         |                        |                   |   |
|---------|------------------------|-------------------|---|
| THF     | √                      | DMF               | √ |
| Alcohol | X                      | CHCl <sub>3</sub> | √ |
| Toluene | Depends on composition | Water             | X |

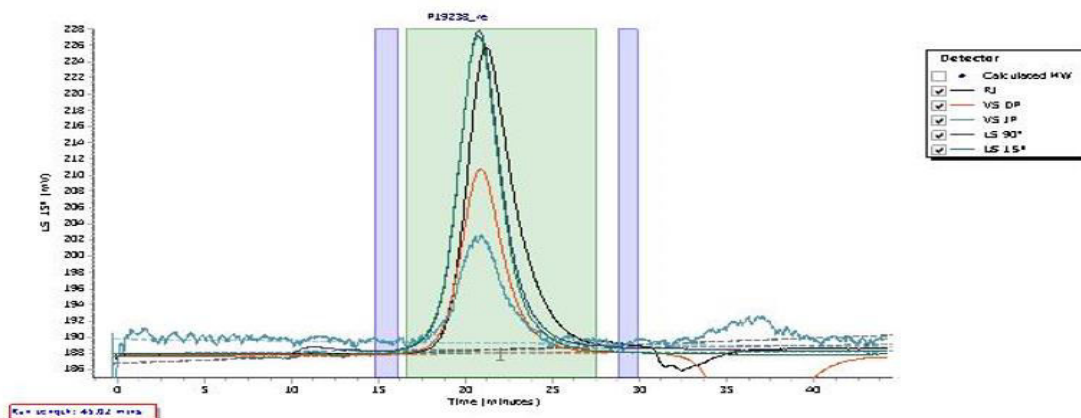
## Validation of Architecture

### A. Gel Permeation Chromatography (GPC), SEC Profile:

Molecular weights were determined by Agilent Technologie 1260 Infinity II GPC/SEC System equipped with Triple detector (RI, Viscometer, RALS 90° and LS 15°) and three columns (PLgel, 7.5x300 mm, 5µm-10µm, 10<sup>5</sup>-10<sup>6</sup>Å). THF (stabilized BHT) with 1%(v/v%) TEA was the eluent. The flow rate was 1.0 ml/min.

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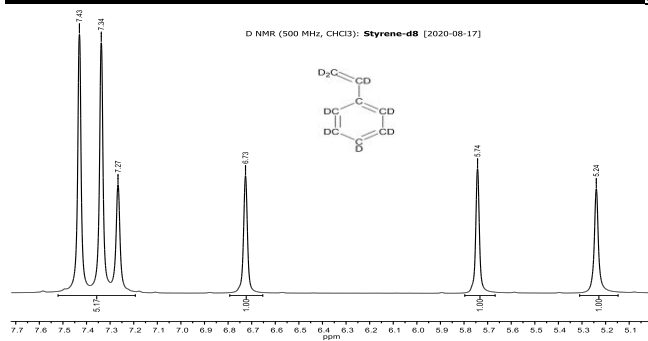
Chromatogram Plot



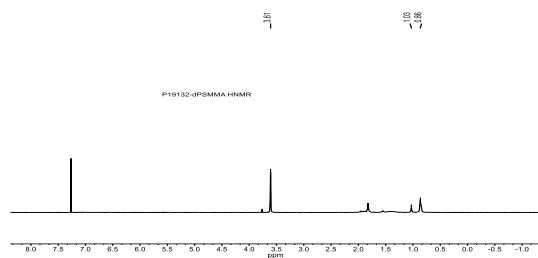
Molecular Weight Averages

| Peak   | Mp (g/mol) | Mn (g/mol) | Mw (g/mol) | Mz (g/mol) | Mz+1 (g/mol) | Mv (g/mol) | PD    |
|--------|------------|------------|------------|------------|--------------|------------|-------|
| Peak 1 | 179729     | 132631     | 170162     | 205400     | 239967       | 201080     | 1.283 |

B. NMR (D<sup>2</sup>NMR) of d8 styrene used  
<sup>2</sup>D (deuterium) NMR spectrum (500 MHz, CHCl<sub>3</sub>):



**H NMR:**



**D2 NMR:**

