

# Product Profile

## Identification

**Product Name:** Poly(styrene-b-4-vinyl-pyridine)

**Product Lot Number:** P9885-R-S4VP

**CAS #:** 26222-40-2

**Product Chemical Architecture:**



**Composition:**

| Composition (S-b-4VP)        | 159,000-b-176,000 |
|------------------------------|-------------------|
| 4VP mole%                    | 52.5              |
| Mn (g/mole)                  | 335,000           |
| Mw (g/mole)                  | 356,000           |
| Mw/Mn                        | 1.06              |
| dn/dc (mL/g) in DMF at 35 °C | 0.157             |

## Method of Synthesis

The polymer is synthesized by anionic polymerization process.

**Solubility in different solvents:**

|                          |                        |                   |   |
|--------------------------|------------------------|-------------------|---|
| THF                      | Depends on composition | DMF               | ✓ |
| Alcohol                  | Depends on composition | CHCl <sub>3</sub> | ✓ |
| Toluene <sub>(hot)</sub> | X                      | Water             | X |

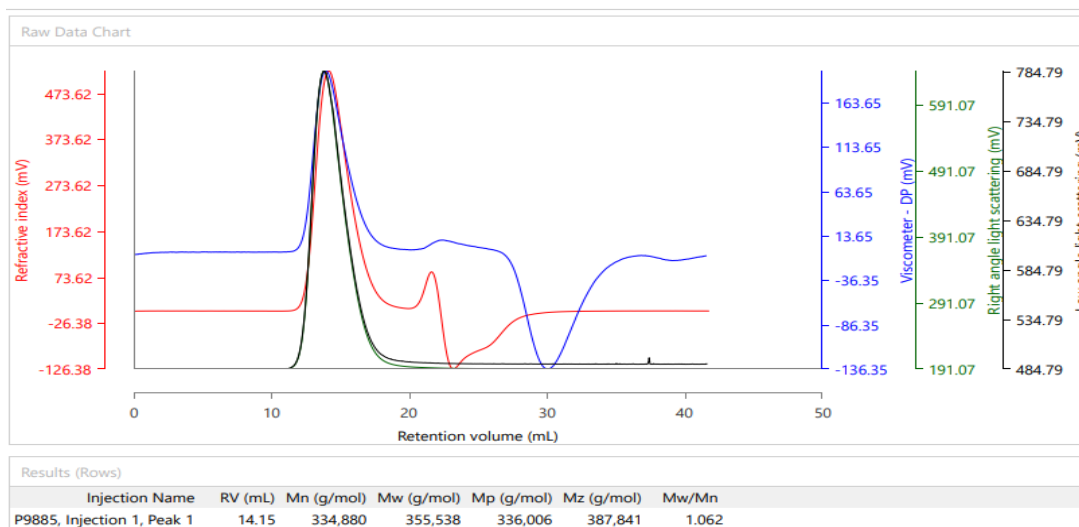
## Validation of Architecture

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

Molecular weights were determined by Malvern OmniSec Reveal & Resolve GPC/SEC System equipped with Triple detector (RI, Viscometer, RALS 90° and LALS 7°) and two columns (PSS, SDV, 8x300 mm). DMF with 0.023M LiBr was the eluent. The flow rate was 0.7 ml/min.

Polymer Source

Malvern Panalytical



Chemical structure of the polymer P9885-S4VP is shown above the spectrum. The structure consists of a polyisobutylene chain (H<sub>3</sub>C-CH<sub>2</sub>-CH(CH<sub>3</sub>)-) linked to a poly(4-phenyl-1,3-butadiene) chain (H<sub>2</sub>C-CH(Ph)-CH(Ph)-). The pyridine ring is highlighted in green.

**P9885-S4VP run in DMF**

The <sup>1</sup>H NMR spectrum shows peaks in the aromatic region (6.5-7.5 ppm) and a small peak at 8.5 ppm. Integration values of 2.00 and 6.63 are shown.