

Product Profile

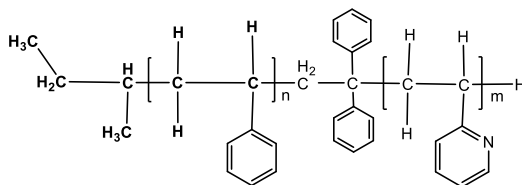
Identification

Product Name: Poly(styrene-b-2-vinyl-pyridine)

Product Lot Number: P8890-R-S2VP

CAS #: 24980-54-9

Product Chemical Architecture:



Composition:

Composition (S-b-2VP)	12,000-b-41,000
2VP mole %	76.9
Mn (g/mole)	53,000
Mw (g/mole)	55,000
Mw/Mn	1.03
dn/dc (mL/g) in DMF at 35 °C	0.156

Method of Synthesis

The polymer is synthesized by anionic polymerization process.

Solubility in different solvents:

THF	√	DMF	√
Alcohol	Depends on composition	CHCl ₃	√
Toluene _(hot)	√	Water	X

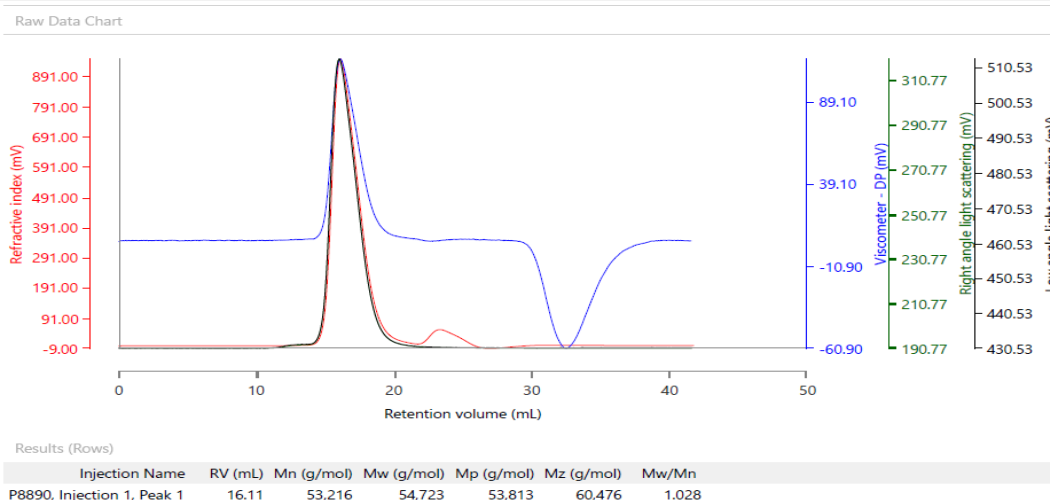
Validation of Architecture

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



P8890-R-S2VP

The chemical structure of P8890-R-S2VP is shown above the spectrum. It is a block copolymer consisting of a poly(methyl methacrylate) (PMMA) block (n units) and a polystyrene (PS) block (m units). The PMMA block is represented as $\text{H}_3\text{C}-\text{CH}_2-\text{CH}(\text{H}_3\text{C})-\text{C}(\text{H})(\text{C}_6\text{H}_5)_n$. The PS block is represented as $\text{H}_2\text{C}-\text{C}(\text{C}_6\text{H}_5)-\text{CH}_2-\text{C}(\text{H})(\text{C}_6\text{H}_5)_m$. The structure includes labels for the repeating units n and m, and a red 'N' label on the phenyl ring of the PS block, with a green oval highlighting the corresponding peak in the spectrum.

The ^1H NMR spectrum (400 MHz, CDCl₃) shows the following peaks and integrations:

- Aromatic region (6.5-7.5 ppm):** Multiple peaks corresponding to the aromatic protons of the PS block. The integration value is 4.50.
- Allylic region (5.0-5.5 ppm):** Peaks corresponding to the CH_2 protons of the PMMA block. The integration value is 1.00.
- Aliphatic region (1.5-2.5 ppm):** Peaks corresponding to the CH_3 and CH_2 protons of the PMMA and PS blocks. The integration value is 1.00.

The spectrum also shows a solvent peak for CDCl₃ at approximately 7.26 ppm and a reference peak for TMS at 0 ppm.