

Product Profile

Identification

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

Product Lot Number: P10974-R-S4VP

CAS #: 26222-40-2

Product Chemical Architecture:



Composition:

Composition (S-b-4VP)	7,000-b-7,000
4VP mole%	51.1
Mn (g/mole)	14,000
Mw (g/mole)	14,000
Mw/Mn	1.02
dn/dc (mL/g) in DMF at 35 °C	0.159

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 ₃	✓
Toluene _(hot)	X	Water	X

Validation of Architecture

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

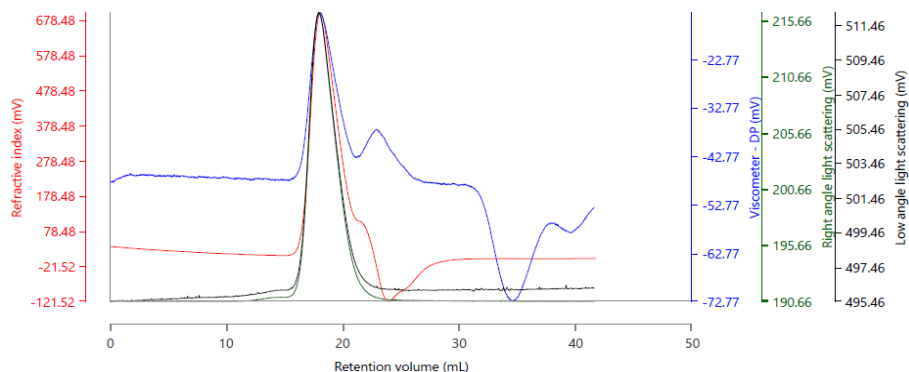
Molecular weights were determined by Malvern OmniSec Reveal & Resolve GPC/SEC System equipped with Triple detector (RI, Viscometer, RALS 90° and LALS 7°) and two columns (PSS, SDV, 8x300 mm). DMF with 0.023M LiBr was the eluent. The flow rate was 0.7 ml/min.

Polymer Source

Malvern Panalytical



Raw Data Chart



Results (Rows)

Injection Name	RV (mL)	Mn (g/mol)	Mw (g/mol)	Mp (g/mol)	Mz (g/mol)	Mw/Mn
P10974, Injection 1, Peak 1	18.09	13,830	14,092	14,157	14,372	1.019

The figure displays the ¹H NMR spectrum of the copolymer P10974-S4VP. The chemical structure of the copolymer is shown at the top, consisting of a polyisobutylene (PIB) block and a poly(4-vinylpyridine) (P4VP) block. The PIB block is represented as $\text{H}_3\text{C}-\text{CH}_2-\text{CH}(\text{CH}_3)-\text{CH}_2-$ with subscript n , and the P4VP block is represented as $-\text{CH}_2-\text{CH}(\text{C}_5\text{H}_4\text{N})-$ with subscript m . The NMR spectrum shows peaks corresponding to these protons. The x-axis is labeled 'f1 (ppm)' and ranges from 9.6 to 6.0. The y-axis represents intensity, ranging from -500 to 5000. Two integration regions are marked with horizontal lines and labeled with their respective values: 2.00 for the peak at approximately 8.4 ppm (corresponding to the PIB methine protons) and 6.79 for the peak at approximately 6.7 ppm (corresponding to the P4VP methine protons). The spectrum shows a broad peak at 8.4 ppm, a sharp peak at 7.2 ppm (likely solvent or water), and a broad peak at 6.7 ppm. The chemical structure also includes a pyridine ring with a red 'N' and green circles indicating the integration regions for the P4VP block.