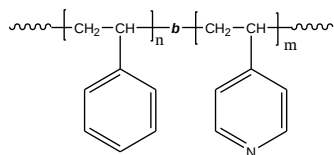


Sample Name: Poly(styrene-*b*-4-vinyl pyridine)
Electronic grade

Sample #: P3910AA-S4VP

Structure:



Composition:

Mn x 10 ³ PS- <i>b</i> -4VP	PDI
109.0- <i>b</i> -27.0	1.12

T _g for PS block: 101°C
T _g for 4VP block: 153°C

Synthesis Procedure:

Poly(styrene-*b*-4-vinyl pyridine) is prepared by living anionic polymerization in THF or THF–DMF solvent mixtures at –78 °C. Polystyrene macroanions were end capped with a unit of diphenyl ethylene (DPE) before adding 4-vinylpyridine (4VP) monomer. For further details please see our published articles.^{1,2}

Characterization:

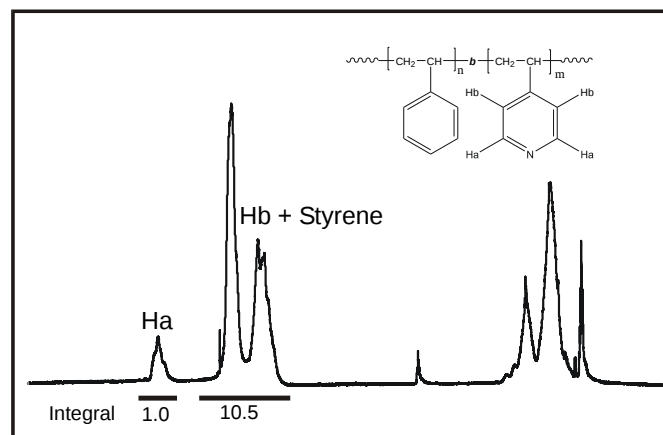
An aliquot of the anionic polystyrene block was terminated before addition of 4-vinyl pyridine and analyzed by size exclusion chromatography (SEC) in DMF to obtain the molecular weight and polydispersity index (PDI). The block copolymer composition was then calculated from ¹H-NMR spectroscopy by comparing the peak area of the two aromatic 4-VP protons at about 8.5 ppm with the peak area of the aromatic protons of polystyrene at 6.3-7.2 ppm. The composition of the block copolymer can also be determined by titration in acetic acid/HClO₄ using crystal violet indicator. Copolymer PDI is determined by SEC.

Thermal analysis of the samples was carried out using a differential scanning calorimeter (TA Q100) at a heating rate of 15°C/min. The inflection glass transition temperature (T_g) of the sample has been considered.

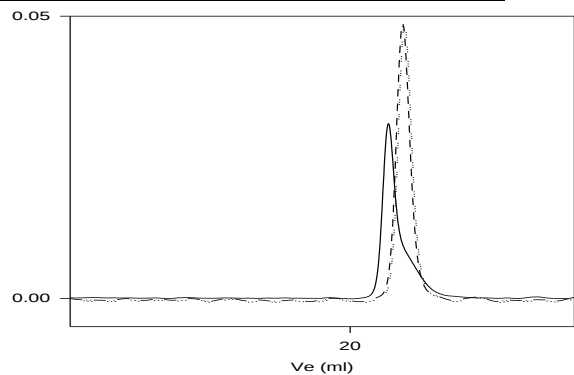
Solubility:

Poly(styrene-*b*-4-vinyl pyridine) is soluble in DMF, CHCl₃. The polymer can also be solubilized in THF depending on its chemical composition. The polymer readily precipitates from hexanes and diethyl ether.

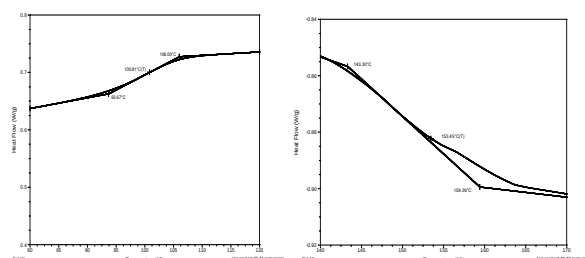
¹H-NMR Spectrum of Sample #: P3910AA-S4VP:



SEC profile of Sample # P3910AA-S4VP:



Thermograms of sample:



References:

- (1). S. K. Varshney, X. F. Zhong and A. Eisenberg *Macromolecules*, **1993**, 26, 701-706.
- (2). Z.Gao, S. K. Varshney, S. Wong, A. Eisenberg *Macromolecules*, **1994**, 27, 7923-7927.