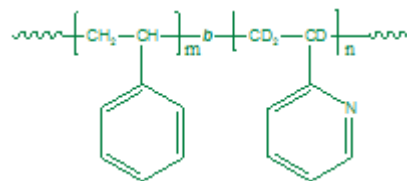


Sample Name:

**Polystyrene-(protonated) (d3)- 2 vinyl
pyridine (deuterated)**

Sample #: P2960-Sd3-2VP

Structure:**Composition:**

Mn x 10 ³ (PS-b-d3P2VP)	PDI
54.0-b-5.0	1.08
T _g for dPS block	104°C
T _g for dPS block	Not observed

Synthesis Procedure:

Protonated poly(styrene-b- (deuterated d3) 2-vinyl pyridine) diblock copolymer is prepared by living anionic polymerization.

Characterization:

The molecular weight and polydispersity index (PDI) of the block copolymer are characterized by size exclusion chromatography (SEC). The composition of the block copolymer was calculated from ¹H-NMR by comparing the peak area of the phenyl polystyrene protons between 6.4 to 7.2 ppm (indicating about 1% protonated fraction) and the vinyl pyridine protons at 3.65 ppm. This is given an approximate analysis. The yield of the polymer from the theoretical amount of protonated styrene and deuterated vinyl pyridine monomer calculate also the compositions required.

Thermal analysis

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

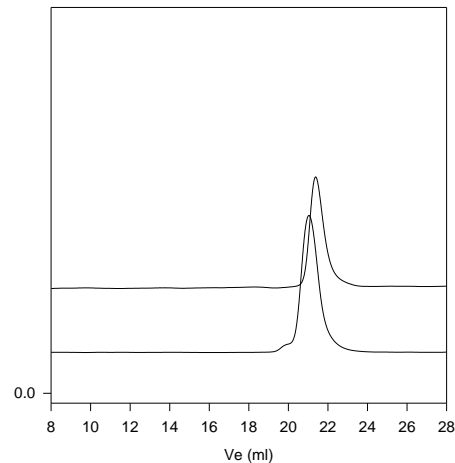
Solubility:

The polymer is soluble in THF (at 35°C), CHCl₃, benzene, toluene, dioxane.

NMR :

P2960-S d3 2VP

Deuterated poly2 vinylpyridine (d3) block



Size exclusion chromatography of polystyrene-b- (deuterated -d3) 2-vinyl pyridine))

—— Polystyrene, M_n=54,000 Mw= 56,500 PI=1.05
—— Polystyrene(54,000)-b-Poly(2-vinyl pyridine)(d3 deuterated)(5,000), PI=1.08

References for further information:

1. S. K. Varshney, R. Fayt, Ph. Teyssie, and J.P. Hautekeer US Patent 5,264,527 (1993)
2. S. K. Varshney, Jian-Xin Zhang. US Patent 7009,033 B3 2006.