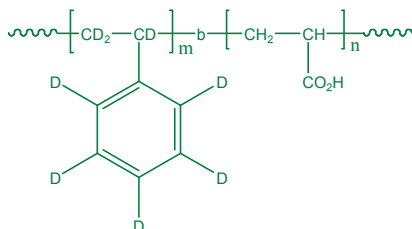


Sample Name:

**Deuterated polystyrene (d<sub>8</sub>)- polyacrylic acid  
(protonated) salt form**

Sample #: **P1253-dPSANa**

**Structure:**



**Composition:**

Mn x 10 <sup>3</sup> (dPS-b-ANa)	PDI
5.5-b-16.0	1.13

### Synthesis Procedure:

Deuterated poly(styrene (D<sub>8</sub>)-b-t-butyl acrylate) is prepared by living anionic polymerization in THF at -78 °C using sec.BuLi initiator in the presence of LiCl. Deuterated Polystyrene macroanions were end capped with a unit of diphenyl ethylene (DPE) before adding tert.butylacrylate (tBuA) monomer. For further details please see our published articles.<sup>1-5</sup> The t-butyl ester form was converted to acid form by hydrolysis in dioxane.

### Characterization:

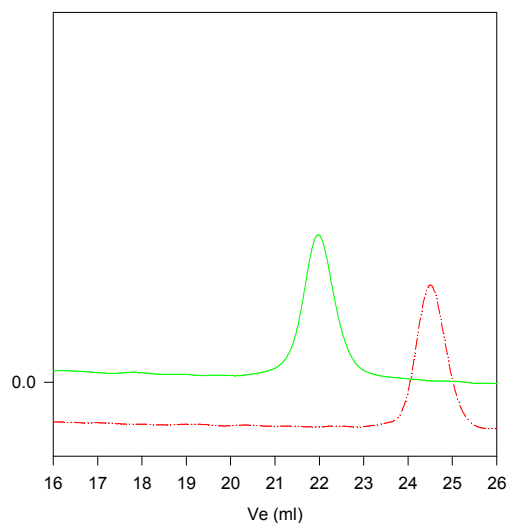
The molecular weight and polydispersity index (PDI) are obtained by size exclusion chromatography (SEC) in THF. SEC analysis was performed on a Varian liquid chromatograph equipped with refractive and UV light scattering detectors from Viscotek Co. Three SEC columns from Supelco (G6000-4000-2000 HXL) were used.

### Solubility:

Deuterated polystyrene-ANa is soluble in DMF, THF and may solubilize in CHCl<sub>3</sub> dependent on the composition (with a few units of acrylic acid block). It precipitates from hexanes.

### SEC of the product:

**P1253-dPSBA -precursor for dPSAA**



Size exclusion chromatography of polystyrene-b-poly(t-butyl acrylate)  
Precursor for Poly(deuterated styrene(d<sub>8</sub>)-b-acrylic acid)

--- Polystyrene, M<sub>n</sub>=5500, M<sub>w</sub>=5800, PI=1.05  
— Block Copolymer PdSt(5500)-b-PtBuA(28500), PI=1.13  
PdSt(5500)-b-PANa(16000), PI=1.13

### References for further information:

1. S. K. Varshney, R. Fayt, Ph. Teyssie, and J.P. Hautekeer US Patent 5,264,527 (1993)
2. Ph. Teyssie, Ph. Bayard, R. Jerome, S. K. Varshney, and J. S. Wang, *35th IUPAC International Union of Pure & Applied Chemistry International Symposium on Macromolecules* 1994, 67.
3. Ph. Teyssie, R. Fayt, J. P. Hautekeer, C. Jacobs, R. Jerome, L. Leemans and S. K. Varshney *Makromolekulare Chemie, Macromol. Symp.*, 1990, 32,61-73.
4. S. K. Varshney, J. P. Hautekeer, R. Fayt, R. Jerome, and Ph.Teyssie *Macromolecules*, 1990, 23, 2618-2622.
5. R. Jerome, R. Forte, S. K. Varshney, R. Fayt, and Ph. Teyssie  
"The Anionic Polymerization of Alkylacrylates: A Challenge" in the Recent Advances in Mechanistic and Synthetic Aspects of Polymerization: M. Fontanille and A. Guyot Ed., NATO ASI Series C 215,101 (1987), *CA Vol. 108*, 12, 094992.