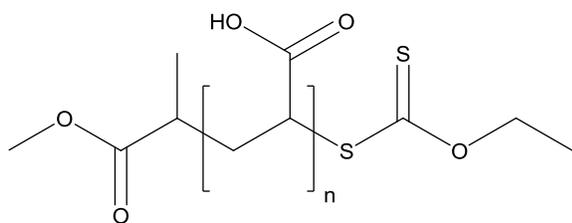


Sample Name:
Poly(acrylic acid)
Sample #: **P14100-AA**

Structure:

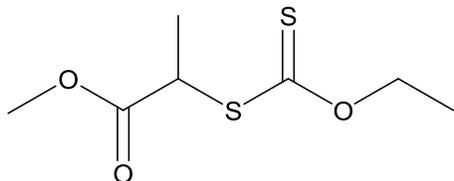


Composition:

Mn x 10 ³	PDI
1.7	1.4

Synthesis Procedure:

Polyacrylic acid was synthesized by RAFT polymerization of acrylic acid using 2,2'-azobis isobutyrate (CAS 2589-57-3) as initiator and xanthate as chain transfer agent:



Characterization:

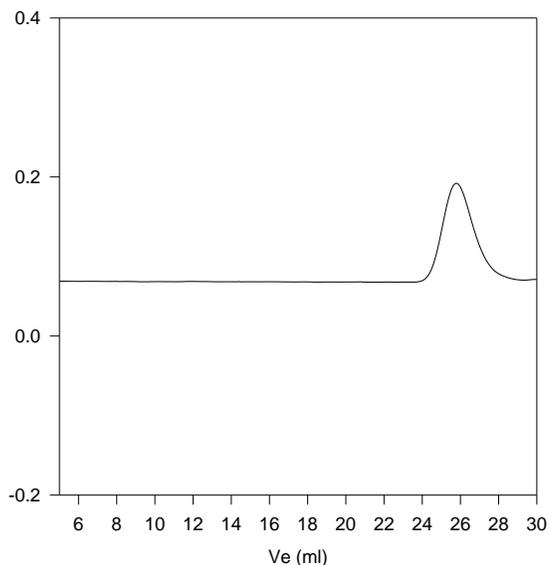
The molecular weight and polydispersity index (PDI) are obtained by size exclusion chromatography (SEC) in THF. SEC analysis was performed on a Varian liquid chromatograph equipped with refractive and UV light scattering detectors. Three SEC columns from Supelco (G6000-4000-2000 HXL) were used with triple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

The molecular weight of the obtained polymer was determined after converting poly acrylic acid to its n-butyl acrylate.

Solubility:

Poly(acrylic acid) is soluble in THF, water, methanol, ethanol. The polymer precipitates from ether, acetone, hexane.

SEC of Homopolymer: In ester form:
P14100-AA (in ester form)



Size Exclusion Chromatography of the polymer:

Ester form (PnBuA) M_n = 3000, M_w = 4200, PI = 1.4
PAA: Mn 1700 Mw/MN 1,4

References:

1. 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.
2. R. Fayt, R. Forte, C. Jacobs, R. Jerome, T. Ouhadi, Ph. Teyssie and **S. K. Varshney**, *Macromolecules*, 1987, 20, 1442-1444.
3. 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*.
4. Ph. Teyssie, R. Fayt, C. Jacobs, R. Jerome, L. Leemans, and **S. K. Varshney** *Am. Chem. Soc., Polym. Prepr.* 1988, 28, 2, 52-53