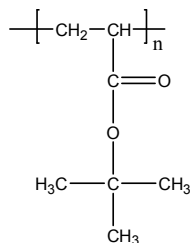


Sample Name: Poly(t-butyl acrylate)

Sample #: P4936-tBuA

Structure:



Composition:

| | |
|-------------------|-------|
| $M_n \times 10^3$ | PDI |
| 32.0 | broad |

Synthesis Procedure:

Poly(t-butyl acrylate) is obtained by living anionic polymerization of t-butyl acrylate.¹⁻⁴

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.

Thermal analysis of the samples was carried out using a differential scanning calorimeter (TA Q100) at a heating rate of 10°C/min. The inflection glass transition temperature (T_g) of the sample has been considered.

Solubility:

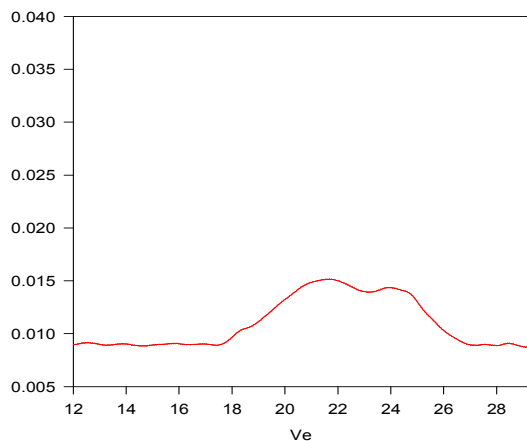
Poly(t-butyl acrylate) is soluble in THF, hexanes (low MW), toluene and CHCl_3 . This polymer precipitates from ethanol and methanol containing 10-15% water.

T_g vs MW for selected poly t-butyl acrylate

| $M_n \times 10^3$ | T_g (°C) | $M_n \times 10^3$ | T_g (°C) |
|-------------------|------------|-------------------|------------|
| 0.75 | -15 | 11.6 | 28 |
| 1.4 | -5 | 22 | 32 |
| 2 | 7 | 65 | 35 |
| 4.5 | 12 | 1128 | 38 |

SEC of Sample:

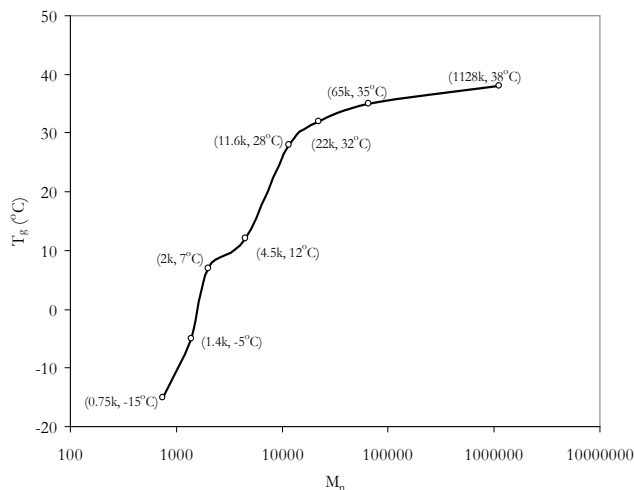
P4936-tBuA



Size Exclusion Chromatography of Poly tert.-butyl acrylate:

$M_n = 32000$, $M_w = 255000$ PI= Broad

T_g of poly t-butyl acrylate as function of molecular weight



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