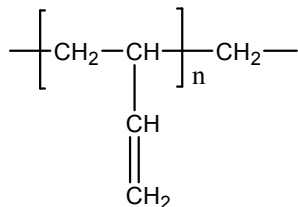


Sample Name: Sulfonic Acid Terminated Polybutadiene, 1,2-rich microstructure

Sample #: P3766-BdSO3H

Structure:

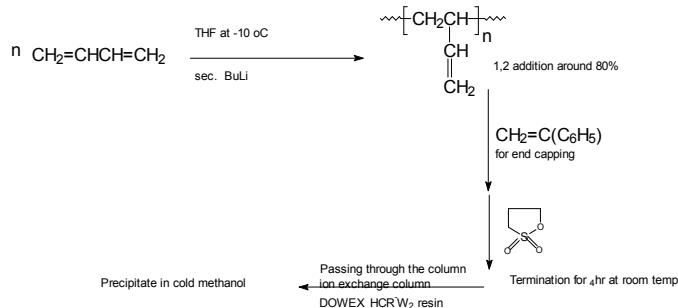


Composition:

Mn x 10 ³	PDI
19.0	1.04

Synthesis Procedure:

1,2-addition sulfonic acid terminated polybutadiene was prepared by anionic living polymerization of butadiene in polar solvent followed by endcapping with a unit of diphenyl ethylene and termination with propane sultone. The scheme of the reaction is illustrated below:



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.

Functionality:

The sulfonic acid functionality of the polymer was determined by two-phase titration with Hyamine® 1622 (Fluka) in water-chloroform using the methylene blue (Fluka) as indicator (*Ref. Quirk & Kim, Macromolecules*, 1991, **24**, 4515-4522). The functionality of the polymer from titration is indicated on the label.

FTIR spectrum of the product also indicate absorbance at 1055 cm⁻¹ and 1128 cm⁻¹ for C-O-S characteristic.

Solubility:

Sulfonic acid terminated polybutadiene is soluble in DMF, THF, toluene, hexane, cyclohexane and CHCl₃. It precipitates from methanol, ethanol, water.

SEC of Sample: