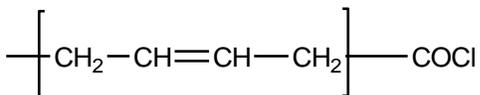


Sample Name: Carboxyl Chloride Terminated Polybutadiene, 1,4-rich microstructure

Sample #: P4482-BdCOCl

Structure:

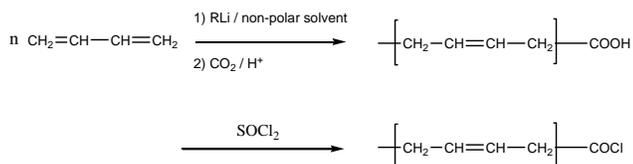


Composition:

Mn x 10 ³	PDI
2.5	1.04

Synthesis Procedure:

1,4-addition carboxy terminated polybutadiene was prepared by anionic living polymerization of butadiene in non-polar media (or in presence of 10% diethyl ether), followed by terminating the polymerization with dried CO₂. The carboxyl chloride was prepared by treating with thionyl chloride. 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 degree of polymer functionality was determined by acid-base titration. Conversion of terminal COOH to COCl was verified from FTIR spectrum. C=O of the free acid disappeared at 1710 cm⁻¹ and another absorbance appeared at 1799 cm⁻¹.

Solubility:

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

SEC of Sample:

