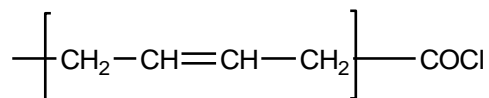


**Sample Name:** Carboxyl Chloride Terminated Polybutadiene, 1,4-rich microstructure

**Sample #:** P4482-BdCOCl

**Structure:**

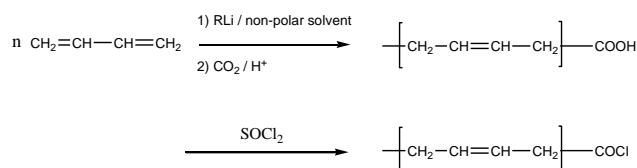


**Composition:**

$M_n \times 10^3$	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  $\text{CO}_2$ . 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  $\text{COOH}$  to  $\text{COCl}$  was verified from FTIR spectrum.  $\text{C}=\text{O}$  of the free acid disappeared at  $1710 \text{ cm}^{-1}$  and another absorbance appeared at  $1799 \text{ cm}^{-1}$ .

**Solubility:**

$\text{COOH}$  terminated polybutadiene is soluble in DMF, THF, toluene, hexane, cyclohexane and  $\text{CHCl}_3$ . It precipitates from methanol, ethanol and water.

**SEC of Sample:**

