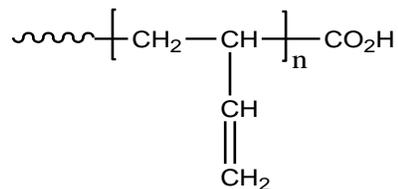


**Sample Name:** Carboxy Terminated Polybutadiene, 1, 2-rich microstructure  
**Sample #:** P5132-BdCOOH

**Structure:**



**Composition:**

$M_n \times 10^3$	PDI
2.6	1.09
COOH functionality	>90%
$T_g$ (°C)	-60

**Synthesis Procedure:**

1, 2-addition carboxy terminated polybutadiene was prepared by anionic living polymerization of butadiene in non-polar media, followed by end capping with a unit of diphenyl ethylene than the addition of THF followed by terminating the polymerization with dried  $\text{CO}_2$ .

**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.

**Thermal Analysis:**

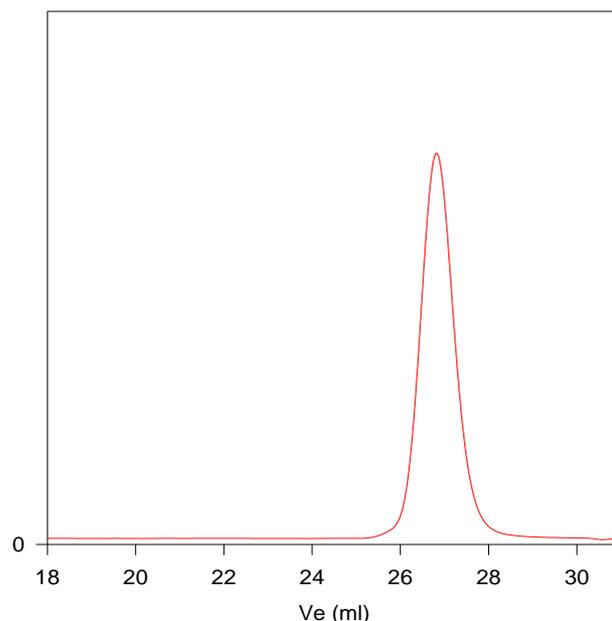
Thermal analysis of the samples was carried out using a differential scanning calorimeter (TA Q100) at a heating rate of  $10^\circ\text{C}/\text{min}$ . The inflection glass transition temperature ( $T_g$ ) of the sample has been considered.

**Solubility:**

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:**

**P5132-BdCOOH (Rich in 1,2 addition)**



Size exclusion chromatography of polybutadiene before termination with  $\text{CO}_2$ :

$M_n=2600$   $M_w=2850$ ,  $PI=1.09$  functionality= $\Rightarrow 0.98\%$   
 (Acid base titration)

**DSC thermogram for the sample:**

