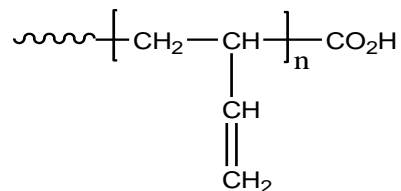


Sample Name: Carboxy Terminated
Polybutadiene, 1, 2-rich microstructure
Sample #: P3866-BdCOOH

Structure:



Composition:

| | |
|--------------------|------|
| $M_n \times 10^3$ | PDI |
| 2.0 | 1.11 |
| COOH functionality | >90% |
| T_g (°C) | -17 |

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 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:

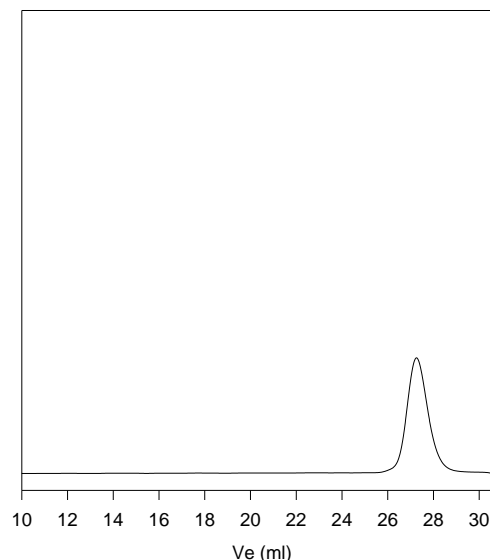
Thermal analysis of the samples was carried out using a differential scanning calorimeter (TA Q100) at a heating rate of $10^\circ\text{C}/\text{min}$. The inflection glass transition temperature (T_g) of the sample has been considered.

Solubility:

COOH terminated polybutadiene is soluble in DMF, THF, toluene, hexane, cyclohexane and CHCl_3 . It precipitates from methanol, ethanol and water.

SEC of Sample:

P3866-BdCOOH (Rich in 1,2 addition)



Size exclusion chromatography of dicarboxy terminated polybutadiene before termination with CO_2 :

$M_n=2,000$ $M_w=2,200$, $PI=1.11$ functionality=>0.90

DSC thermogram for the sample:

