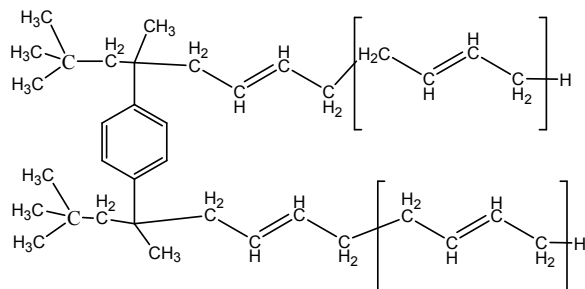


**Sample Name: Polybutadiene**  
**(rich in 1,4 microstructure)**  
**(1,2=27% , 1,4 = 73%)**

**Sample #: P18134-Bd**



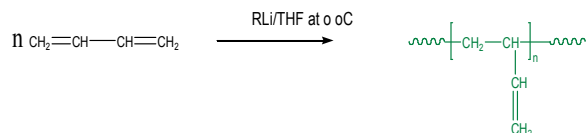
**Composition:**

Mn x 10 <sup>3</sup>	PDI
2.5	1.10
T <sub>g</sub> (°C)	-21

#### Synthesis Procedure:

Polybutadiene (1,2-rich) is obtained by living anionic polymerization in THF. The reaction scheme is shown below:

#### 1,2 addition:



#### 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.

Polymer microstructure can be confirmed by <sup>1</sup>H-NMR where the spectrum of 1,2-polybutadiene contains of 1 vinylic proton signal at 5.4 ppm and 2 vinylic protons at 5.0 ppm but the spectrum of 1,4-polybutadiene only contains vinylic signals at 5.4 ppm.

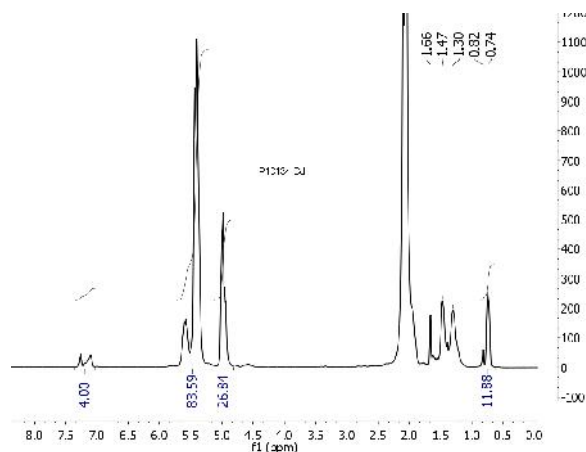
#### Thermal analysis:

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T<sub>g</sub>).

#### Solubility:

Polybutadiene is soluble in THF, toluene, hexane, pentane and cyclohexane and precipitates from methanol and ethanol.

#### SEC of Homopolymer



#### Thermogram for the polymer

