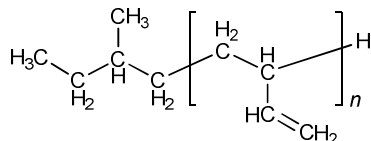


**Sample Name:**

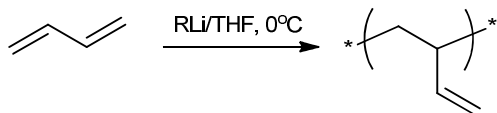
Polybutadiene (rich in 1,2 microstructure, 93%)

**Sample # P4840-Bd****Structure:****Composition:**

$M_n \times 10^3$ (g/mol)	$M_w/M_n$ (PDI)
4.0	1.10
$T_g$ (°C)	-17

**Synthesis Procedure:**

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

**Characterization:**

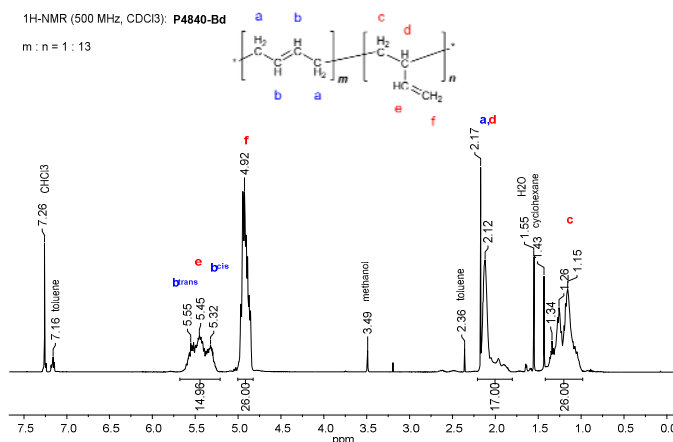
The molecular weight and polydispersity index (PDI) were obtained by size exclusion chromatography (SEC) in THF. SEC analysis was performed on a Varian liquid chromatograph equipped with refractive and UV light scattering detectors. Three SEC columns from Supelco (G6000-4000-2000 HXL) were used with triple detectors from Viscotek Co.

Polymer microstructure was calculated from  $^1\text{H}$ -NMR spectrum by comparison of ratio between characteristic vinylic protons at 4.9 ppm (1,2-polybutadiene) and 5.3–5.5 ppm (1,4-polybutadiene).

Thermal analysis of the sample was done on a TA Q100 differential scanning calorimeter at a heating rate of  $10^\circ\text{C}/\text{min}$ . The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature ( $T_g$ ).

**Solubility:**

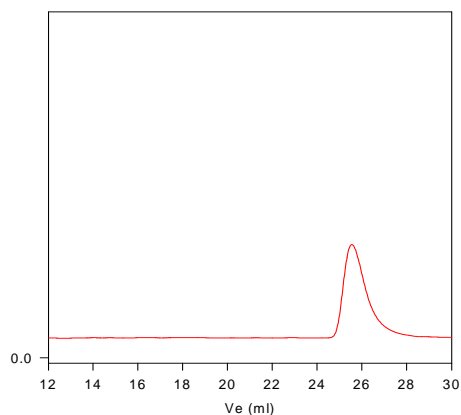
Polybutadiene is soluble in THF, toluene, hexane, pentane, and cyclohexane; and precipitates from methanol and ethanol.

 **$^1\text{H}$  NMR spectrum of P4840-Bd:**

1,2-Polybutadiene = 93 %

**SEC elugram of the polymer:**

P4840-Bd (rich in 1,2 addition)

 $M_n=4000$ ,  $M_w=4500$ ,  $M_w/M_n=1.10$ **DSC of the polymer:**