

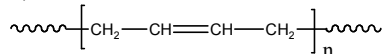
Sample ID: P10562-Bd

Sample Name: Polybutadiene (rich in 1,4 microstructure)

Sample #: P10562-Bd

1,4 rich microstructure (cis 68%, trans 27% and 1,2 contents 5%)

1,4 rich microstructure:



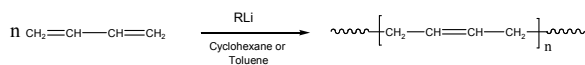
Composition:

Mn x 10 ³	PDI
54.5	1.05

Synthesis Procedure:

Polybutadiene (1,4-rich) is obtained by living anionic polymerization in toluene or cyclohexane. The reaction scheme is shown below:

1,4 addition:



Characterization:

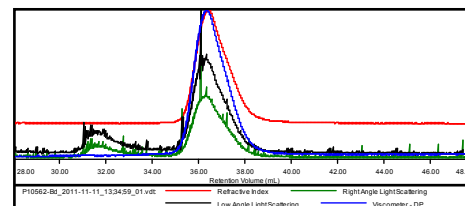
The molecular weight and polydispersity index (PDI) are obtained by size exclusion chromatography (SEC) in THF. SEC analysis was performed on a Varian liquid chromatograph equipped with refractive and UV light scattering detectors. Three SEC columns from Supelco (G6000-4000-2000 HXL) were used with triple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

Polymer microstructure can be confirmed by ¹H-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.

Solubility:

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

Concentration (mg/mL)	3.3794
Sample dn/dc (mL/g)	0.1270
Method File	PS80K-Oct-0000.v cm
Column Set	3x PL 1113-6300
System	System 1



Sample	Mn (Da)	Mw (Da)	Mp (Da)	Mw/Mn	IV (dL/g)
P10562-Bd_2011-11-11_13;34;59_01.v c	54,506	57,406	54,164	1.053	1.3159

