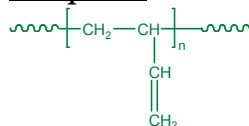


Sample Name: Polybutadiene
(Rich in 1, 2 microstructure)
(1,2=85% , 1,4 = 15%)

Sample #: P19293-Bd

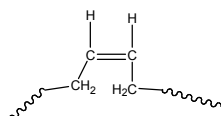


Composition:

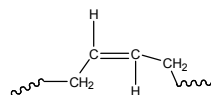
Mn x 10 ³	PDI
97.0	1.09

Synthesis Procedure:

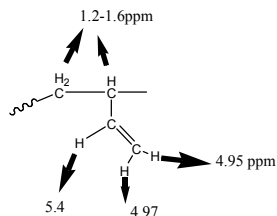
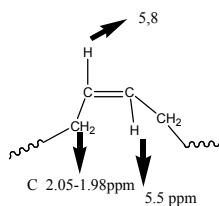
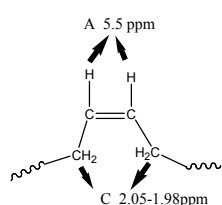
Polybutadiene (1,2-rich) is obtained by living anionic polymerization in THF using cumyl potassium as initiator.



Cis 1,4 addition



Trans 1,4 addition



Characterization:

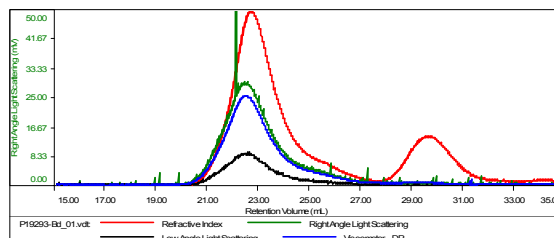
The molecular weight and polydispersity index (PDI) are obtained by size exclusion chromatography (SEC) in THF. SEC analysis was performed on a Varian liquid chromatograph equipped with refractive and UV light scattering detectors. Three SEC columns from Supelco (G6000-4000-2000 HXL) were used with triple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

SEC of the polymer:

Sample ID:P19293-Bd

Concentration (mg/mL)	1.4431
Sample dn/dc (mL/g)	0.1270
Method File	PS80K-May20-2015-0000.vcm
Column Set	3xPL 1113-6300
Solvent	THF



Sample	MW Number Average (Da)	MW Weight Average (Da)	MW at Peak (Da)	Polydispersity	Intrinsic Viscosity (dL/g)
P19293-Bd_01.vdt	96,458	105,436	92,271	1.093	2.4067

NMR of the polymer:

