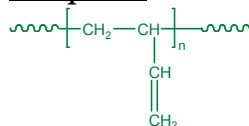


**Sample Name: Polybutadiene**  
**(Rich in 1, 2 microstructure)**  
**(1,2=90% , 1,4 = 10%)**

**Sample #: P19295-Bd**

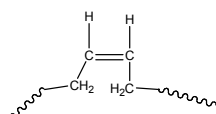


### Composition:

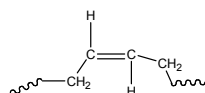
Mn x 10 <sup>3</sup>	PDI
305.0	1.04

### Synthesis Procedure:

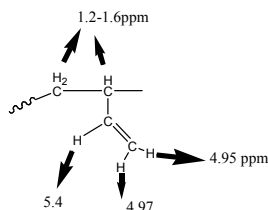
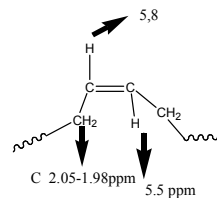
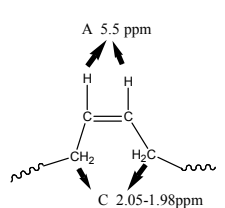
Polybutadiene (1,2-rich) is obtained by living anionic polymerization in THF. Using cumyl potassium as initiator.



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.

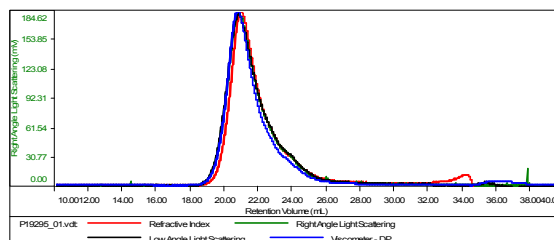
Polymer microstructure can be confirmed by <sup>1</sup>H-NMR where the spectrum of 1,2-polybutadiene contains of 1 vinylic proton signal at 5.4 ppm and 2 vinylic protons at 5.0 ppm but the spectrum of

1,4-polybutadiene only contains vinylic signals at 5.4 ppm.

### SEC of polymer:

Sample ID: P19295-Bd

Concentration (mg/mL)	3.7684
Sample ch/dc (mL/g)	0.1270
Method File	PS80K-M520-2015-0000.vcm
Column Set	3x PL 1113-6300
Solvent	THF



Sample	MW Number Average (Da)	MW Weight Average (Da)	MW at Peak (Da)	Polydispersity	Intrinsic Viscosity (dL/g)
P19295_01.vdt	304,931	316,607	289,607	1.038	5.7469

### NMR of polymer:

