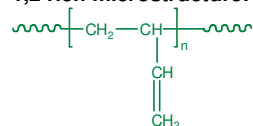


Sample Name: Polybutadiene
(rich in 1,2 microstructure)
(1,2=85% trans-1,4 =9% , cis 1,4 = 6%)

Sample #: P4843-Bd

1,2 rich microstructure: (>85%)



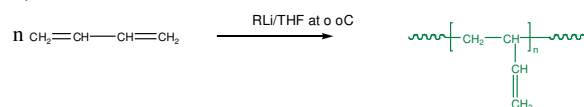
Composition:

Mn x 10 ³	PDI
13.0	1.06

Synthesis Procedure:

Polybutadiene (1,4-rich) is obtained by living anionic polymerization in toluene or cyclohexane. 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.

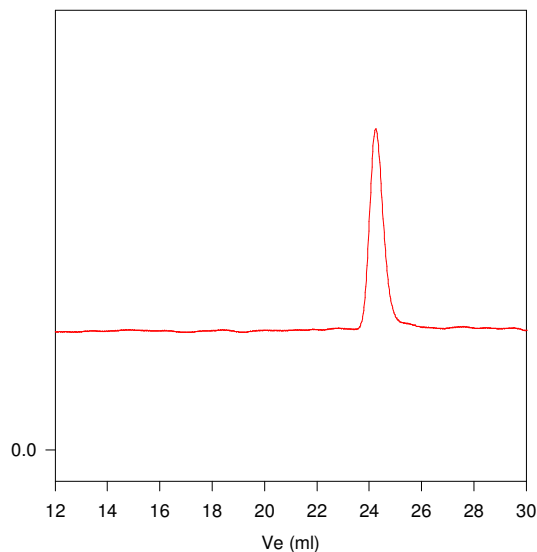
Polymer microstructure can be confirmed by ¹H-NMR where the spectrum of 1,2-polybutadiene contains of 1 vinylic proton signal at 5.4 ppm and 2 vinylic protons at 5.0 ppm but the spectrum of 1,4-polybutadiene only contains vinylic signals at 5.4 ppm.

Solubility:

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

SEC of Homopolymer

P4843-Bd(rich in 1,2 addition)



Size exclusion chromatography of polybutadiene with respect to polybutadiene standards:

M_n=13000, M_w=13800, M_w/M_n=1.06