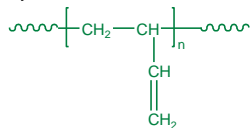


Sample Name: Polybutadiene
(rich in 1,2 microstructure)
(1,2=85% trans-1,4 =9% , cis 1,4 = 6%)

Sample #: P602-Bd

1,2 rich microstructure: (>85%)



Composition:

Mn x 10 ³	PDI
6.5	1.14
T _g (°C)	-18

Synthesis Procedure:

Polybutadiene (bearing different contents of 1,2 addition) is obtained by living anionic polymerization in toluene or cyclohexane containing the modifier

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.

Thermal analysis:

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/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).

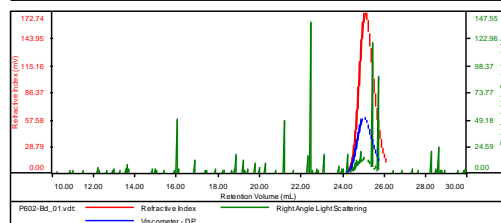
Solubility:

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

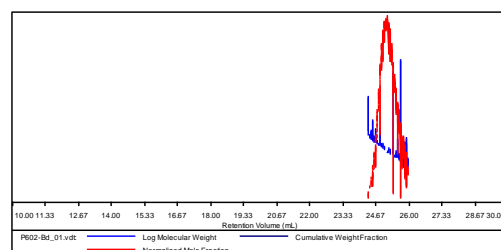
SEC of Homopolymer

Sample ID: P602-Bd

Concentration (mg/mL)	5.5270
Sample dn/dc (mL/g)	0.1270
Method File	PS80K-NOV25-2013-0000.vcm
Column Set	3x PL 1113-6300
System	System 1



Sample	Mn	Mw	Mp	Mw/Mn	IV
P602-Bd_01.vdt	6,488	7,404	6,798	1.141	0.2244



Thermogram for the polymer

