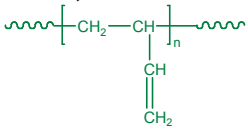
Sample Name: **Polybutadiene**
(rich in 1,2 microstructure)
(1,2=29%, trans 1,4 =44%, cis 1,4=27%)

Sample #: **P1958-Bd**

1,2 rich microstructure: (about 29% from H NMR)



Composition:

Mn x 10^3	PDI
10.7	1.11
T_g (°C)	-31

Synthesis Procedure:
Polybutadiene (bearing different contents of 1,2 addition) is obtained by living anionic polymerization in THF or cyclohexane that contain the modifier

Characterization:

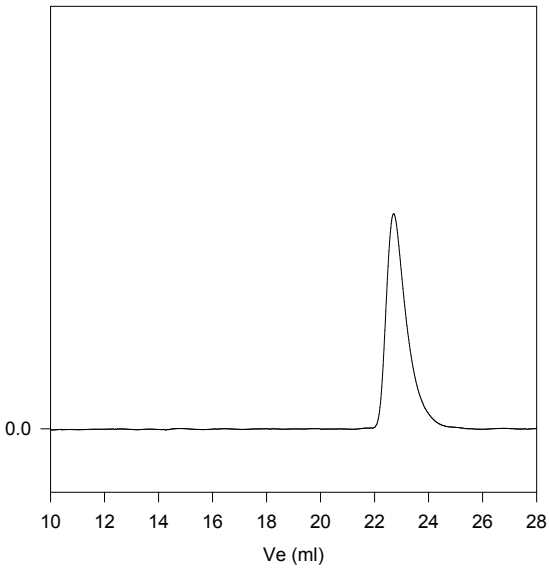
The molecular weight and polydispersity index (PDI) are obtained by size exclusion chromatography (SEC) in THF. SEC analysis was performed on a Varian liquid chromatograph equipped with refractive and UV light scattering detectors. Three SEC columns from Supelco (G6000-4000-2000 HXL) were used with triple detectors from Viscotek Co.
Polymer microstructure can be confirmed by ^{1}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.

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

P1958-Bd



Size exclusion chromatography of polybutadiene with respect to polybutadiene standards:
M_n=10,700, M_w=11,900, M_w/M_n=1.11

Thermogram for the polymer