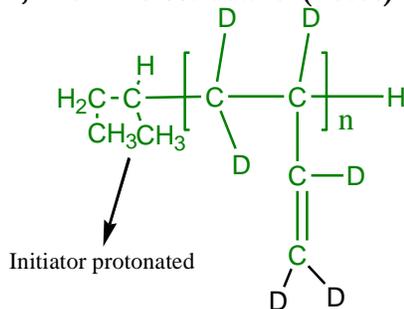


**Sample Name: Deuterated Polybutadiene**  
**(rich in 1,2 microstructure)**  
**(1,2=80% trans-1,4 =12% , cis 1,4 = 8%)**

**Sample #: P18168-dPBd (d6)**

**1,2 rich microstructure: (>80%)**



**Composition:**

| $M_n \times 10^3$ | PDI  |
|-------------------|------|
| 4.2               | 1.09 |

**Synthesis Procedure:**

Deuterated Polybutadiene (1,2-rich) is obtained by living anionic polymerization in THF.

**Characterization:**

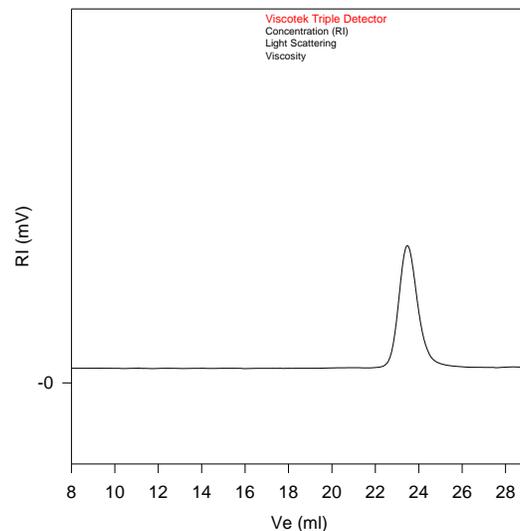
The molecular weight and polydispersity index (PDI) are obtained by size exclusion chromatography (SEC) in THF. SEC analysis was performed on a Varian liquid chromatograph equipped with refractive and UV light scattering detectors. Three SEC columns from Supelco (G6000-4000-2000 HXL) were used and the molecular weights of the deuterated polymer determined from using polybutadiene as reference material.

Polymerization and microstructure of the polymer determined from the protonated monomer polymerization using the identical conditions as of deuterated monomer polymerization.

Polymer microstructure can be confirmed by  $^1\text{H-NMR}$  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 Homopolymer**

**P18168-dBd**



Size exclusion chromatography of deuterated polybutadiene( $d_6$ )  
 (rich in 1,2 microstructure):  
 $M_n=4,200$ ,  $M_w=4,600$ ,  $M_w/M_n=1.09$