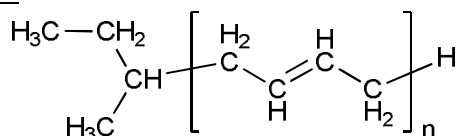


Sample Name:

Polybutadiene (predominantly 1,4-addition)

Sample # **P10053-Bd**

Structure:



Composition:

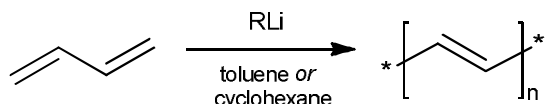
$M_n \times 10^3$ (g/mol)	M_w/M_n
1,200.0	1.18

Microstructure:

1,4-addition:		1,2-addition
<i>Cis</i> -isomer	<i>Trans</i> -isomer	
59 %	35 %	6 %

Synthesis procedure:

1,4-Polybutadiene was prepared by living anionic polymerization in toluene or cyclohexane. A scheme of reaction is presented below.

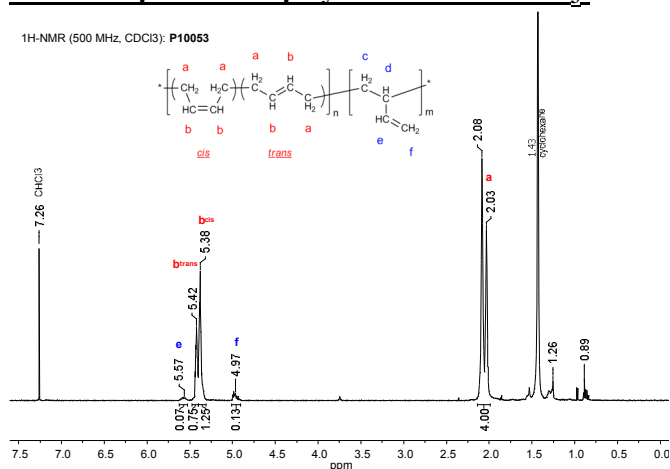


Characterization:

The polybutadiene microstructure was determined by ^1H NMR spectroscopy by comparison of characteristic chemical shifts for *cis*-1,4- and *trans*-1,4- isomers, and 1,2-vinyl type of butadiene polymerization.

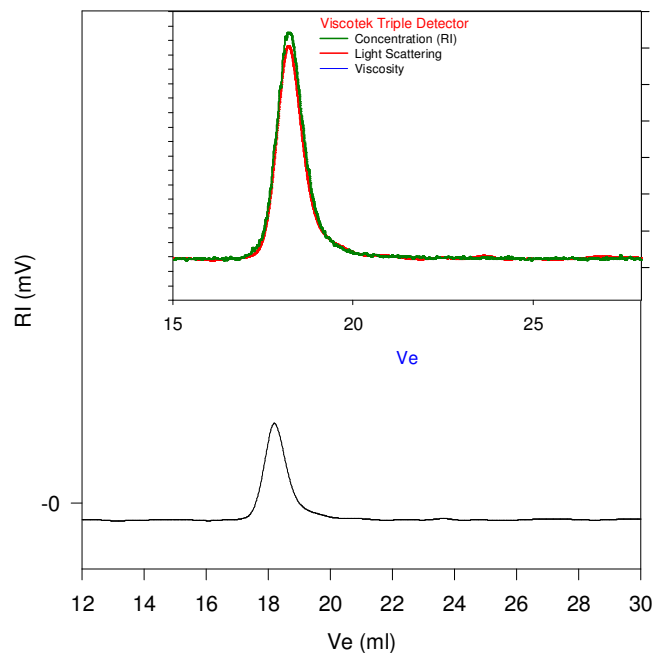
The molecular weight and polydispersity index (M_w/M_n) of polybutadiene were obtained by size exclusion chromatography (SEC) in THF. SEC analysis was performed on a Varian liquid chromatograph equipped with triple detector (RI, viscometer, light scattering) and SEC columns from Supelco (G6000-4000-2000 HXL).

^1H NMR spectrum of polybutadiene in CDCl_3 :



SEC elugram of polybutadiene in THF:

P10053-Bd



Size exclusion chromatography of Polybutadiene (rich in 1,4 microstructure):

$M_n=1,200,000$, $M_w=1,400,000$, $M_w/M_n=1.18$

Solution viscosity in THF at 35 °C: 10.629 dl/g

RgW: 83.69 nm