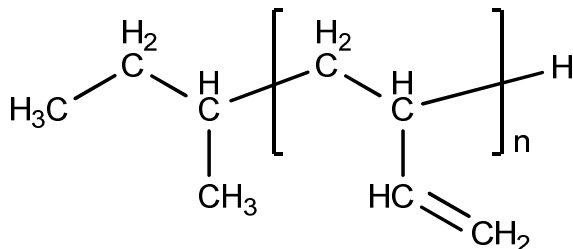


Sample Name: **Polybutadiene (1,2-addition)**

Sample #: **P19847-Bd**

Structure:



Composition:

Mn x 10 ³	PDI
1.9	1.08
PBd 1,4-addition	<5 %
PBd 1,2-addition:	>95 %
Glass transition temperature (T _g):	-27°C

Synthesis procedure:

1,2-addition polybutadiene was prepared by anionic living polymerization of butadiene in non-polar/polar media.

Characterization:

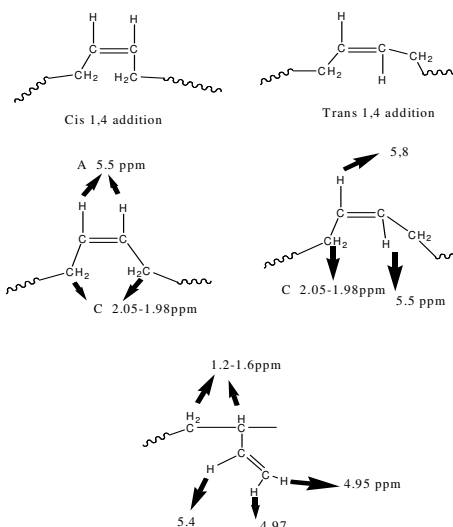
The ratio between 1,4- and 1,2-addition was calculated by ¹H NMR spectroscopy. Molecular weight and polydispersity index were determined by size exclusion chromatography (SEC).

Thermal analysis:

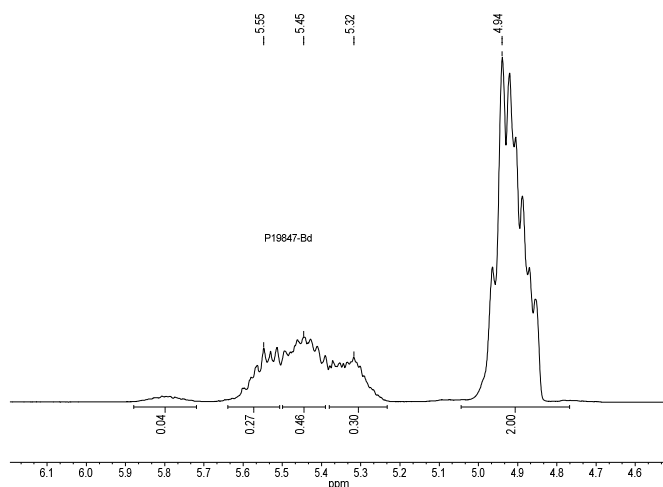
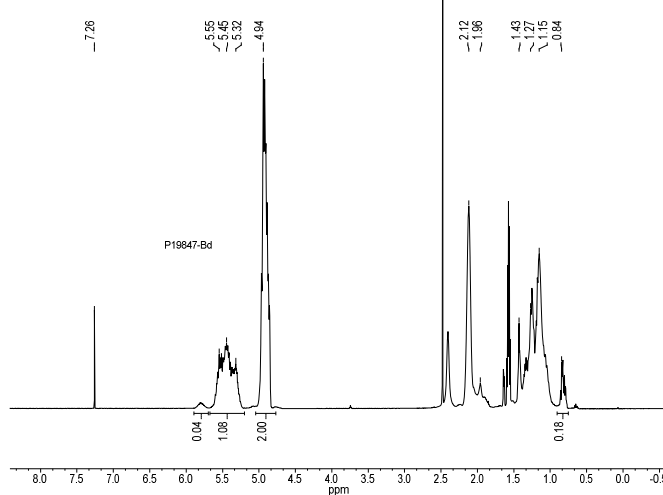
Thermal analysis of the copolymer was performed on a TA Q100 differential scanning calorimeter (DSC) at a heating rate of 10oC/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

Solubility:

Polybutadiene is soluble in DMF, THF, toluene, hexane, cyclohexane and CHCl₃. It precipitates from methanol, ethanol and water.



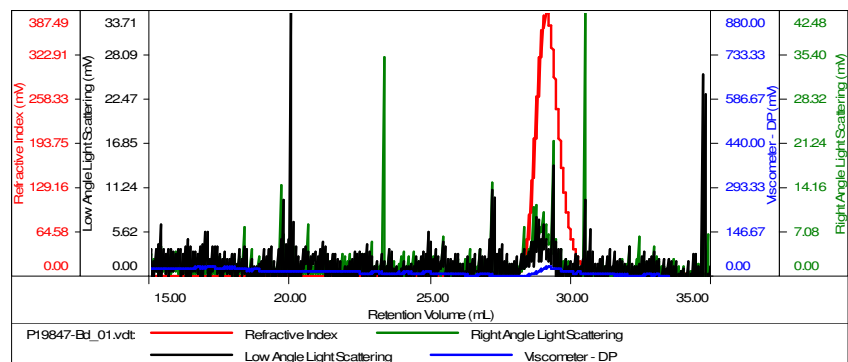
¹H NMR (500 MHz, CDCl₃) of polybutadiene:



SEC elugram:

Sample ID:P19847-Bd

Concentration (mg/mL)	7.2280
Sample dn/dc (mL/g)	0.1250
Method File	PS80K-April-18-2016-0001.vom
Column Set	3x PL 1113-6300
Solvent	THF



Sample	Mn (Da)	Mw (Da)	Mw/Mn	IV (dL/g)	Rh (nm)	Ret Vol (mL)
P19847-Bd_01.vdt	1,834	1,991	1.085	0.1412	2.03	29.073

Reference: Thermal transition of PBd.

Polybutadiene (Mn=2.2–2.4 x10 ³)	Tg
1,2-addition: 78 %	–35°C
1,2-addition: 89 %	–29°C
1,2-addition: 99 %	–27°C