

### Sample name:

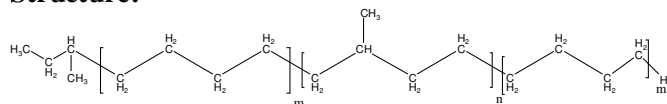
**Poly(Ethylene-*b*-Ethylene Propylene-*b*-Ethylene) triblock copolymer**

### Other name:

Hydrogenated form of Poly(Butadiene-*b*-Isoprene-*b*-Butadiene), Bd rich in 1,4-microstructure

**Sample # P19493A-EEPrE**

### Structure:



### Composition:

Mn $\times 10^3$ (by $^1\text{H}$ NMR)	Mw/Mn	Degree of hydrogenation
Bd- <i>b</i> -Ip- <i>b</i> -Bd 23.0- <i>b</i> -129.0- <i>b</i> -18.0	1.03	—
After hydrogenation: <b>23.8-<i>b</i>-132.5-<i>b</i>-18.5</b>	1.03	> 98%

### Synthesis procedure:

The polymer was synthesized by anionic polymerization in cyclohexane.

### Characterization:

The polymer was characterized by  $^1\text{H}$  NMR, SEC, FTIR, and DSC.

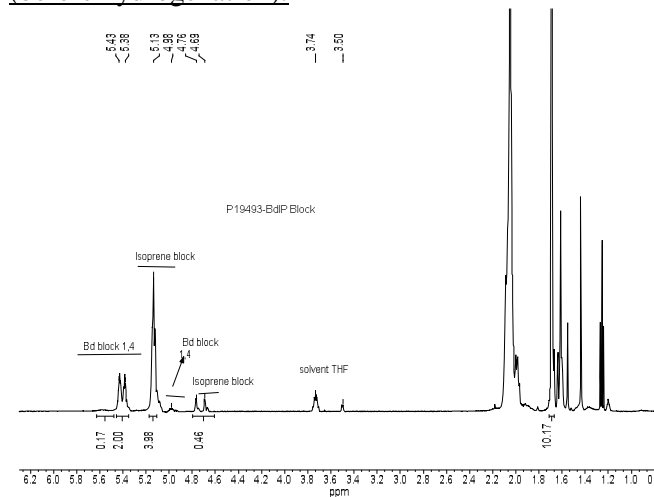
### DSC thermal analysis:

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of  $10^\circ\text{C}/\text{min}$ . The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature ( $T_g$ ).

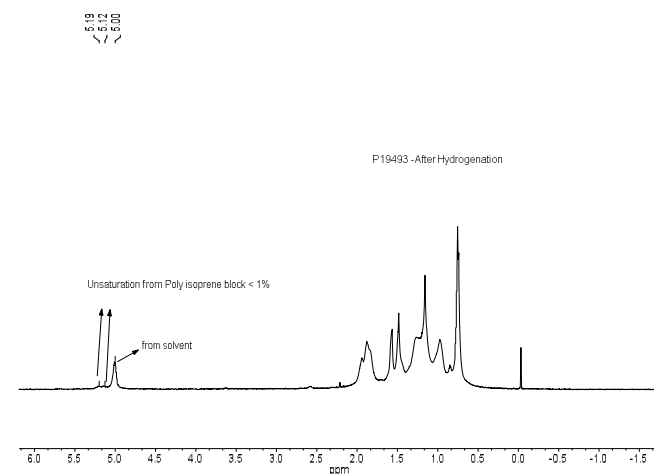
### $^1\text{H}$ NMR analysis:

Chemical shifts of Unsaturated blocks:	
Polybutadiene (Bd):	Polyisoprene (Ip):
5.43 ppm	5.13 ppm
5.38 ppm	4.98 ppm
4.76 ppm	4.76 ppm
4.69 ppm	4.69 ppm

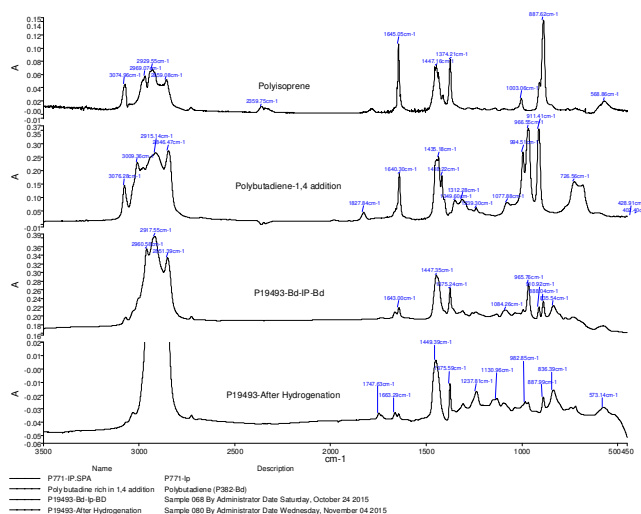
### $^1\text{H}$ NMR spectrum of Bd-Ip block copolymer (before hydrogenation):



### $^1\text{H}$ NMR spectrum of E-EPr-E triblock copolymer (hydrogenated form):



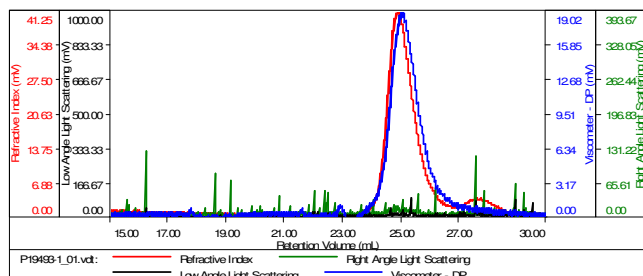
### FTIR spectra:



## SEC of polybutadiene (first block):

Sample ID:P19493-Bd-First Block

Concentration (mg/mL)	0.3370
Sample ch/dc (mL/g)	0.1250
Method File	PS80K-June30-2015-0000.vcm
Column Set	3x PL 1113-6300
Solvent	THF

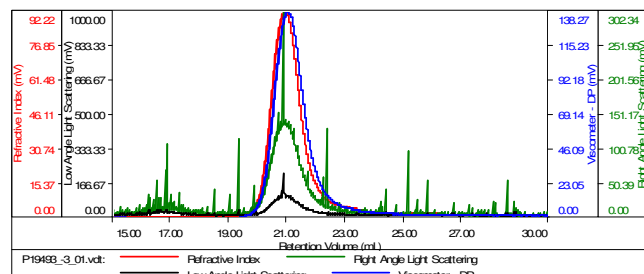


Sample	MW Number Average (Da)	MW Weight Average (Da)	MW at Peak (Da)	Polydispersity	Intrinsic Viscosity (dL/g)
P19493-1_01.vdt	23,351	29,477	22,596	1.262	2.1274

## SEC of E-EPr-E (after hydrogenation):

Sample ID:P19493-BdIPBd triblock

Concentration (mg/mL)	0.8234
Sample ch/dc (mL/g)	0.1300
Method File	PS80K-June30-2015-0000.vcm
Column Set	3x PL 1113-6300
Solvent	THF

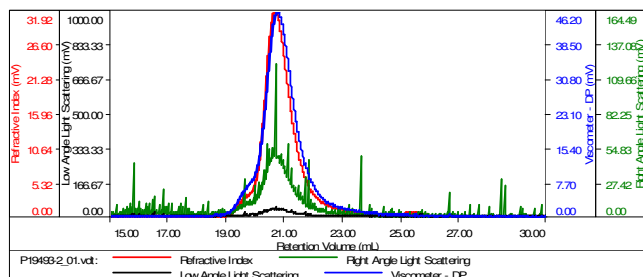


Sample	MW Number Average (Da)	MW Weight Average (Da)	MW at Peak (Da)	Polydispersity	Intrinsic Viscosity (dL/g)
P19493-3_01.vdt	170,137	175,469	164,231	1.031	6.3036

## SEC of Bd-IP (before hydrogenation):

Sample ID:P19493-Bd-IP diblock

Concentration (mg/mL)	0.2252
Sample ch/dc (mL/g)	0.1560
Method File	PS80K-June30-2015-0000.vcm
Column Set	3x PL 1113-6300
Solvent	THF



Sample	MW Number Average (Da)	MW Weight Average (Da)	MW at Peak (Da)	Polydispersity	Intrinsic Viscosity (dL/g)
P19493-2_01.vdt	152,169	163,509	133,698	1.075	7.5890