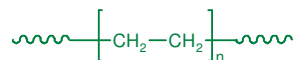


Sample Name: Polyethylene
(obtained from the hydrogenation of Polybutadiene rich in 1,4 microstructure)

Sample #: P1991-E

Structure:

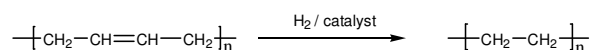
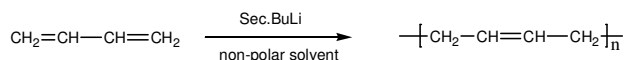


Composition:

Mn x 10 ³	PDI
6.4	1.04
T _m (°C): 107	T _c (°C): 99

Synthesis Procedure:

Polyethylene is made from the hydrogenation of 1,4-polybutadiene. 1,4-polybutadiene is synthesized by living anionic polymerization of butadiene in non-polar solvent.



Characterization:

The molecular weight and polydispersity index (PDI) are obtained by size exclusion chromatography (SEC) in THF. The SEC instrument calibrated with poly butadiene standards. 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.

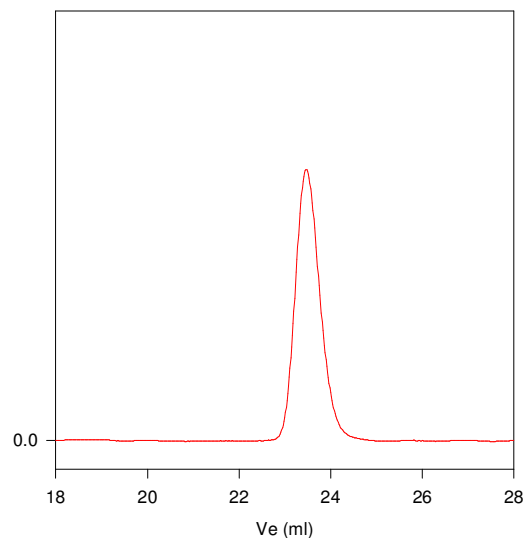
The hydrogenation of polybutadiene is confirmed by FT-IR with disappearance of the alkene double bond.

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The melting temperature (T_m) was taken as the maximum of the endothermic peak where as the crystallization temperature (T_c) was considered as the minimum of the exothermic peak.

Solubility:

Polyethylene is soluble in hot toluene and hot xylene. The polymer is insoluble in hexane, methanol and ethers.

SEC of the Polymer: Precursor P1555-Bd (precursor for P1991-E)

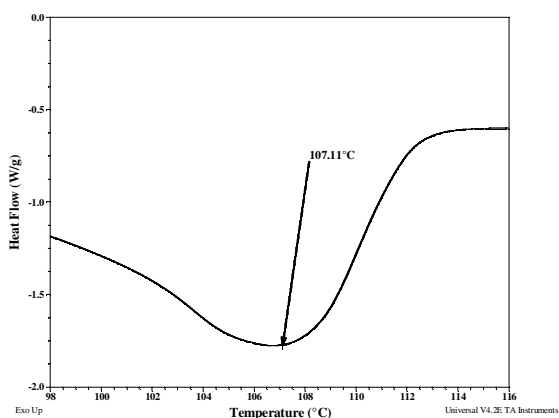


Size exclusion chromatography of polybutadiene (precursor of P1991-E):

M_n=6200, M_w=6400, PI=1.04

Molecular weight of Polyethylene: Mn:6400 Mw/Mn: 1.04

Melting curve for the polymer:



Crystallization curve for the sample:

