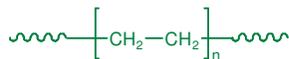


Sample Name: Polyethylene
(obtained from the hydrogenation of Polybutadiene rich in 1,4 microstructure)

Sample #: P1979-E

Structure:

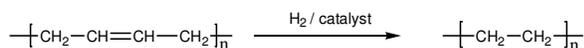
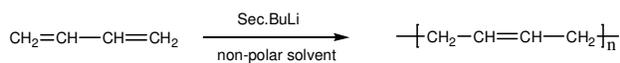


Composition:

Mn x 10 ³	PDI
12.5	1.05
T _m (°C): 106	T _c (°C): 97

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.

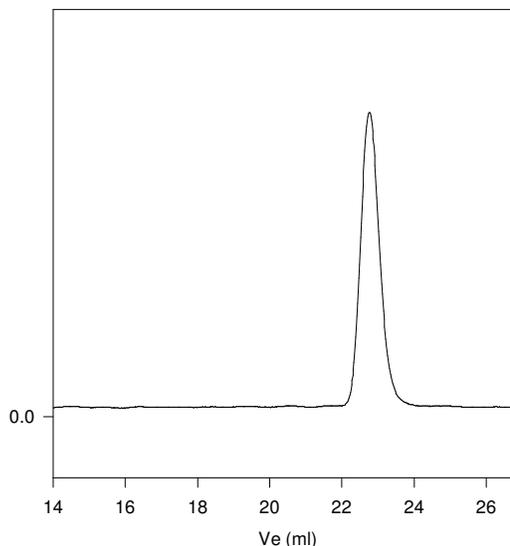
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The melting temperature (T_m) was taken as the maximum of the endothermic peak where as the crystallization temperature (T_c) was considered as the minimum of the exothermic peak.

Solubility:

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

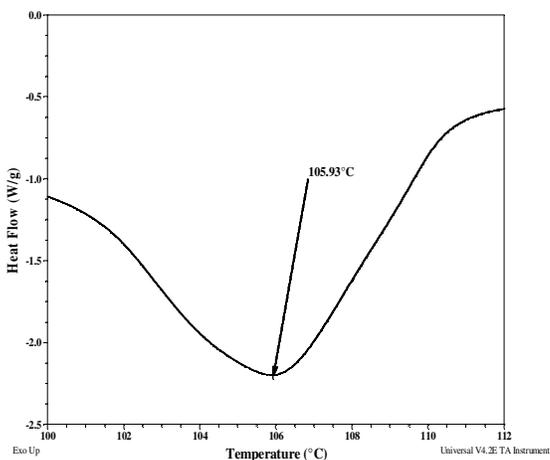
SEC of the Polymer: Precursor

PBd precursor for the Sample P1979-E



Size exclusion chromatography of polybutadiene with respect to polybutadiene standards:
M_n=12000, M_w=12600, M_w/M_n=1.05

Melting curve for the PE:



Crystallization curve for the polymer:

