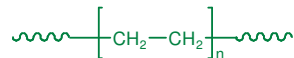


Sample Name: Polyethylene  
(obtained from the hydrogenation of Polybutadiene rich in 1,4 microstructure)

Sample #: P2072-E

**Structure:**

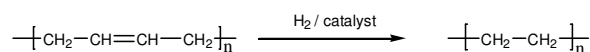
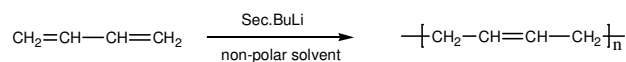


**Composition:**

$M_n \times 10^3$		PDI
1.8		1.10
$T_m (^{\circ}\text{C}): 98$	$T_c (^{\circ}\text{C}): 90$	$T_g (^{\circ}\text{C}): -11$

**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:**

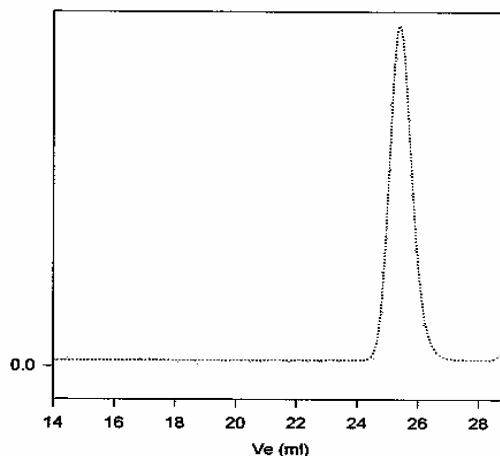
The molecular weight and polydispersity index (PDI) are obtained by size exclusion chromatography. The hydrogenation of polybutadiene is confirmed by FT-IR with disappearance of the alkene double bond.

**Solubility:**

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

SEC of the Polymer: Precursor

**P2072-Bd(precursor for P2072-E)**

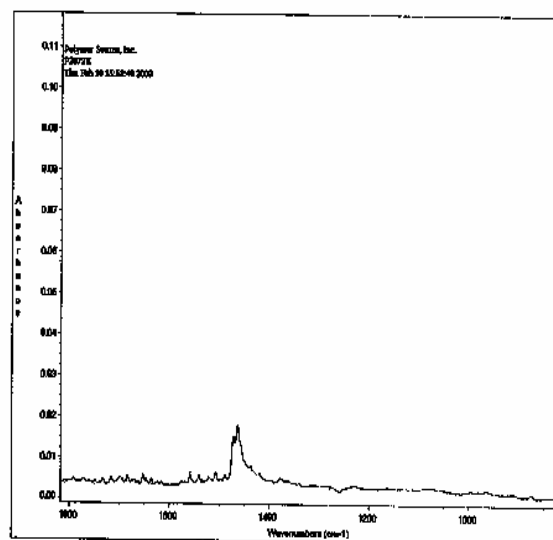


Size exclusion chromatography of polybutadiene with respect to polybutadiene standards (precursor for P2072-E):

$M_n=1750$ ,  $M_w=1930$ ,  $M_p=1950$   $M_w/M_n=1.10$

Molecular weight of Polyethylene  $M_n:1800$   $M_w/M_n:1.10$

**FRIR for the sample:**

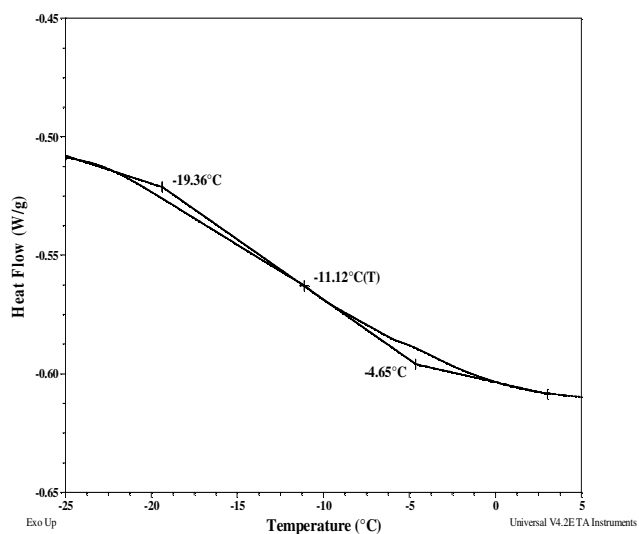


## Thermal analysis of P2072-PE

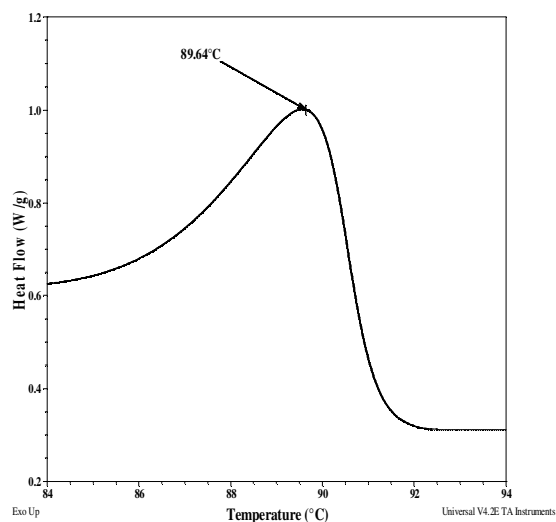
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min.

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.

### Thermogram for the polymer:



### Crystallization curve for the sample:



### Melting curve for the sample:

