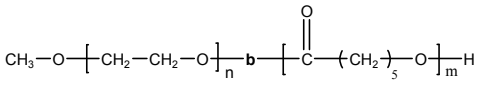
Sample Name:
Poly(propylene oxide -b- ε -caprolactone)

Sample #: P2144- POCL

Structure:



Composition:

Mn × 10^3 PPO-b-PCL	PDI
1.2-b-6.5	1.17

Synthesis Procedure:

Poly(propylene oxide -b- ε -caprolactone) is prepared by living anionic polymerization of propylene oxide and coordination polymerization of ε -caprolactone.

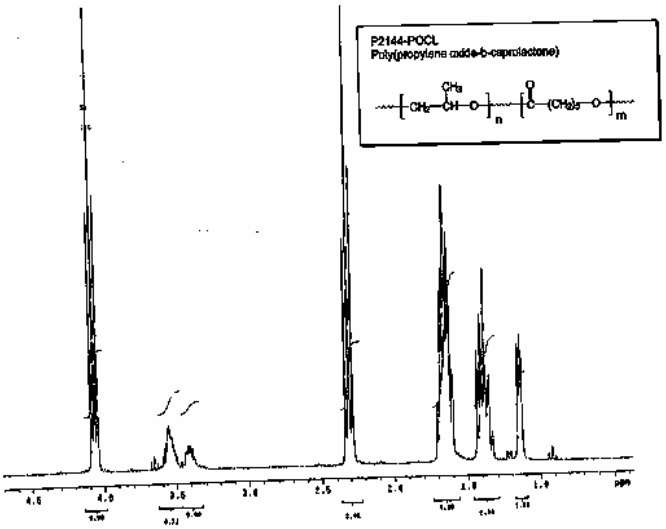
Characterization:

An aliquot of the anionic poly(propylene oxide) block was terminated before addition of caprolactone and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from ^{1}H-NMR spectroscopy by comparing the peak area of the propylene oxide protons with the ε-caprolactone protons.

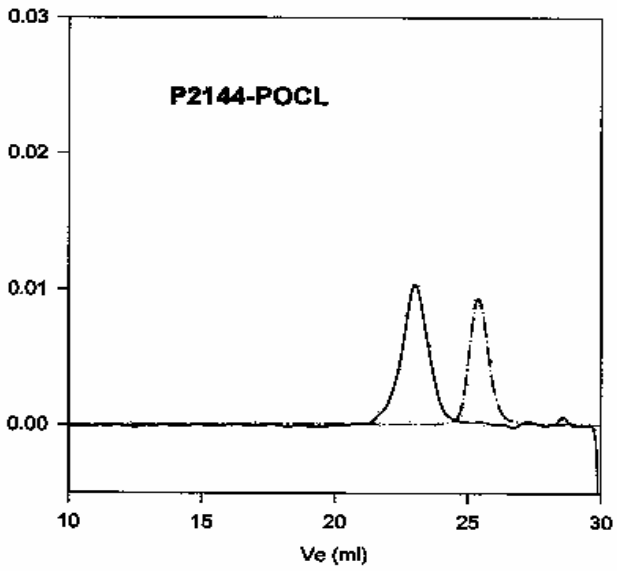
Solubility:

Poly(propylene oxide -b-ε-caprolactone) is soluble in CHCl3, THF, DMF, toluene and precipitated out from cold ethanol, diethyl ether.

^{1}H-NMR Spectrum of the block copolymer:



SEC of the block copolymer:



SEC profile of Poly(propylene oxide-b-ε–caprolactone):
—·— Poly(propylene oxide), M_n=1200, M_w=1300, M_w/M_n=1.08
—— Block Copolymer PPO(1200)-b-PεCL(6500), M_w/M_n=1.17

Thermal analysis of the sample# P2144-POCL

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10^{o}C/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).

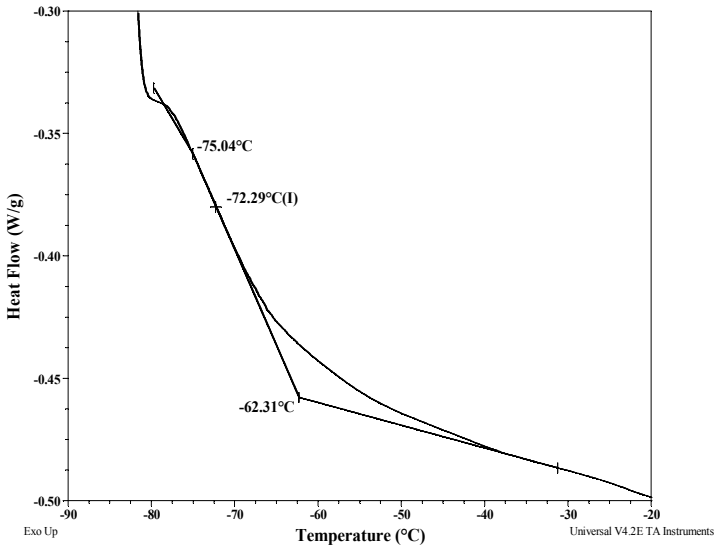
Melting and crystallization curve for the sample

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.

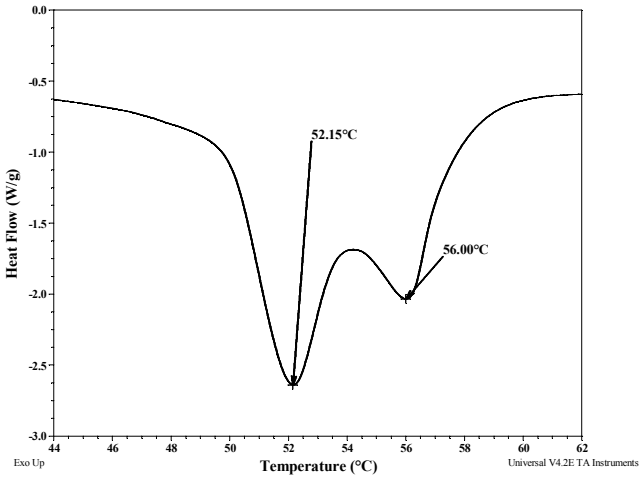
Thermal analysis results at a glance

Sample	T_m (^{o}C)	T_c (^{o}C)	T_g (^{o}C)
PO	-	-	Not distinct
ε-CL	52 & 56	29	-72

Thermogram for the sample



Melting curve for CL block:



Crystallization curve for CL block: