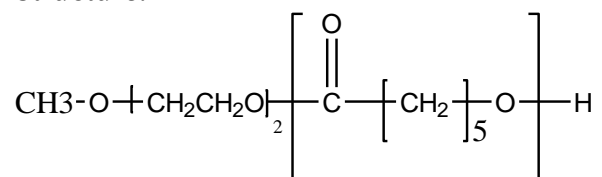


Sample Name: Poly(ϵ -caprolactone)

Sample #: P7438-CL

Structure:

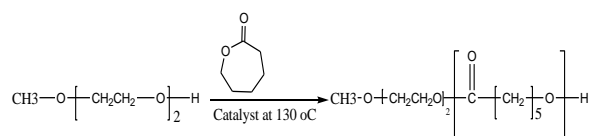


Composition:

$M_n \times 10^3$	PDI
14.0	1.50

Synthesis Procedure:

The polymerization of ϵ -caprolactone can be initiated with a variety of catalysts based on aluminum, tin, barium or HCl. The reaction scheme is shown below:



Purification:

When metal catalysts are employed, the residues are removed by repeated extraction with an aqueous EDTA solution (0.1 mol L⁻¹) followed by washing with water up to neutral pH. The non-polar solvent (usually toluene) is removed under reduced pressure and the polymer is precipitated in a large excess of hexane. The polymer is then freeze-dried after dissolution in benzene.

Characterization:

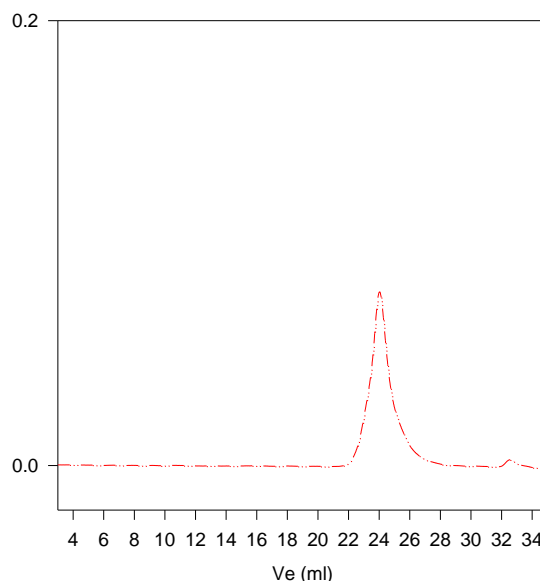
The molecular weight and polydispersity index (PDI) are obtained by size exclusion chromatography.

Solubility:

Poly(ϵ -caprolactone) is soluble in toluene, THF, CHCl₃ and CH₂Cl₂. The polymer is insoluble in methanol, hexane and ether.

SEC of Sample:

P7438-CL



Size exclusion chromatography result:

--- M_n=14000, M_w=21000 PI=1.5
Solution Viscosity in THF at 35 °C: 0.269 dl/g
dn/dc in THF at 35 °C: 0.045ml/g
Radius of Gyration: 5.59 nm

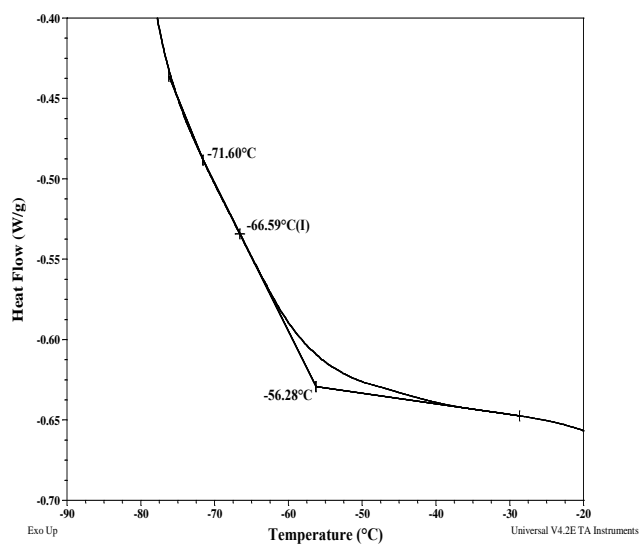
Thermal analysis of the sample P7438-CL

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

Thermal analysis results at a glance

T_m (°C)	T_c (°C)	T_g (°C)
64	32	-67

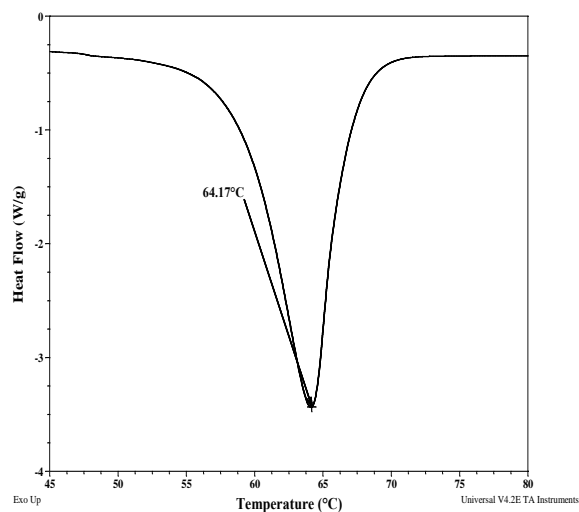
Thermogram for the sample:



Melting and crystallization curves 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.

Melting curve for the CL sample:



Crystallization curve for the CL sample:

