

## Product Profile

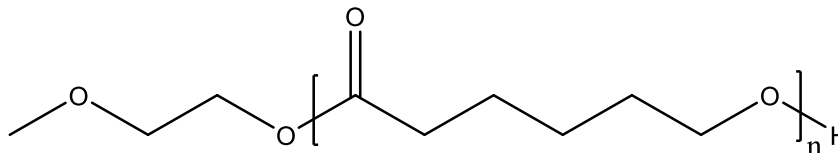
### Identification

**Product Name:** Poly(ε-Caprolactone)

**Product Lot Number:** P18176B-CL

**CAS #:** 24980-41-4

**Chemical Architecture:**



**Composition:**

|                                     |               |
|-------------------------------------|---------------|
| <b>Mn (g/mole)</b>                  | <b>20,000</b> |
| <b>Mw (g/mole)</b>                  | <b>30,000</b> |
| <b>Mw/Mn</b>                        | <b>1.50</b>   |
| <b>dn/dc (mL/g) in THF at 30 °C</b> | <b>0.030</b>  |

### Method of Synthesis

The polymer is synthesized by ring opening polymerization process.

**Solubility in different solvents:**

|         |   |                   |   |
|---------|---|-------------------|---|
| THF     | √ | DMF               | √ |
| Alcohol | X | CHCl <sub>3</sub> | √ |
| Toluene | √ | Water             | X |

### Validation of Architecture

#### A. Gel Permeation Chromatography (GPC), SEC Profile:

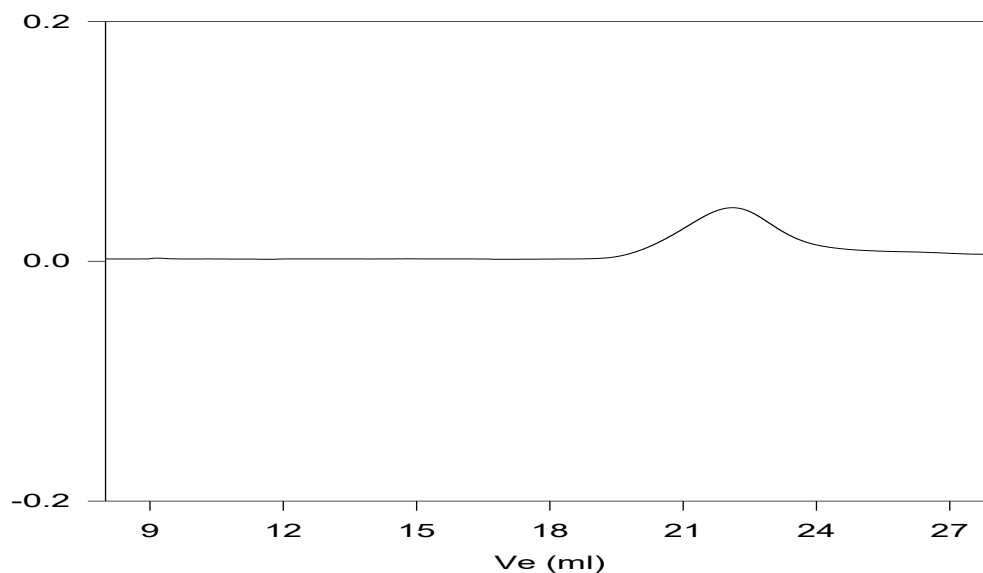
Molecular weights were determined by Agilent Technologie 1260 Infinity II GPC/SEC System equipped with Triple detector (RI, Viscometer, RALS 90° and LS 15°) and three columns (PLgel, 7.5x300 mm, 5μm-10μm, 10<sup>5</sup>-10<sup>6</sup>Å).

THF (stabilized BHT) with 1%(v/v%) TEA was the eluent. The flow rate was 1.0 ml/min.



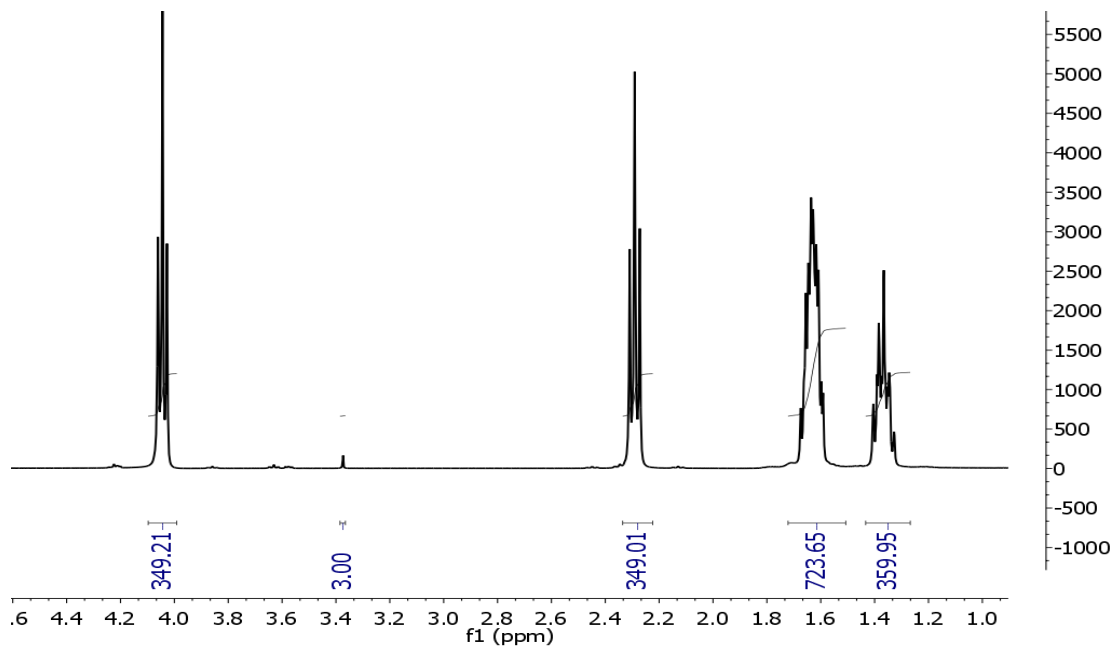
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**B. NMR ( $^1H$ NMR) of CL**

CL sample was dissolved in  $CDCl_3$ .  $^1H$  NMR spectra was determined using a 500 MHz. Bruker Avance III spectrometer.



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### Thermal analysis of the sample

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 ( $T_g$ ).

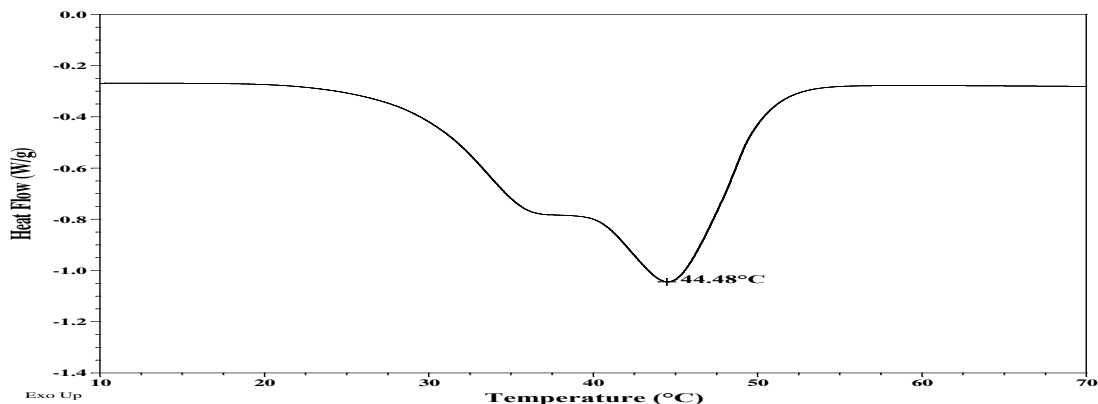
### Melting and crystallization curve for the sample

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

| $T_m$ (°C) | $T_c$ (°C) | $T_g$ (°C)   |
|------------|------------|--------------|
| 44         | 17         | Not distinct |

### Melting curve for the CL sample:



### Crystallization curve for the CL sample:

