

Product Profile

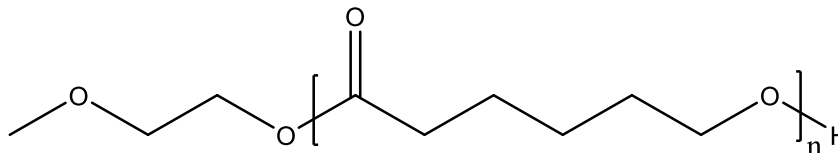
Identification

Product Name: Poly(ε-Caprolactone)

Product Lot Number: P18183GF1-CL

CAS #: 24980-41-4

Chemical Architecture:



Composition:

| | |
|-------------------------------------|--------------|
| Mn (g/mole) | 5,800 |
| Mw (g/mole) | 7,300 |
| Mw/Mn | 1.25 |
| dn/dc (mL/g) in THF at 30 °C | 0.030 |

Method of Synthesis

The polymer is synthesized by ring opening polymerization process.

Solubility in different solvents:

| | | | |
|---------|---|-------------------|---|
| THF | √ | DMF | √ |
| Alcohol | X | CHCl ₃ | √ |
| Toluene | √ | Water | X |

Validation of Architecture

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

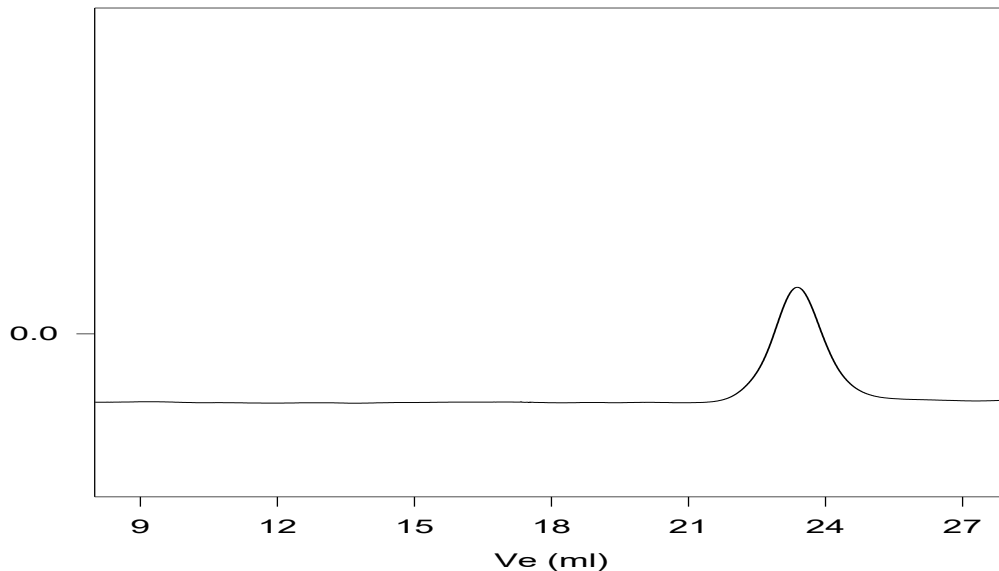
Molecular weights were determined by Agilent Technologie 1260 Infinity II GPC/SEC System equipped with Triple detector (RI, Viscometer, RALS 90° and LS 15°) and three columns (PLgel, 7.5x300 mm, 5μm-10μm, 10⁵-10⁶Å).

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



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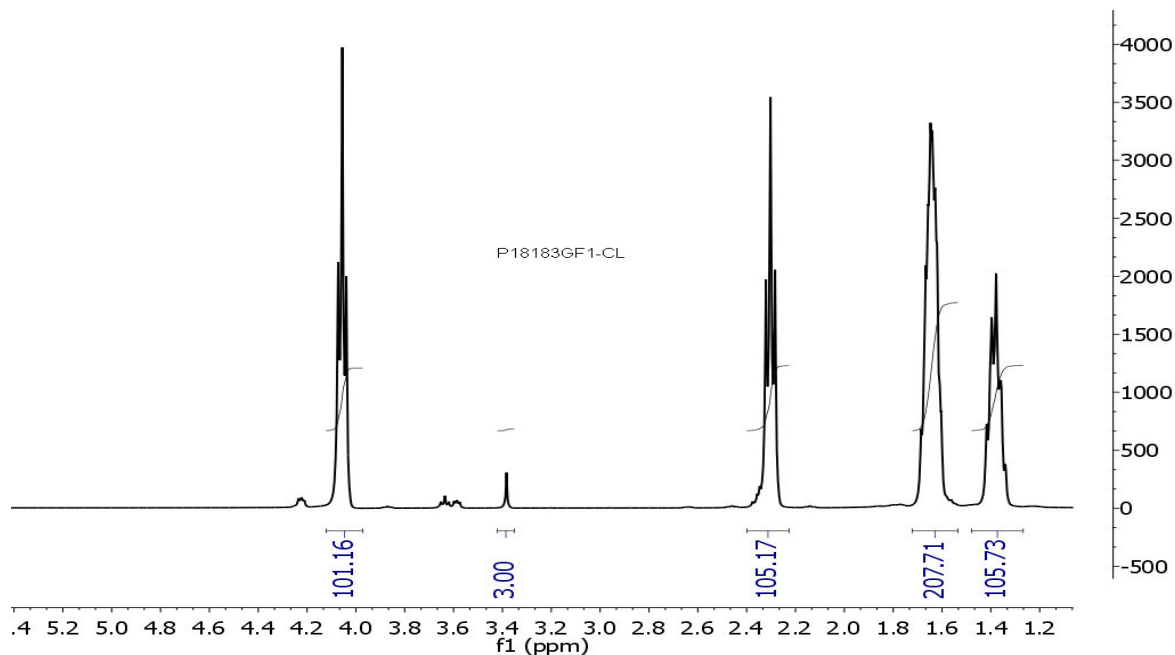


Size exclusion chromatography result:

— $M_n=5,800$, $M_w=7,300$ $PI=1.25$ (M_n calculated by HNMR)

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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v.R-02

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).

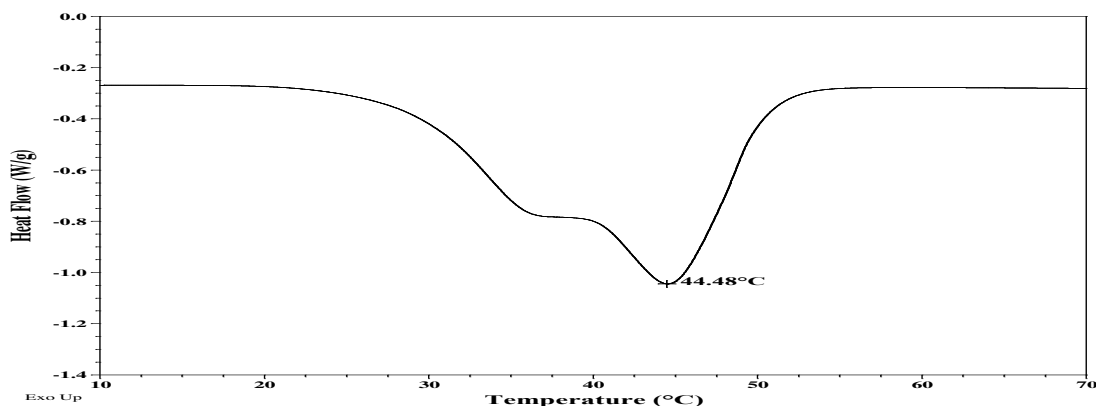
Melting and crystallization curve for the sample

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:

