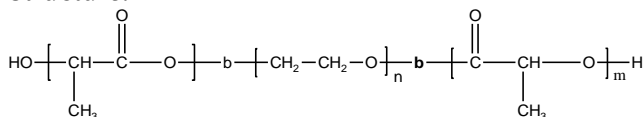


Sample Name:

**Poly(lactide -b- ethylene oxide -b- lactide) (DL form)**

Sample #: **P7331-LAEOLA (DL form)**

**Structure:**

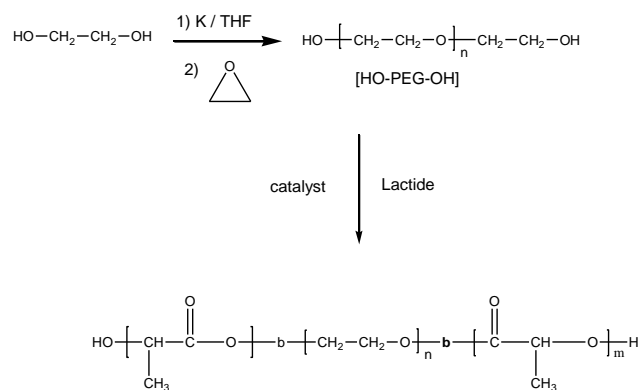


**Composition:**

Mn x 10 <sup>3</sup>	PDI
3.6-10-3.6	1.08

**Synthesis Procedure:**

Poly(lactide -b- ethylene oxide -b- lactide) was prepared by living anionic polymerization of ethylene oxide (EO) followed by living coordination polymerization of D,L-lactide (LA) using a Tin catalyst. The scheme of the reaction is illustrated below:



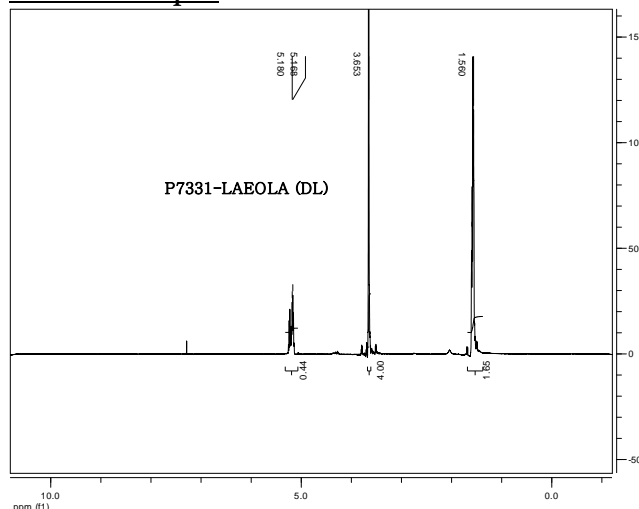
**Characterization:**

The molecular weight and polydispersity index of the poly(ethylene oxide) block was determined by size exclusion chromatography (SEC) using a Varian liquid chromatograph equipped with a UV and refractive index detector. The composition of the lactide ABA triblock copolymer was determined using <sup>1</sup>H-NMR spectroscopy by comparing the integration of the lactide peaks (5.2ppm) with that of the ethylene oxide peaks (3.6ppm).

**Solubility:**

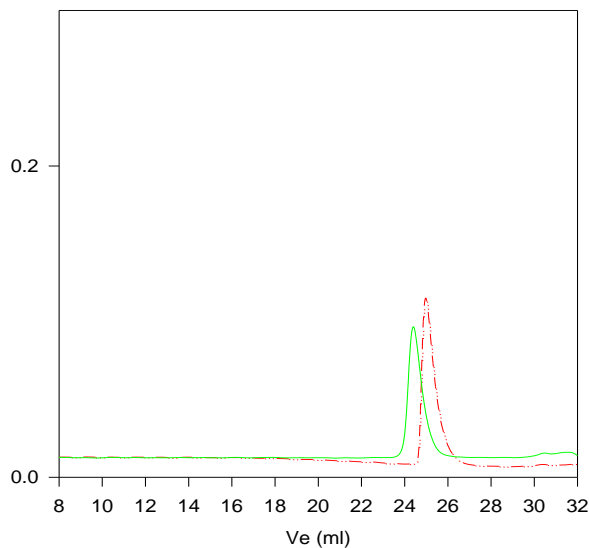
The polymer is soluble in THF, chloroform, DMF and toluene, but not soluble in hexane.

**NMR of Sample:**



**SEC of Sample:**

**P7331- LAEOLA (DL form)**



Size exclusion chromatography:

--- Poly(ethylene glycol) diol, M<sub>n</sub>=10000, M<sub>w</sub>=10600, PI=1.05

— Block Copolymer PLA(3600)-PEO(10000)-b-PLA(3600), PI=1.08

Composition from <sup>1</sup>H NMR

Dp: LA(50 units)-EO(228 units)-b-LA (50 units)

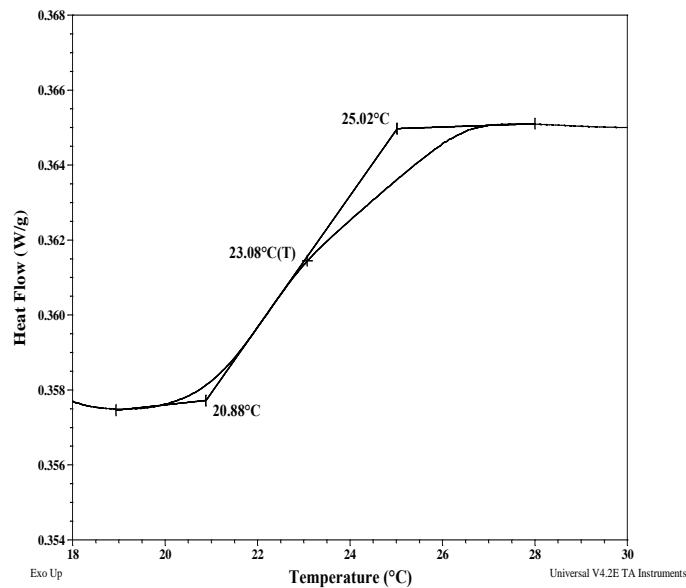
Thermal analysis of the sample# P7331-LAEOLA

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 20°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

For PLA block (DL)		
$T_g$ : 23°C	$T_m$ : -	$T_c$ : -
For PEO block		
$T_g$ : -39°C	$T_m$ : 53°C	$T_c$ : -04°C

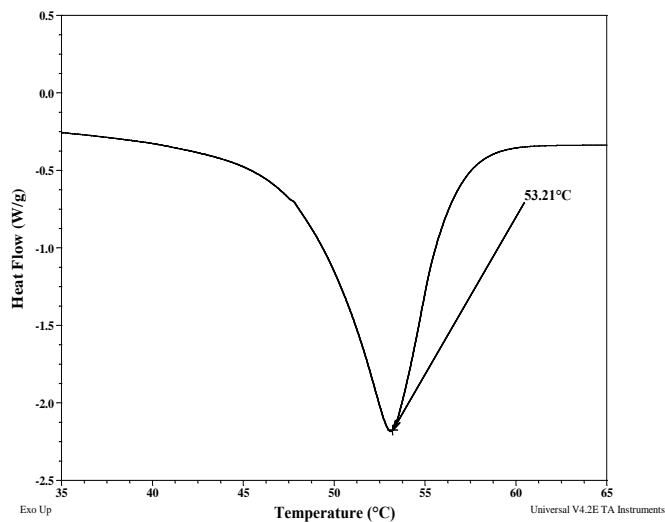
Thermogram for PLA block:



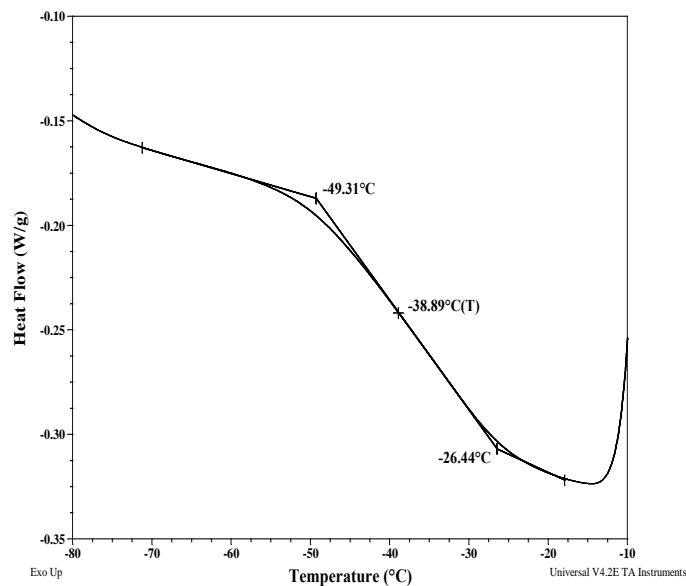
Melting and crystallization curve for the sample

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.

Melting curve for PEOblock



For PEO block



Crystallization curve For PEO block

