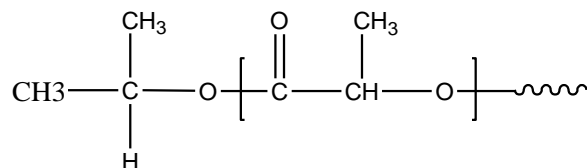


Sample Name: Polylactide

Sample #: P8030-LA (L-Form)

Structure:

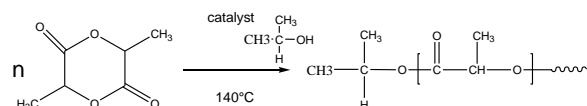


Composition:

Mn x 10 ³	PDI
1.4	1.13

Synthesis Procedure:

The polymerization of (3S)-cis 3, 6-dimethyl-1,4-dioxane-2,5-dione was initiated with an aluminum-based catalyst and the reaction was carried out at 140 °C, using isopropanol as initiator.



Purification:

Catalyst residues and unreacted lactide monomer were removed by repeated precipitation from acetone solution to cold diethyl ether. Finally the polymer was dissolved in toluene, and azeotropic distillation water was removed. Polymer was again precipitated in cold diethyl ether and then dried under vacuum at 40°C for 48h.

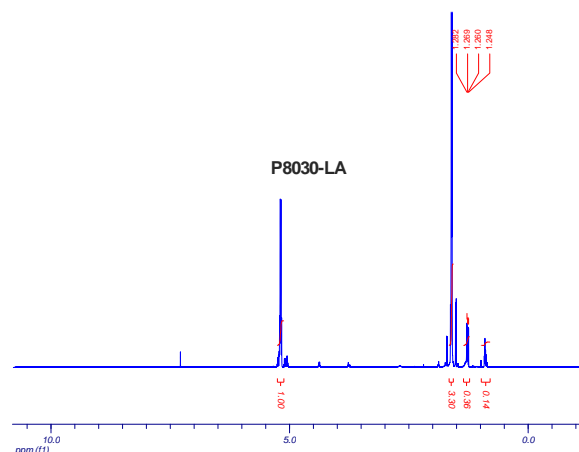
Characterization:

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

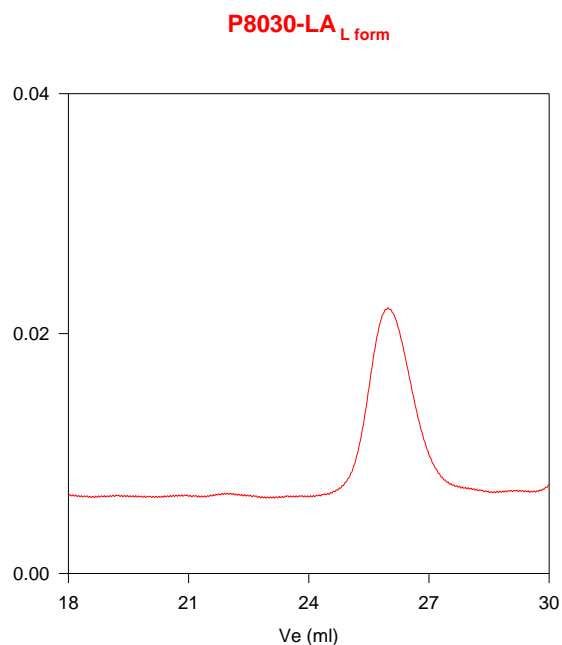
Solubility:

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

¹H NMR of the Polymer:



SEC of Homopolymer:



Size exclusion chromatograph of poly(L-lactide):

M_n=1400, M_w=1600, PI=1.13

(Values calculated from H NMR)

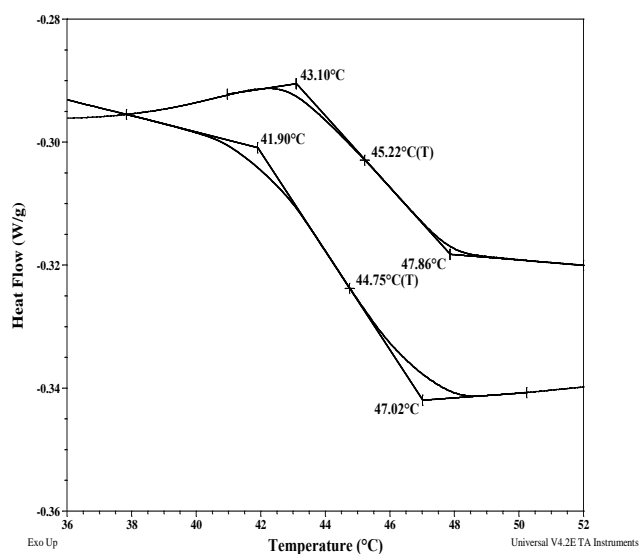
Thermal analysis of the sample P8030-LA

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)
132	94	45

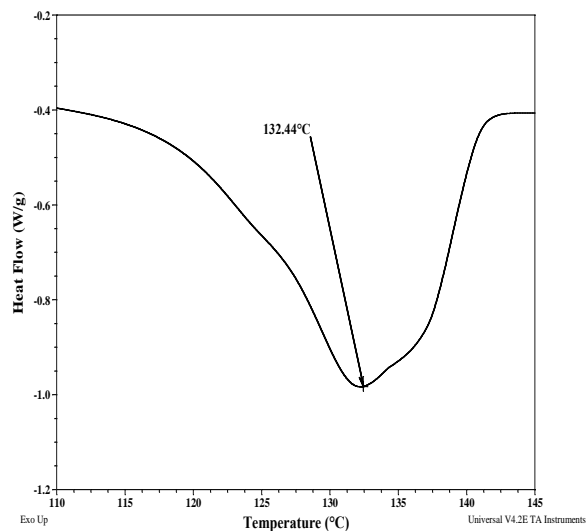
Thermogram for the sample



Melting and crystallization curves

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 LA sample:



Crystallization curve:

