Sample Name: Polylactide (D form)

Sample #: P6683-LA (D-Form)

**Structure:**

CH3—O—CH$_2$—CH$_2$—O—CH$_2$—CH$_2$—O$\left[\overset{\overset{\textstyle O}{\|}}{C}-\overset{\overset{\textstyle CH_3}{|}}{CH}-O\right]$H
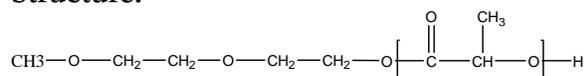
Composition:

Mn $\times 10^3$	PDI
37.0	1.18

Synthesis Procedure:

The polymerization of (D+) 3, 6-dimethyl-1,4-dioxane-2,5-dione was initiated with tin octoate catalyst.
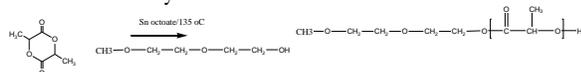
Purification:

Polymer was precipitated employing a large excess of hexane. The polymer was further dissolved in chloroform; filtered and precipitated in ethanol/hexane mixture.

Characterization:

The molecular weight and polydispersity index (PDI) are obtained by size exclusion chromatography (SEC) in THF. SEC analysis was performed on a Varian liquid chromatograph equipped with refractive and UV light scattering detectors. Three SEC columns from Supelco (G6000-4000-2000 HXL) were used with triple detectors from Viscotek Co.

Solubility:

Polymer is soluble in CHCl$_3$ and CH$_2$Cl$_2$. The polymer is insoluble in acetone, methanol, hexane and ether.

SEC of Homopolymer:
P6683-LA(D form)
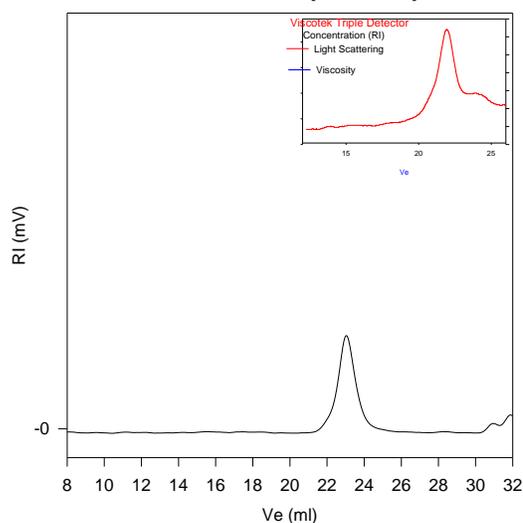
Size Exclusion Chromatography of Polymer;

—— M$_n$ = 37,000, M$_w$ =43,600, M$_w$/M$_n$ = 1.18
Solution Viscosity in THF at 35 oC: 0.82dl/g
dn/dcin THF at 35 oC: 0.046 ml/g
Rgw:10.98nm

Reference for further details:

Ahmed, J., Zhang, J-X., Song, Z., Varshney, S.K. J.Thermal Analysis and Calorimetry, 95, 3, 957-964, **2009**

Thermal analysis of the sample P6683-LA

Thermal analysis of the polymer 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).

Thermogram for PLA block:
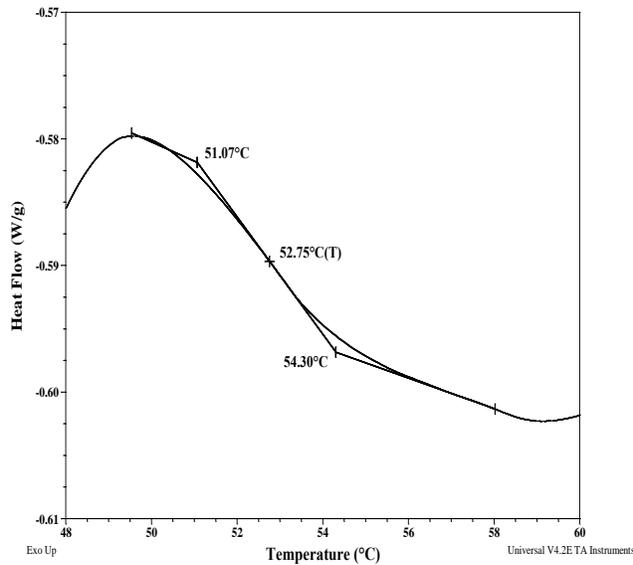
Thermal analysis results at a glance

For PLA (D-form)		
T_g: 53°C	T_m: 167°C	T_c: 90°C

Melting curve for the sample

The melting temperature (T_m) was taken as the maximum of the endothermic peak.

Melting curve for PLA block: