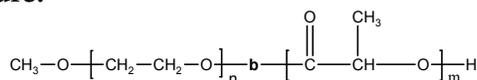


Sample Name:

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

Sample #: P9191A-EOLA (DL form)

Structure:

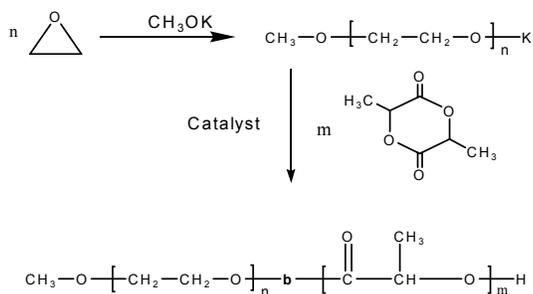


Composition:

Mn x 10 ³ PEO-b-PLA	PDI
5.0-b-12.0	1.20
T _g for PLA block	
T _g for PEO block	Not distinct

Synthesis Procedure:

Poly(ethylene oxide -b- lactide) is prepared by living anionic polymerization of ethylene oxide and coordination polymerization of lactide with Tin octoate as catalyst. The scheme of the reaction is illustrated below:



Characterization:

An aliquot of the anionic poly(ethylene oxide) block was terminated before addition of lactide and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from ¹H-NMR spectroscopy by comparing the peak area of the methoxy protons of poly(ethylene oxide) at about 3.6 ppm with the polylactide protons at about 5.1 and 1.55 ppm.

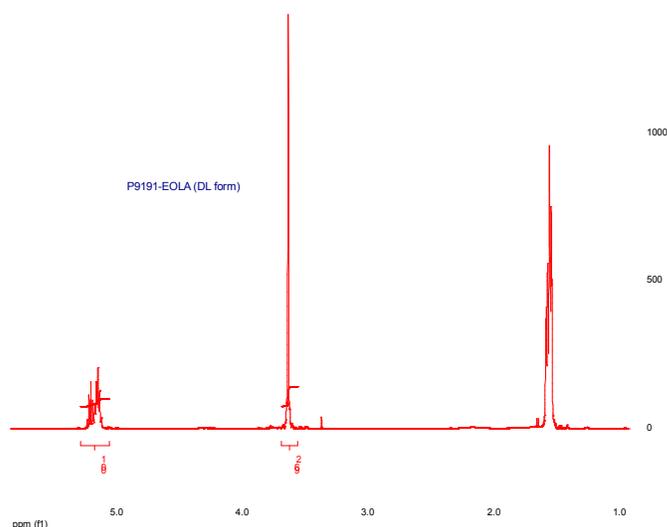
Thermal analysis

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).

Solubility:

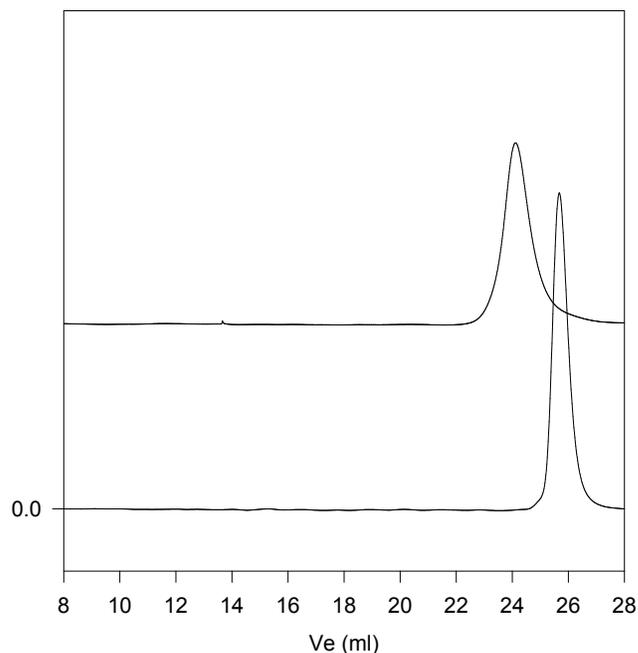
The polymer is soluble in chloroform, THF, DMF, toluene and precipitates from ethanol, ether and hexane.

¹H-NMR Spectrum of the block copolymer:



SEC profile of the Polymer:

P9191A- EOLA (DL form)



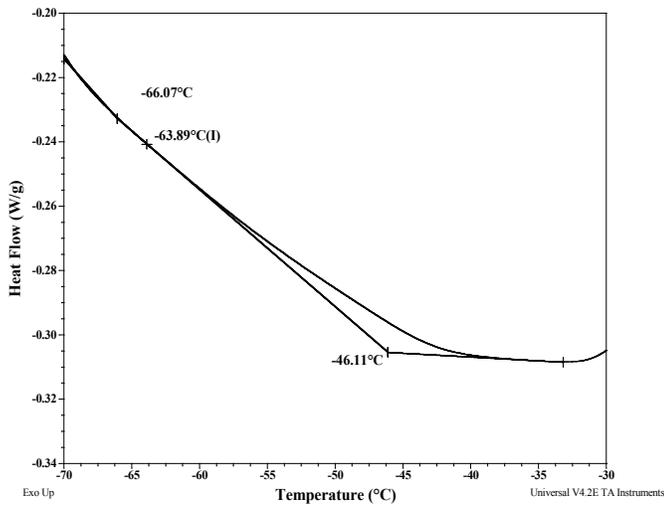
Size exclusion chromatography:

- Poly(ethylene glycol) monomethoxyl ether, M_n=5000, M_w=5300, PI=1.06
- Block Copolymer PEO(5000)-b-PLA(12000), PI=1.2
Composition from ¹H NMR
Dp: EO(114 units)-b-LA (166units)

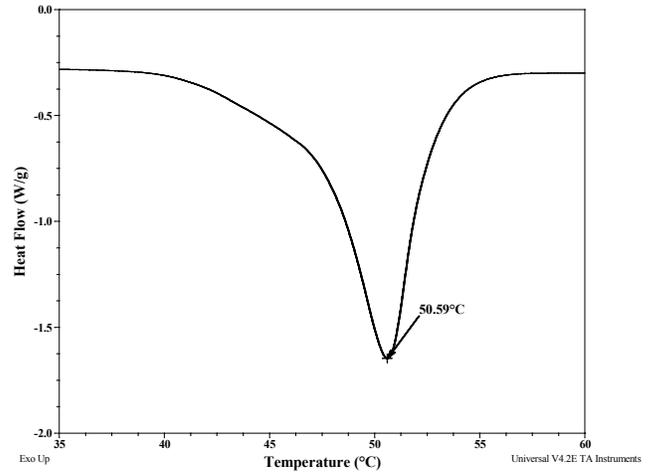
Thermal analysis of the sample# P9188-EOLA

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).

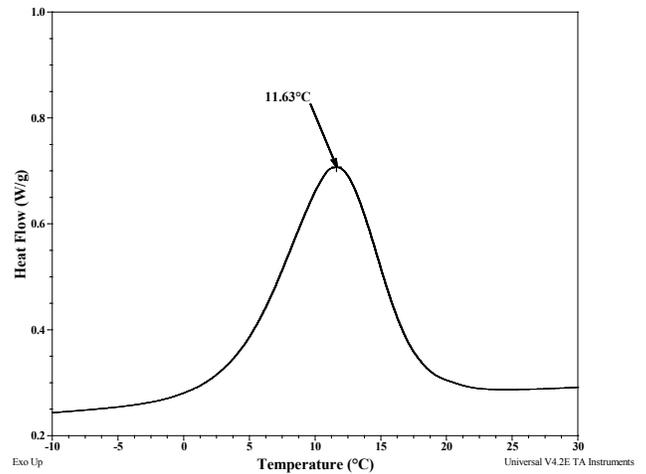
For PEO block



Melting curve for PEO block:



Crystallization curve For PEO block



Melting and crystallization curve for the sample

The melting temperature (T_m) was taken as the maximum of the endothermic peak whereas the crystallization temperature (T_c) was considered as the minimum of the exothermic peak.

Thermal analysis results at a glance

For PLA block		
T_g : Not distinct	T_m : Not found	T_c : Not found
For PEO block		
T_g : -64°C	T_m : 51°C	T_c : 12°C