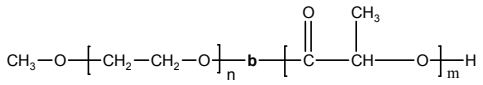
Sample Name:
Poly(ethylene oxide -b- lactide) (DL form)
Sample #: P5350-EOLA (DL form)

Structure:

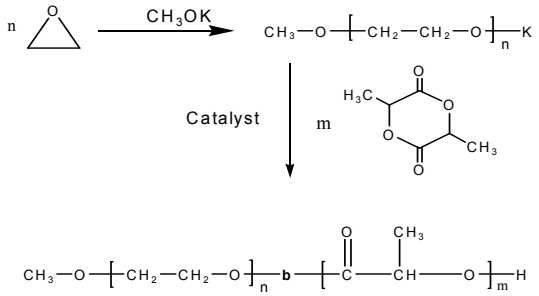


Composition:

Mn x 10^3 PEO-b-PLA	PDI
5.0-b-10.0	1.7
T_g for PLA block	48°C
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 ^{1}H-NMR spectroscopy by comparing the peak area of the methoxyl protons of poly(ethylene oxide) at about a 3.6 ppm with the polylactide protons at about 5.1 and 1.55 ppm.

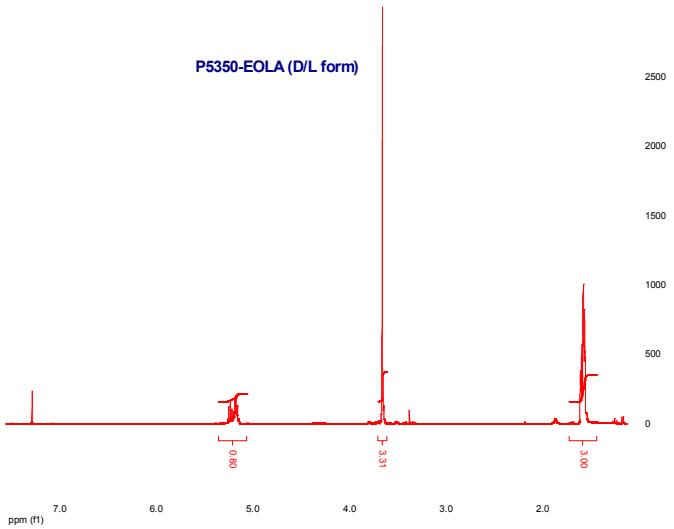
Thermal analysis

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).

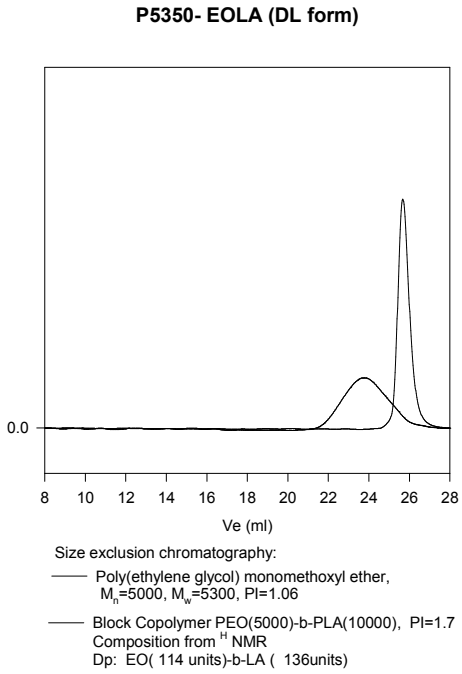
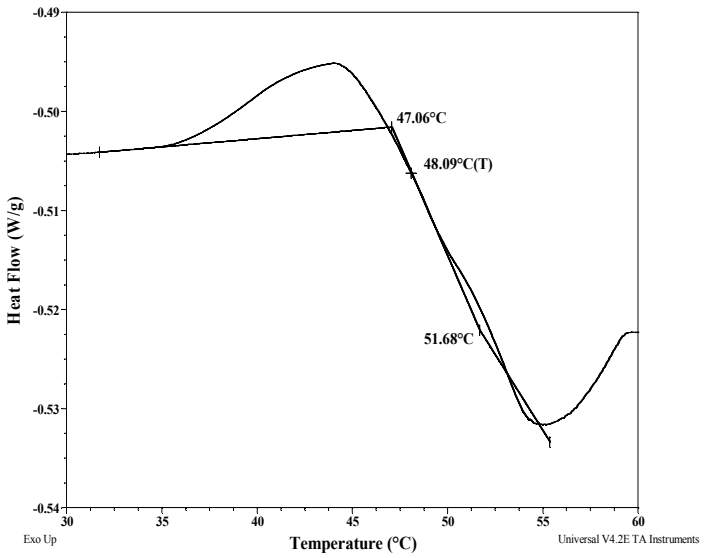
Solubility:

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

^{1}H-NMR Spectrum of the block copolymer:



SEC of the block copolymer:



DSC thermogram for the PLA block: