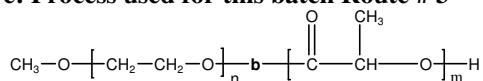


Sample Name: Poly(ethylene oxide -b- lactide) (DL form)

Sample #: P40010-EOLA (DL form)

Structure: Process used for this batch Route # 3



Composition:

Mn x 10 ³ PEO-b-PLA	PDI
5.0-b-3.2	1.12

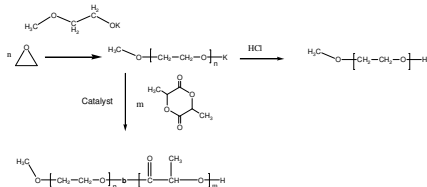
T _g for PLA block	40°C
T _g for PEO block	-63°C

Synthesis Procedure:

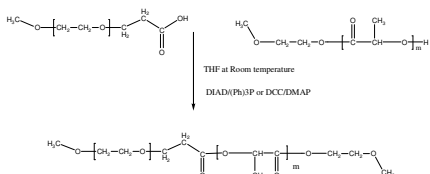
Poly(ethylene oxide -b- lactide) Can be synthesized by following routes:

Synthetic Routes

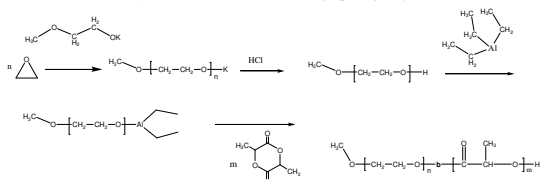
1. By anionic and ring opening Polymerization



2. By Modification of End groups and Condensation reaction



3. By anionic and Co-ordination ring opening Polymerization



Characterization:

Polymer 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 methoxyl protons of poly(ethylene oxide) at about a 3.6 ppm with the polylactide protons at about 5.1 and 1.55 ppm.

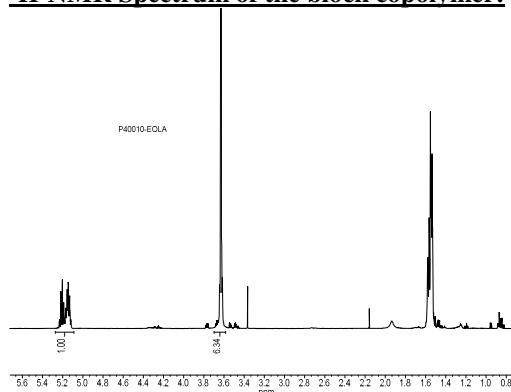
Thermal analysis

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:

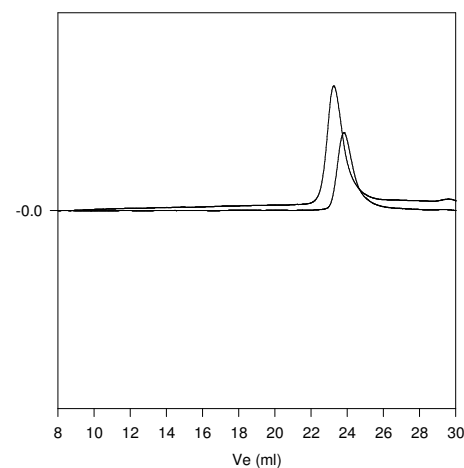
The polymer is soluble in chloroform, THF, DMF, toluene and precipitates from ethanol, ether and hexane.

¹H-NMR Spectrum of the block copolymer:



SEC elugram of the polymer:

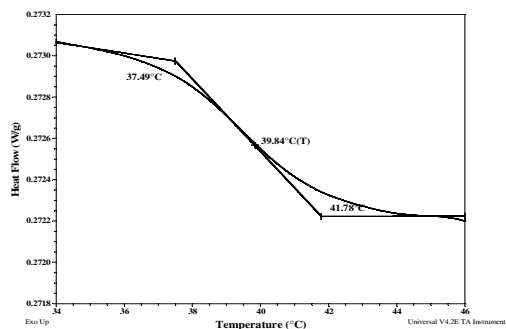
P40010- EOLA (DL form)



Size exclusion chromatography:

— Poly(ethylene glycol), M_n=5000, M_w=5200, PI=1.05
— Block Copolymer PEO(5000)-b-PLA(3,200), PI=1.12
Composition from ¹H NMR
Dp: EO(114 units)-b-LA (45 units)

DSC thermogram for the PLA block:



DSC thermogram for PEO block:

