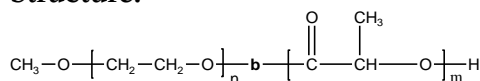


Sample Name:

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

Sample #: **P7067-EOLA**

**Structure:**



**Composition:**

$M_n \times 10^3$ PEO-b-PLA	PDI
2-b-1.2	1.13

**Synthesis Procedure:**

Poly(ethylene oxide -b- lactide) is prepared by living anionic polymerization of ethylene oxide and coordination polymerization of lactide.

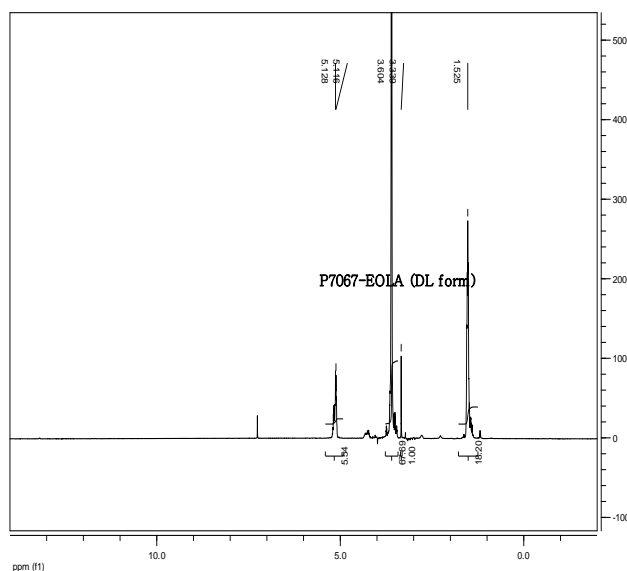
**Characterization:**

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  $^1\text{H-NMR}$  spectroscopy by comparing the peak area of the ethylene oxide protons at about 3.6 ppm with the lactide protons at about 5.1 ppm.

**Solubility:**

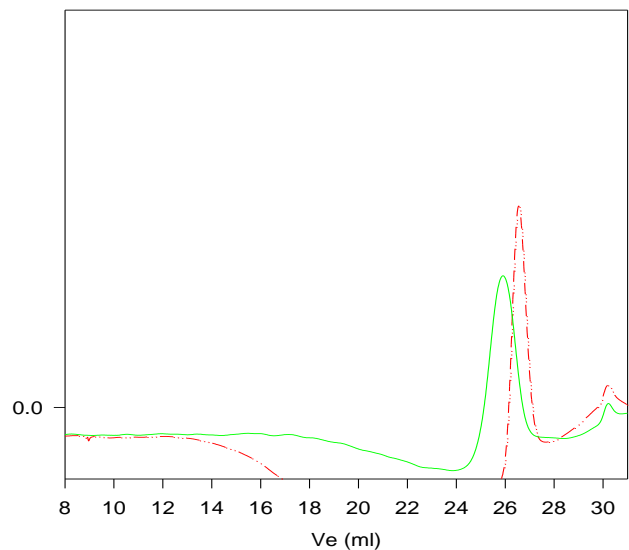
Poly(ethylene oxide -b- lactide) is soluble in chloroform, THF, DMF, toluene and precipitates from ethanol, ether and hexane.

**$^1\text{H-NMR}$  Spectrum of the block copolymer:**



**SEC of the block copolymer:**

**P7067- EOLA (DL form)**



Size exclusion chromatography:

- Poly(ethylene glycol),  $M_n=2000$ ,  $M_w=2100$ ,  $PI=1.03$
  - Block Copolymer PEO(2000)-b-PLA(1200),  $PI=1.13$
- Composition from  $^1\text{H NMR}$   
Dp: EO(45 units)-b-LA (17 units)

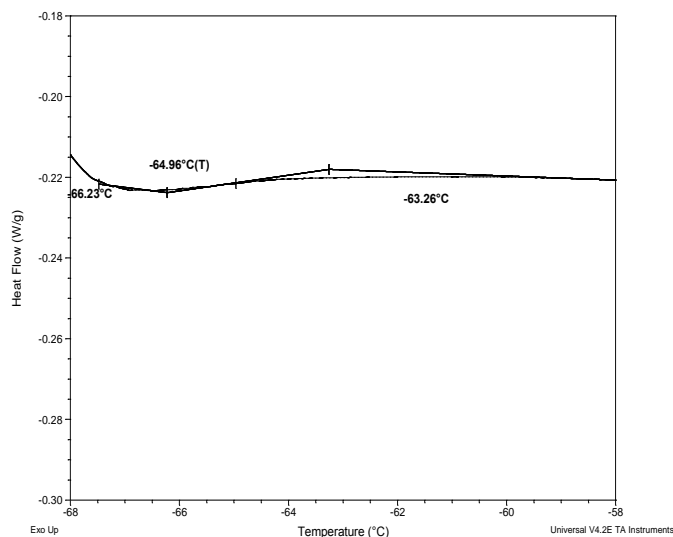
## Thermal analysis of the sample# P7067-EOLA

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 ( $T_g$ ).

### Thermal analysis results at a glance

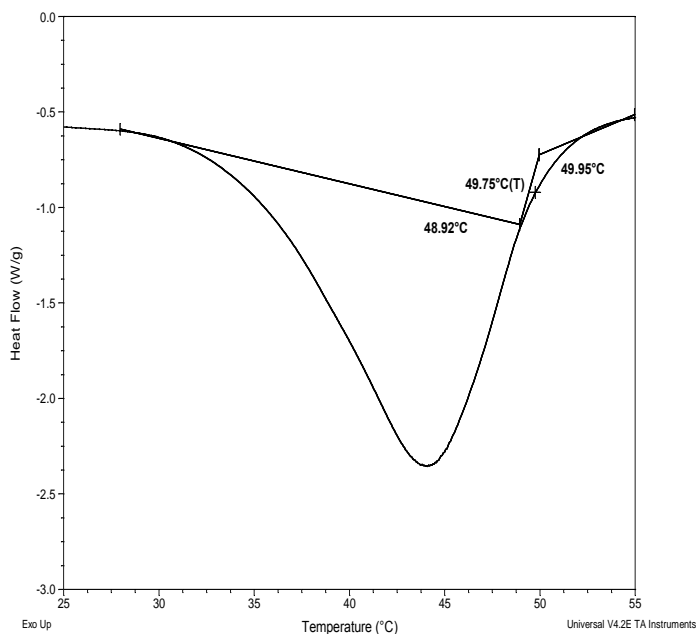
For PLA block		
$T_g$ : 50°C	$T_m$ Not found	$T_c$ : Not found
For PEO block		
$T_g$ : -67°C	$T_m$ : Not observed	$T_c$ : 12°C

### DSC thermogram of PEO block:



### Melting and crystallization curve for the sample

#### DSC thermogram of PLA block:



The crystallization temperature ( $T_c$ ) was considered as the minimum of the exothermic peak.

