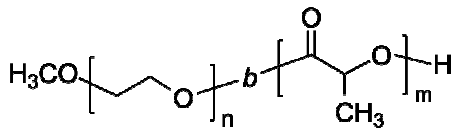


**Sample Name:** Poly(ethylene oxide)-*b*-poly(D,L-lactide)

**Sample #:** P40630-EOLA (DL form)



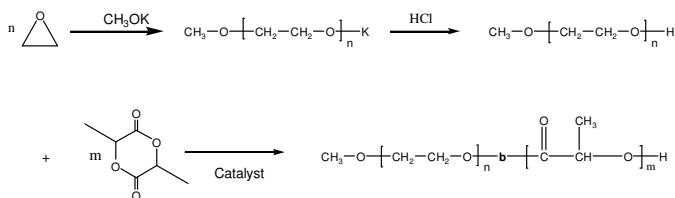
#### Composition:

$M_n \times 10^3$ (g/mol) [PEO- <i>b</i> -PLA]	$M_w/M_n$
11.0- <i>b</i> -8.0	1.07

Glass transition temperature, $T_g$ (PEO block):	-41 °C
Cold crystallization temperature, $T_{c.cr}$ :	-13 °C
Melting point, $T_m$ (PEO block)*:	57 °C
Crystallization temperature, $T_{cr}$ :	9 °C
* $T_g$ of PLA block overlaps with $T_m$ of PEO block.	

#### Synthesis procedure:

Scheme of poly(ethylene oxide)-*b*-lactide synthesis is shown below:



#### Characterization:

To determine the molecular weight of the first block, an aliquot of anionic poly(ethylene oxide) block was terminated before addition the lactide monomer, and analyzed by size exclusion chromatography (SEC). The final block copolymer composition was calculated from  $^1\text{H-NMR}$  spectroscopy by comparing the peak area of the methoxy-protons of poly(ethylene oxide) at *ca.* 3.6 ppm and the poly(lactide) protons at *ca.* 5.1 and 1.55 ppm. The polydispersity index ( $M_w/M_n$ ) of the diblock copolymer was obtained by SEC.

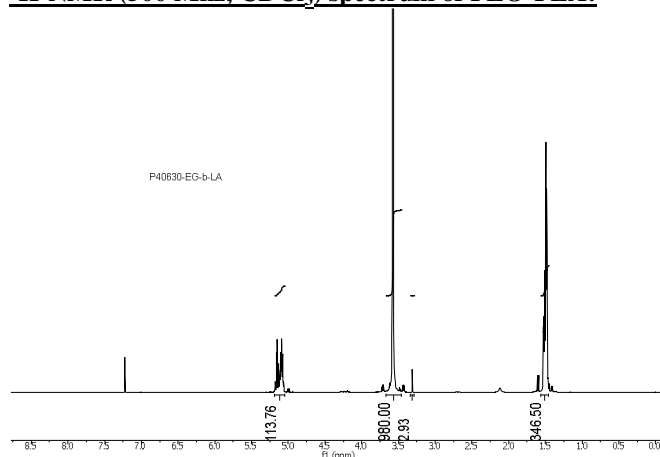
#### Thermal analysis:

Thermal analysis was performed on TA Instruments Q100 differential scanning calorimeter (DSC) under a nitrogen atmosphere. The glass transition temperature ( $T_g$ ) of the polymer was measured at a scan rate of 10°C/min shortly after creating thermal history of the sample.

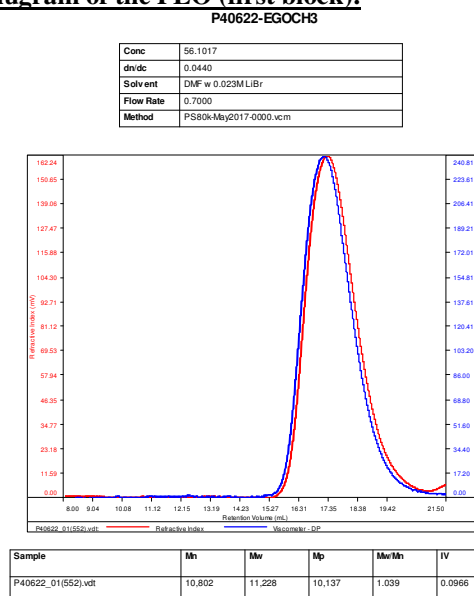
#### Solubility:

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

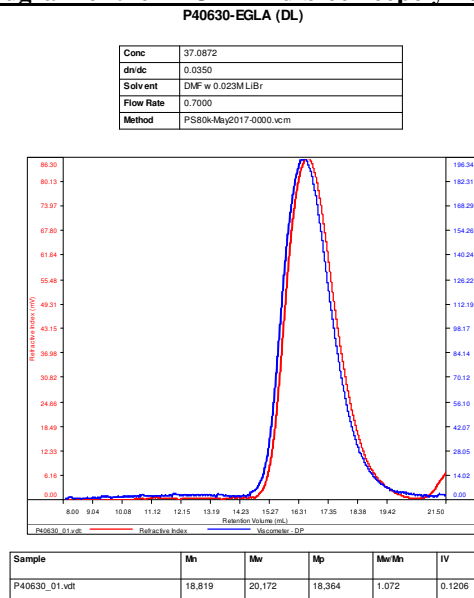
#### $^1\text{H-NMR}$ (500 Mhz, $\text{CDCl}_3$ ) spectrum of PEO-PLA:



#### SEC elugram of the PEO (first block):



#### SEC elugram of the PEO-PLA diblock copolymer:

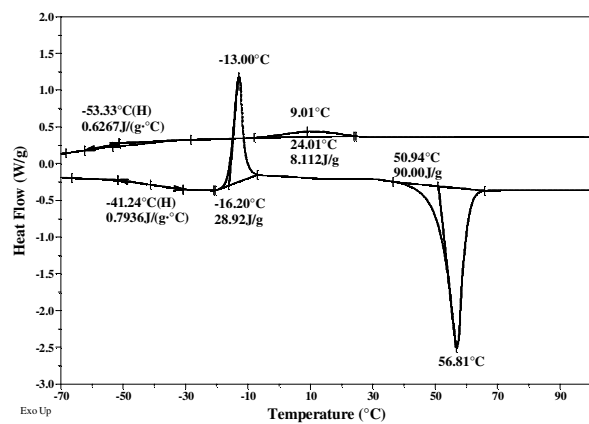


### DSC thermograms of the polymer

(2<sup>nd</sup> cooling scan [top] and 3<sup>rd</sup> heating scan [bottom], 10°C/min):

Sample: P40630-EOLA (DL-form)  
Size: 12.5000 mg

File: P40630\_EO-LA.001



### DSC thermograms of the polymer (3<sup>rd</sup> heating scan, 10°C/min):

Sample: P40630-EOLA (DL-form)  
Size: 12.5000 mg

File: P40630\_EO-LA.001

