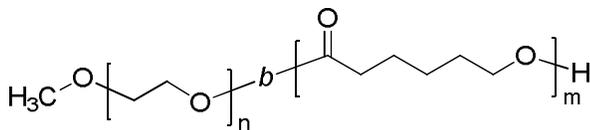


Sample Name:

Poly(ethylene oxide-*b*- ϵ -caprolactone)

Sample # **P18129A-EOCL**

Structure:



Composition:

Mn x 10 ³ (g/mol) [PEO- <i>b</i> -PCL]	M _w /M _n
5.0- <i>b</i> -5.0	1.18

Glass transition temperature (T _g):	-61 °C
Melting point (T _m):	53 °C

Synthesis Procedure:

Poly(ethylene oxide-*b*- ϵ -caprolactone) was prepared by living anionic polymerization of ethylene oxide and coordination polymerization of ϵ -caprolactone.

Characterization:

An aliquot of the anionic poly(ethylene oxide) was terminated before addition of ϵ -caprolactone and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight of the first block.

The final block copolymer composition was calculated from ¹H-NMR spectroscopy by comparing the peak area of the poly(ethylene oxide) protons at ~3.6 ppm and poly(ϵ -caprolactone) protons at ~4.1 ppm. The polydispersity index of the diblock copolymer was determined by SEC.

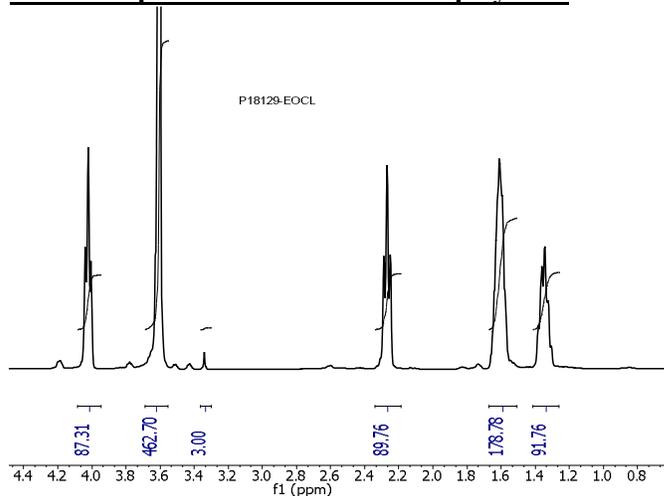
Thermal analysis:

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

Solubility:

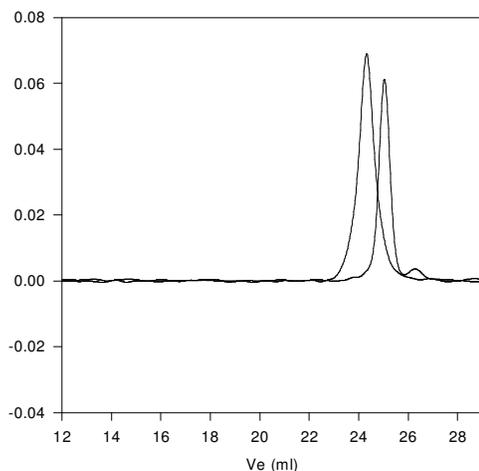
Poly(ethylene oxide-*b*- ϵ -caprolactone) is soluble in chloroform, THF, DMF, toluene; and it precipitates from cold ethanol and diethyl ether.

¹H NMR spectrum of the diblock copolymer:



SEC elugrams of PEO (first block) and PEO-*b*-PCL:

P18129A- EOCL



Size exclusion chromatography:

— Poly(ethylene oxide), M_n=5000, M_w=5300, PI=1.05
— Block Copolymer PEO(5,000)-b-PCL(5,000), PI=1.18
Composition from ¹H NMR

DSC thermograms:

Sample: P18129-A_EOCL
Size: 18.4000 mg

DSC

File: P18129-A_EOCL.001

