Sample Name:
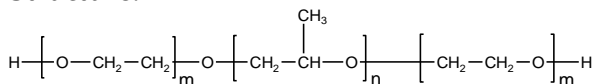
Poly(ethylene oxide-b- propylene oxide -b- ethylene oxide)

Sample #: P9811-EOPOEO
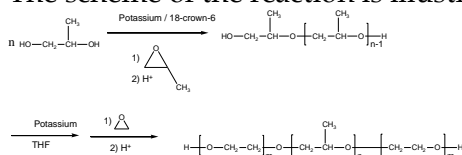
Structure:

Composition:

Mn x 10^3	PDI
4.3-b-0.55-b-4.3	1.12
Dp: 98-b-10-b-98	

Synthesis Procedure:

Poly(ethylene oxide-b- propylene oxide -b- ethylene oxide) is prepared by living anionic polymerization with sequence addition of propylene oxide followed by ethylene oxide.
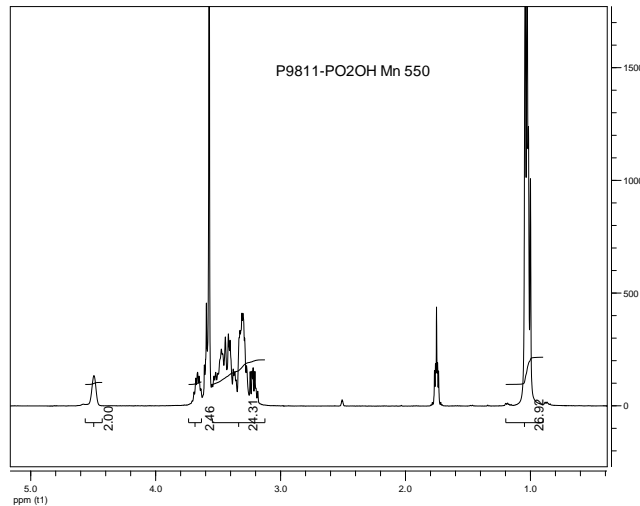
The scheme of the reaction is illustrated below:

Characterization:

The molecular weight and polydispersity index of this polymer were determined by size exclusion chromatography (SEC) using a Varian liquid chromatograph equipped with a UV and refractive index detector.
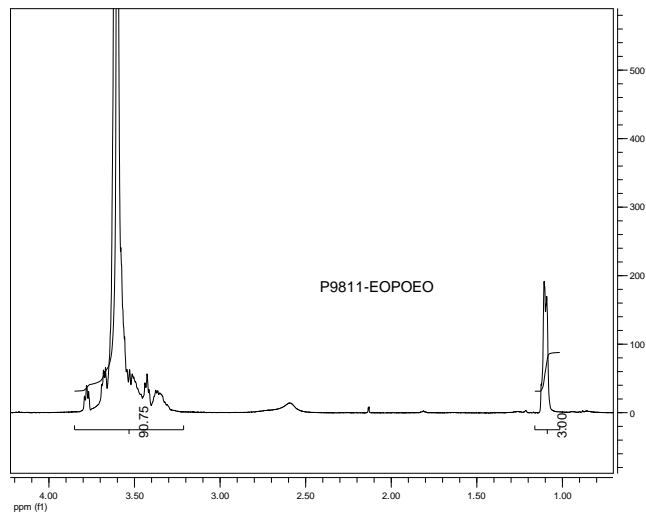
Solubility:

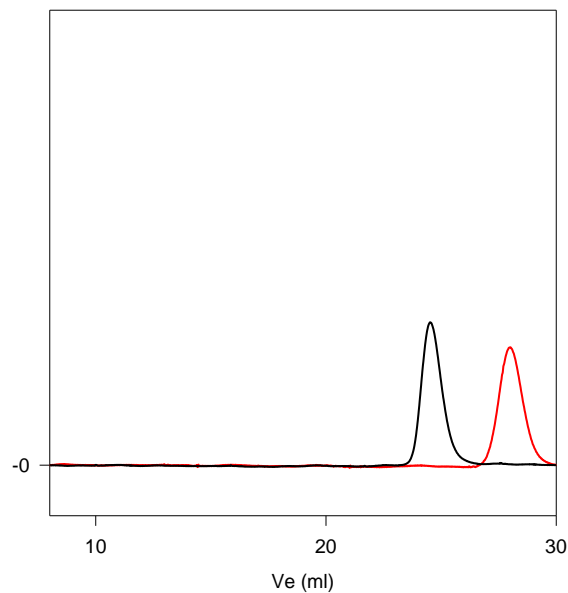Polymer is soluble in THF, CHCl₃, and toluene.

PO2OH Mn 550

P9811-PO2OH Mn 550

HNMR of the Polymer:

P9811-EOPOEO

SEC of Sample:

P9811-EOPOEO

Size exclusion chromatography of:
(ethylene oxide-propylene oxide-ethylene oxide) triblock copolymer:

—— Poly(propylene oxide) center block: M_n=550, M_w=630, M_w/M_n=1.15

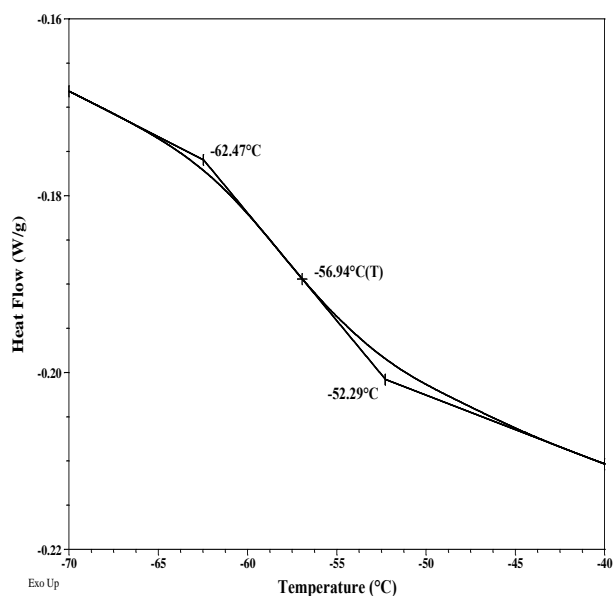—— Block Copolymer EO(4300)-b-PO(550)-b-EO(4300), M_w/M_n=1.12

Thermal analysis of the sample# P9811-EOPOEO

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°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 (EO-PO-EO)

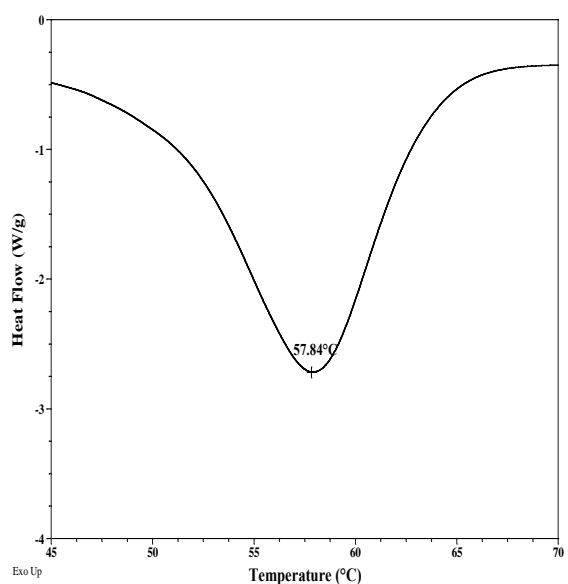| Sample	T_m ($^{\circ}$C)	T_c ($^{\circ}$C)	T_g ($^{\circ}$C)
EO block	58	30	-57
PO block		-	-

Typical thermogram for the EO block

Melting and crystallization curve for the sample

The melting temperature (T_m) was taken as the maximum of the endothermic peak where as the crystallization temperature (T_c) was considered as the minimum of the exothermic peak.

Melting curve for PEO block:

Crystallization curve for PEO block: