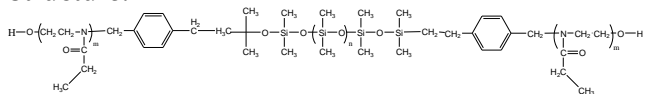


Sample Name:

Poly(2-ethylloxazoline-b-dimethylsiloxane-b-2-ethylloxazoline) Triblock Copolymer

Sample #: **P9168-EtOXZDMSEtOXZ**

Structure:



Composition:

Mn x 10 ³	PDI
1.0-b-4.0-b-1.0	
Dp of each units: (10-b-54-b-10)	1.7

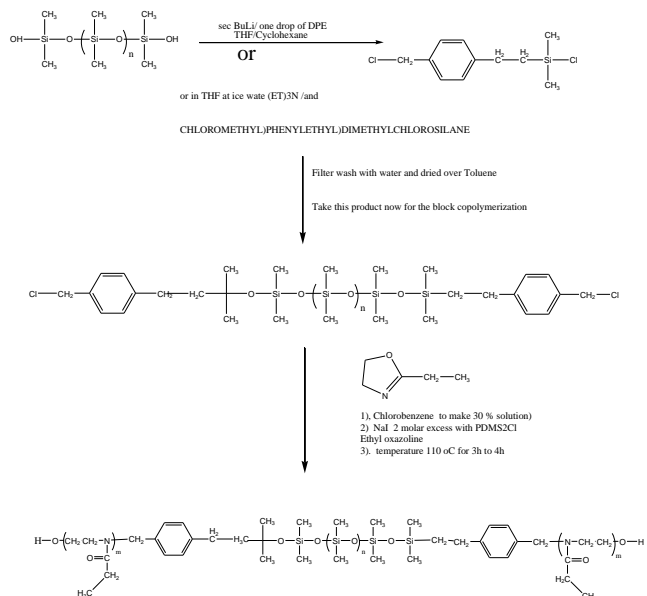
Synthesis Procedure:

The α - ω dihydroxy terminated Poly(2-ethylloxazoline-b-dimethylsiloxane-b-2-ethylloxazoline) triblock copolymer was prepared by combination of anionic living polymerization of hexamethylcyclotrisiloxane (D3) and cationic polymerization of 2-ethyl oxazoline, using difunctional initiator. Polymer was treated with equivalent amount of end functional moieties with NaOH/Methanol. Polymer was recovered in cold acetone, wash couple of times with cold acetone to remove the unreacted any trace amount of monomer.

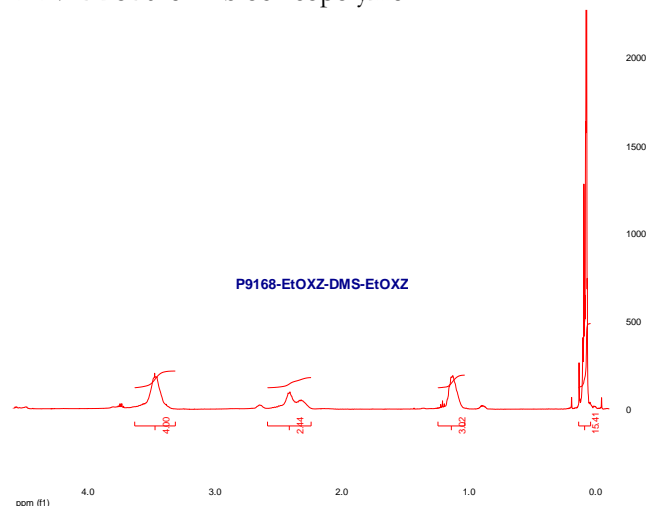
Characterization:

Central Block: The molecular weight and polydispersity index of the poly(ethylene oxide) block was determined by size exclusion chromatography (SEC) using a Varian liquid chromatograph equipped with a UV and refractive index detector. The chemical composition was extracted from proton NMR, which was recorded from Varian 500MHz instrument using CDCl₃ as solvent.

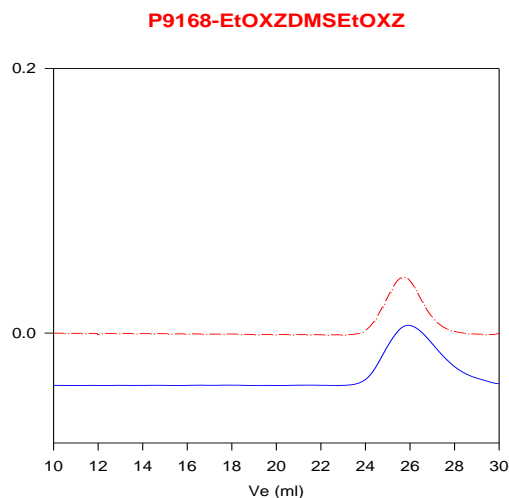
The reaction of polymerization can be illustrated as follows:



¹H NMR of the Triblock copolymer:



SEC for the triblock polymer:

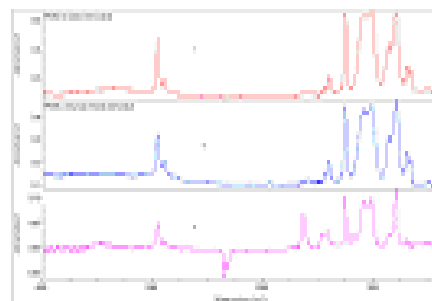


Size exclusion chromatography of the polymer

- Polydimethyl siloxane disilanol $M_n=4000$, $M_w=5400$, $M_w/M_n=1.3$
- Poly(ethylloxazoline-b-dimethyl siloxane-b-ethyl oxazoline)
- M_n : PEtOXZ(1000)-b-PDMS(4000)-b-PEtOXZ(1000) $M_w/M_n=1.7$

FTIR Spectra of the Products:

- PDMS α - ω -disilanol terminated.
- PDMS- α - ω - dibenzyl chloride terminated PDMS
- EtOXZ-DMS-EtOXZ triblock copolymer



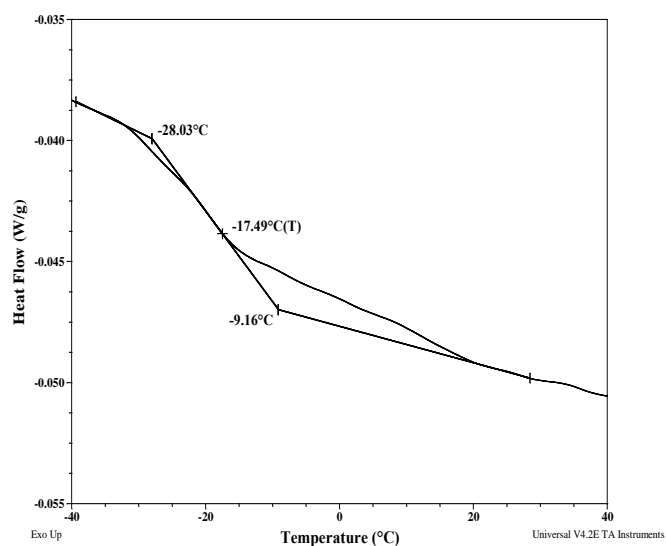
Thermal analysis of the sample# P9168-EtOXZDMSEtOXZ

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

For PDMS block		
T_g : -127°C (lit. value)	T_m : 53°C	T_c : 20°C
For EtOXZ block		
T_g : -17°C	T_m : -	T_c : -

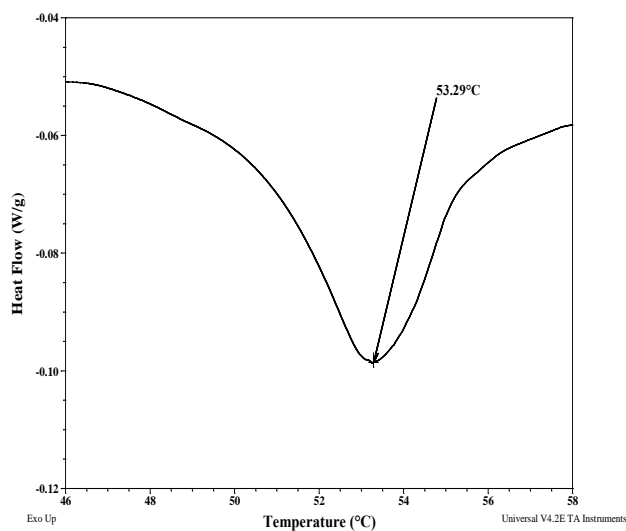
Thermogram for EtOXZ block:



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 PDMS block:



Crystallization curve For PDMS block:

