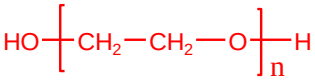
Sample Name: **Poly(ethylene glycol)**

Sample #: **P43979-EG2OH**

Structure:



Composition:

Mn x 10^3	PDI
20.0	1.01
Mp: 20.6	

Synthesis Procedure:
Poly (ethylene glycol) is obtained by living anionic polymerization and the reaction.

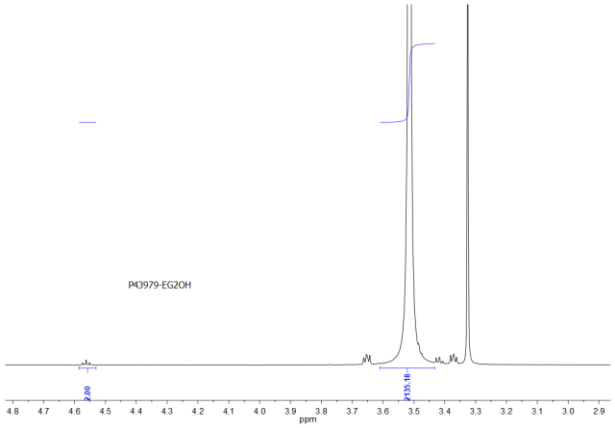
Characterization:
By Size exclusion chromatography (SEC): Varian liquid chromatograph equipped with UV and refractive detector. SEC columns from Supelco were used with THF containing 2 vol% $(Et)_3N$ as the eluent. The molecular weights were determined using light scattering detector and viscosity detector. The molecular weights and the polydispersity indice were calculated.
An aqueous GPC column from Supelco(G5000 PWXL) was also used with 0.5 M acetic acid and 0.8 M NaNO3 as the eluent. It was kept at a constant temperature of 50°C. The flow rate was 1.0 ml/min. The column was calibrated with monodisperse poly(ethylene oxide) standards. The molecular weights and the polydispersity index of polyethylene oxide were calculated by using a Visual Basic GPC software.

Purification of the obtained polymer:
Purification of the obtained polymer was carried out rigorously as follows to ensure the removal of the catalyst side product:

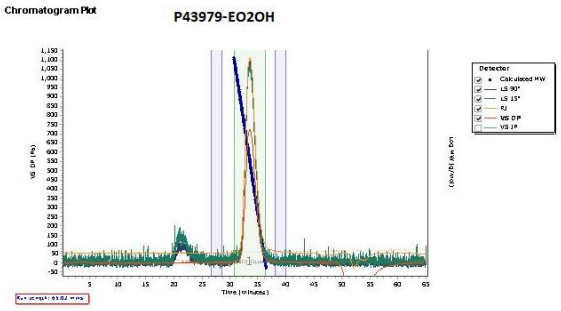
1. Dissolved the polymer in de-ionized distilled water to remove any insoluble organic catalyst side product.
2. Polymer was extracted from water with dichloromethane.
3. Polymer solution in dichloromethane was dried over anhydrous sodium sulfate.
4. Solution was filtered and then passed through a column packed with basic Al_2O_3.
5. Solution was concentrated on rota-evaporator
6. Solution was precipitated in cold diethyl ether.
7. Dried under vacuum for 48h at 38 °C.

Solubility:
Poly(ethyl glycol) is soluble in toluene, THF, water and $CHCl_3$. The polymer is insoluble in hexane, ether, cold isopropanol and ethanol.

H NMR spectrum of the Sample:



SEC elugram of the Sample:



Molecular Weight Averages

Peak	Mp (g/mol)	Mn (g/mol)	Mw (g/mol)	Mz (g/mol)	Mz+1 (g/mol)	Mv (g/mol)	PD
Peak 1	20658	20417	20459	20501	20542	20482	1.002