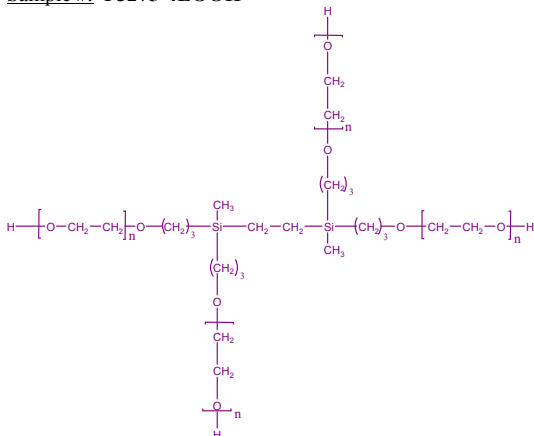


Sample Name:  
**Four arm Poly ethylene oxide-silane  
 based core**

Sample #: **P3275-4EOOH**



Mn x 10 <sup>3</sup> (total)	PDI
8.0	1.12

**Synthesis Procedure:**

The polymer was prepared by anionic living polymerization of ethylene oxide using tetra functional OH terminated reagent bearing silicone in the core. The core was synthesized by reacting bis (methyl dichlorosilyl)butane with tert.butyl dimethyl siloxy propyl lithium. The tert butyl dimethyl siloxyl group was deprotected by reacting with dichloro acetic acid. The core was purified by passing through the Al<sub>2</sub>O<sub>3</sub> packed column.

**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)<sub>3</sub>N 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 NaNO<sub>3</sub> 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:

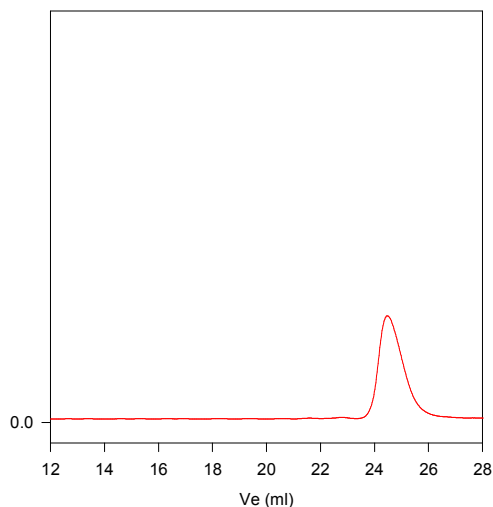
1. Dissolved the polymer in de-ionized distilled water to remove the any insoluble organic catalyst side product.
2. Polymer extracted from water with dichloromethane.
3. Polymer solution in dichloromethane was dried over anhydrous sodium sulfate.
4. Solution filtered and than passed through a column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

**Solubility:**

Polymer is soluble in toluene, THF, water and CHCl<sub>3</sub>. The polymer is insoluble in hexane, ether, cold isopropanol and ethanol.

**SEC of the product**

**P3275-4EOOH (silane core)**



Size Exclusion Chromatogram of Four-Arm Poly(ethylene oxide)

Molecular weights using polyethylene glycol standards:

M<sub>n</sub>=8000, M<sub>w</sub>=9000, M<sub>w</sub>/M<sub>n</sub>=1.12