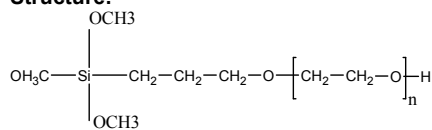


### Sample Name:

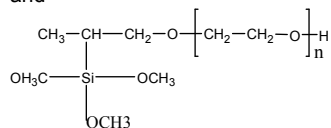
### Trimethoxy Silane terminated Poly ethylene glycol

Sample #: **P4598A-TMS-EG**

#### **Structure:**



and

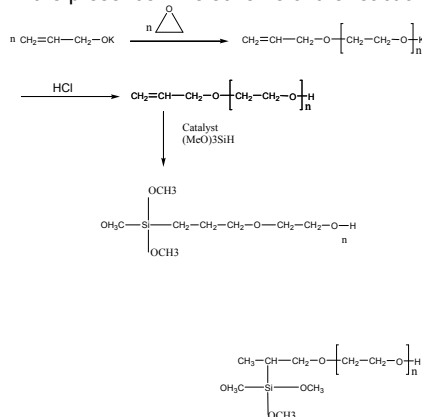


#### **Composition:**

Mn x 10 <sup>3</sup>	PDI
0.9	1.2

#### **Synthesis Procedure:**

Allyl Terminated Poly(ethylene glycol) was prepared by anionic living polymerization of ethylene oxide using an allyl alcohol potassium salt as initiator. The obtained polymer was hydrosylate in the presence. The scheme of the reaction is illustrated below:



#### **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.

**Functionality:** Functionality of the polymer was determined by H NMR analysis or FT-IR spectroscopy.

#### **Solubility:**

Polymer is soluble in water, methanol and ethanol, THF, CHCl<sub>3</sub>. It is precipitated out from cold ethanol, isopropanol, hexane and ether.

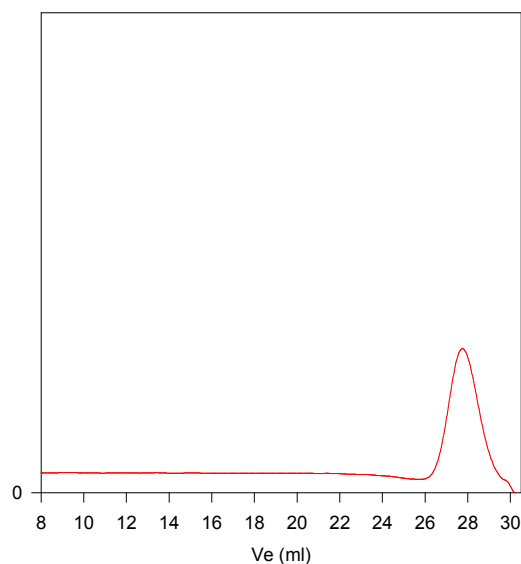
### **Purification of the obtained polymer:**

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.

#### **SEC of Sample:**

**P4598A-EGAllyl**



Size exclusion chromatography of Allyl Terminated Poly(ethylene glycol):

M<sub>n</sub>=900, M<sub>w</sub>=1080 PI=1.2 Allyl functionality: 1.0

