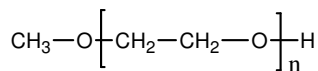


Sample Name: Poly(ethylene glycol) methyl ether

Sample #: P40049-EGOCH3

**Structure:**

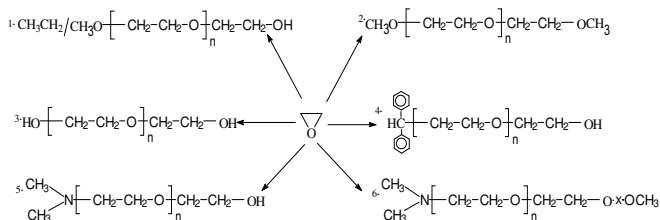


**Composition:**

Mn x 10 <sup>3</sup>	PDI
107.0	1.26

**Synthesis Procedure:**

Polymer is obtained by living anionic polymerization and the reaction. Scheme of the polymerization is illustrated below:



	Initiator System	Resulting Polymer
1)	CH <sub>3</sub> OCH <sub>2</sub> CH(CH <sub>3</sub> )OK	polyethylene glycol methyl ether
2)	CH <sub>3</sub> OCH <sub>2</sub> CH(CH <sub>3</sub> )O	α, ω-term. methyl ether
3)	KOCH <sub>2</sub> CH <sub>2</sub> OK	polyethylene glycol
4)	CH(C <sub>5</sub> H <sub>6</sub> ) <sub>2</sub> CK	polyethylene glycol diphenyl ether
5)	(CH <sub>3</sub> ) <sub>2</sub> N-CH <sub>2</sub> CH <sub>2</sub> OK	methyl amino terminated PEG
6)	(CH <sub>3</sub> ) <sub>2</sub> N-CH <sub>2</sub> CH <sub>2</sub> OK	α-methyl amino ω-methyl ether term. PEG

**Characterization:**

The polymer was characterized by size exclusion chromatography (SEC): Varian liquid chromatograph equipped with light scattering, 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.

**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.

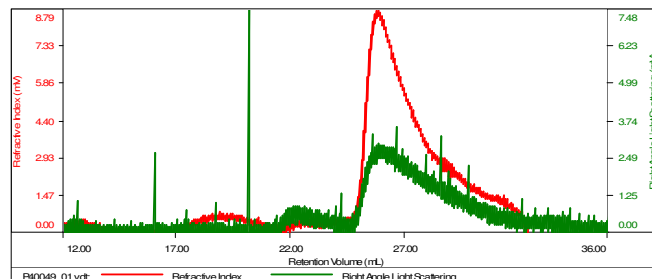
**Solubility:**

Poly(ethyl glycol) is soluble in toluene, THF, water and CHCl<sub>3</sub>. The polymer is insoluble in hexane, ether, cold isopropanol and ethanol.

**SEC elugram of the polymer:**

Sample ID: P40049-EG

Concentration (mg/mL)	1.2385
Sample concn (mL/g)	0.0650
Method File	PS80K-30JUNE2016-0000.vcm
Column Set	3x PL 1113-6300
Solvent	THF



Sample	M <sub>n</sub> (Da)	M <sub>w</sub> (Da)	M <sub>w</sub> /M <sub>n</sub>	IV (dL/g)	M <sub>p</sub> (Da)
P40049_01.vdt	107,164	134,692	1.257	0.7477	193,050