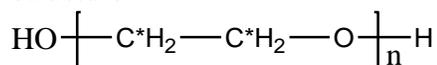


Sample Name:

<sup>13</sup>C label Poly(ethylene glycol)

Sample #: P9408A-<sup>13</sup>C-EO2OH

Structure:



Composition:

Mn × 10 <sup>3</sup>	PDI
7.5	1.25

Synthesis Procedure:

<sup>13</sup>C label Poly (ethylene glycol) is obtained by living anionic polymerization using <sup>13</sup>C label ethylene oxide.

<sup>13</sup>C Label EO is obtained from CIL :

Specifications are as follows:

Lot# PR-19484

Chemical Purity: > 98%

GC/MS for isotopic Enrichment: 99.7%

Mass Spectroscopy for Chemical purity < 0.15%

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:

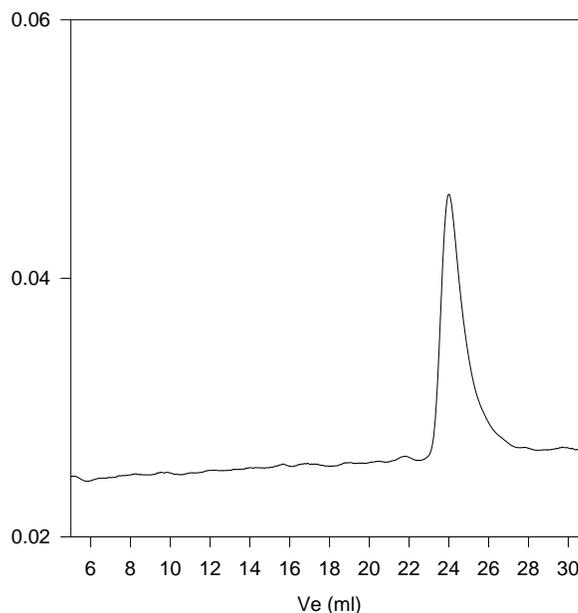
1. Dissolved the polymer in de-ionized distilled water to remove the any insoluble organic catalyst side product.
2. Polymer was extracted from water with dichloromethane.
3. Polymer solution in dichloromethane was dried over anhydrous sodium sulfate.
4. Solution was filtered and then passed through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

Solubility:

<sup>13</sup>C label Poly(ethyl glycol) is soluble in hot toluene, THF, water and CHCl<sub>3</sub>. The polymer is insoluble in hexane, ether, cold isopropanol and ethanol.

SEC of Sample of the polymer:

**P9408A-<sup>13</sup>C EO-2OH)**



Size Exclusion Chromatography of <sup>13</sup>C label Poly (ethylene glycol)

M<sub>n</sub> = 7500, M<sub>w</sub> = 9400, M<sub>w</sub>/M<sub>n</sub> = 1.25