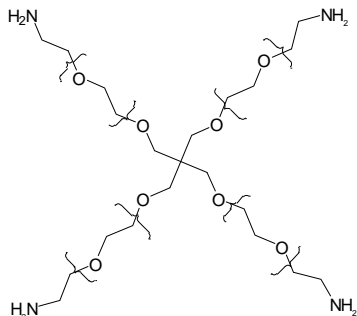


Sample Name: Four-arm Amino-terminated Poly(Ethylene Oxide)

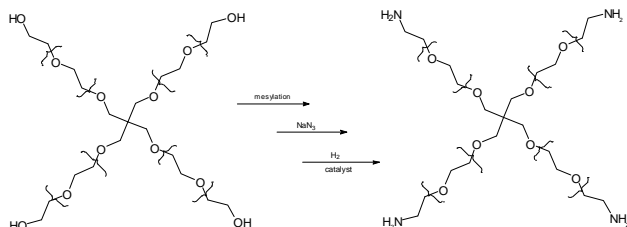
Sample #: P2979-4EONH2



Mn x 10 ³ (total)	PDI
10.0	1.08

Synthesis Procedure:

The polymer was synthesized by anionic living polymerization of ethylene oxide using pentaerythritol potassium salt as an initiator. A scheme of the reaction is presented below:



Characterization.

By ¹H NMR and size exclusion chromatography.

Varian liquid chromatograph equipped with UV and refractive detector, SEC columns from Supelco, and THF (eluent) containing 2 vol% (Et)₃N were used. The molecular weights were determined using light scattering detector and viscosity detector.

An aqueous GPC column from Supelco(G5000 PWXL) was also used with 0.5 M acetic acid and 0.8 M NaNO₃ as an eluent. The constant temperature of 50°C was kept during the experiment. 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. polymer was dissolved 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 Al₂O₃;
5. solution was concentrated on rotary evaporator;
6. solution was precipitated into cold diethyl ether;
7. product was dried under reduced pressure at 38°C for 48 h.

Solubility:

The polymer is soluble in toluene, THF, water and CHCl₃. The polymer is insoluble in hexane, ether, cold isopropanol and ethanol.

Functionality:

The amino functionality was titrated by HClO₄ using violet crystal as indicator.

¹H NMR of the product:

