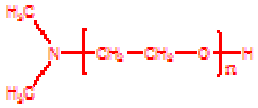
Sample Name:
Poly(ethylene glycol) dimethylamine and hydroxy Terminated

Sample #: **P1993-EO**

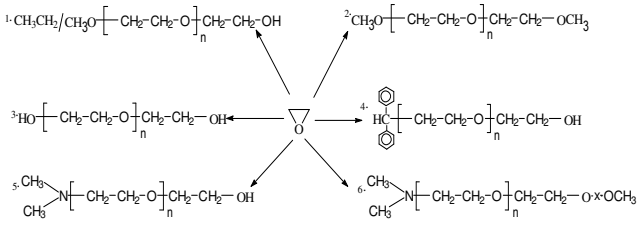
Structure:



Composition:

Mn x 10^3	PDI
8.4	1.06

Synthesis Procedure:
Poly(ethylene glycol) or poly ethylene oxide bearing different end group (symmetric or asymmetric functional0 end groups) is obtained by living anionic polymerization Scheme of the polymerization is illustrated below:



	Initiator System	Resulting Polymer
1)	$CH_3OCH_2CH(CH_3)OK$	polyethylene glycol methyl ether
2)	$CH_3OCH_2CH(CH_3)OK$	α, ω-term. methyl ether polyethylene glycol
3)	$KOCH_2CH_2OK$	polyethylene glycol
4)	$CH(C_5H_6)_2CK$	polyethylene glycol diphenyl ether
5)	$(CH_3)_2$ N-CH_2CH_2 OK	methyl amino terminated PEG
6)	$(CH_3)_2$ N-CH_2CH_2 OK	α-methyl amino ω-methyl ether term. PEG

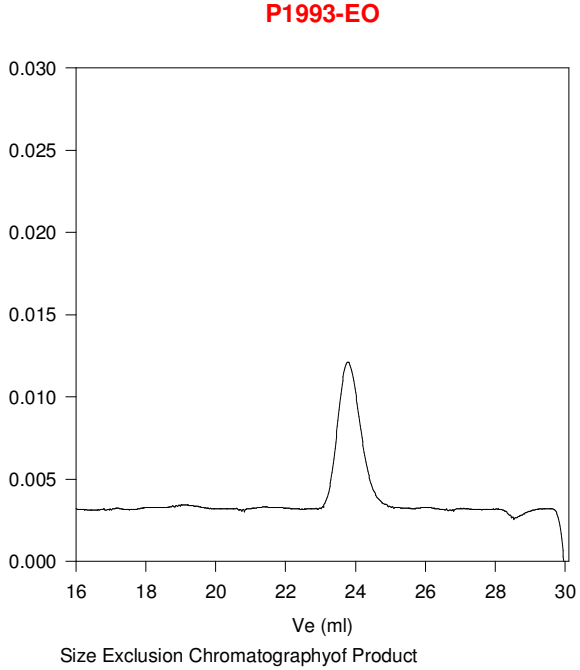
Characterization:
The polymer was characterized by size exclusion chromatography (SEC): Varian liquid chromatograph equipped with UV and refractive, or a Viscotek TriSEC detector. Two sets of columns were used according to the elent system. SEC columns from Supelco was used with THF containing 1 vol% $(Et)_3N$ as the eluent. The columns from Waters were used with 0.5 M acetic acid and 0.8 M $NaNO_3$ as the eluent. The molecular weights and the polydispersity index (PI) were calculated either from Viscotek TriSEC (higher molecular-weight-samples) or the calibration based on poly(ethylene oxide) standards (lower molecular-weight-samples).

Solubility:
Poly(ethyl glycol) is soluble in toluene, THF, water and $CHCl_3$. The polymer is insoluble in hexane, ether, cold isopropanol and ethanol.

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_2O_3 .
5. Solution concentrated on rota-evaporator
6. Solution precipitated in cold diethyl ether.
7. Dried under vacuum for 48h at 38 oC.

SEC elugram



Size Exclusion Chromatographyof Product

M_n = 8,400, M_w =8,900 Mw/Mn =1.06