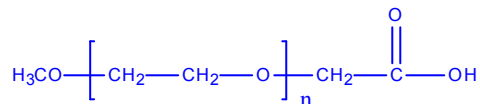


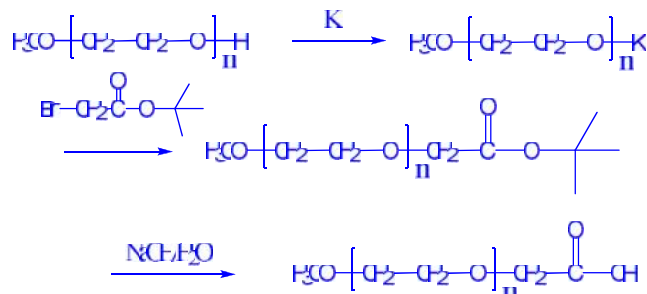
ω-Carboxyl Terminated Poly(ethylene glycol) methyl ether (O-Acetic Acid Ester Terminal group)

Structure:



Mn $\times 10^3$	PDI
1.6	1.15
COOH Functionality by HNMR	0.98
COOH functionality by titration	0.93

Carboxy terminated poly(ethylene glycol) was synthesized by anionic living polymerization of ethylene oxide using ethylene glycol/potassium salt as an initiator. The hydroxyl end groups were converted into carboxyl groups by reacting them with 2-bromoacetate or using Jones Reagent ($\text{CrO}_3\text{H}_2\text{SO}_4$) as oxidizing agent. The reaction is illustrated as Scheme 1.



$$\text{H}_3\text{C}-\text{O}-\left[\text{CH}_2-\text{CH}_2-\text{O}\right]_n-\text{CH}_2-\text{CH}_2-\text{O}-\text{CH}_2-\text{CH}_2-\text{OH}$$

$$\xrightarrow{\text{CrO}_3/\text{H}_2\text{SO}_4}$$

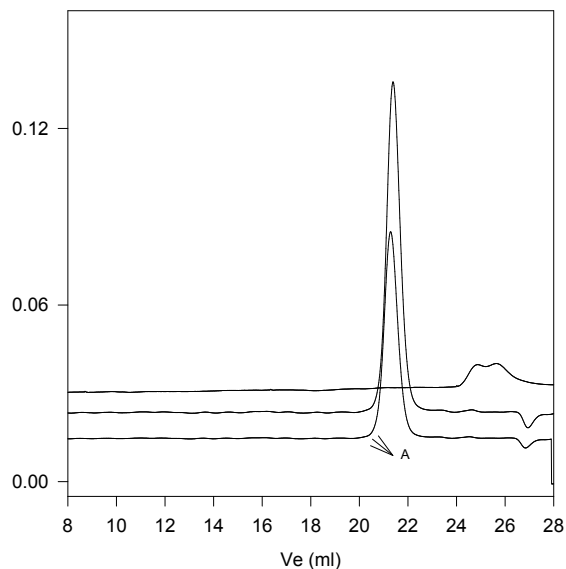
$$\text{H}_3\text{C}-\text{O}-\left[\text{CH}_2-\text{CH}_2-\text{O}\right]_n-\text{CH}_2-\text{CH}_2-\text{O}-\text{CH}_2-\text{C}(=\text{O})-\text{OH}$$

The molecular weight and polydispersity index of this polymer were determined by size exclusion chromatography (SEC) using a Varian liquid chromatograph equipped with a UV and refractive index detector.

Solubility:

Polymer is soluble in water, methanol and ethanol, THF, CHCl_3 . It is precipitated out from cold ethanol, isopropanol, hexane and ether.

P14172-EGOCH₃CH₂COOH



Size Exclusion Chromatography of Polyethylene glycol methyl ether before converting terminal OH to COOH $M_n=2000$, $M_w=2200$, $PI=1.09$

It elution retarded; By converting terminal COOH back to its ester (A):