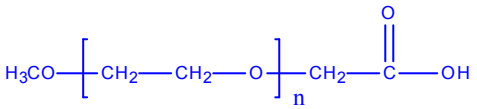
Sample Name:

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

Sample #: **P14168-EGOCH3CH2COOH**

Structure:

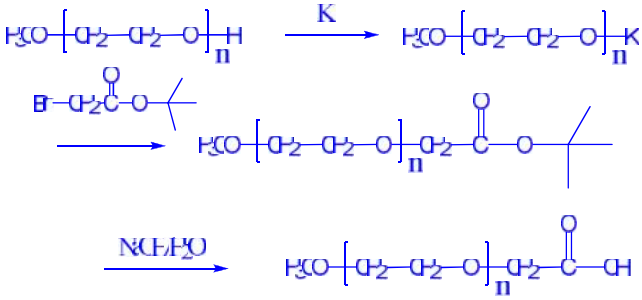


Composition:

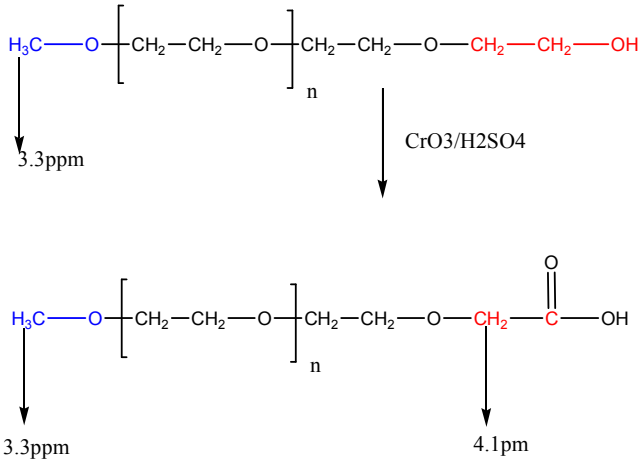
Mn × 10^3	PDI
0.5	1.15
COOH Functionality by HNMR	0.88
COOH functionality by titration	0.92

Synthesis Procedure:

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 (CrO3H2SO4) as oxidizing agent. The reaction is illustrated as Scheme 1.



or:



Characterization:

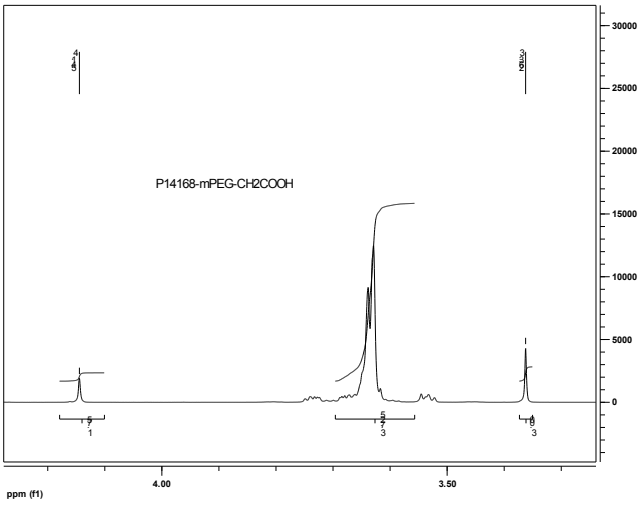
The molecular weight and polydispersity index of this polymer were determined by size exclusion chromatography (SEC) using a Varian liquid chromatograph equipped with a UV and refractive index detector.

Functionality: Functionality of the polymer was determined by H NMR analysis or FT-IR spectroscopy.

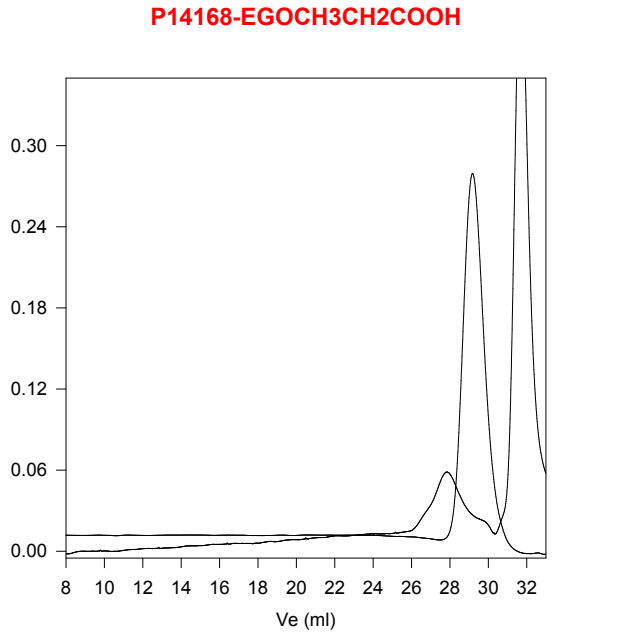
Solubility:

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

NMR of Sample:



SEC of Polymer



Size Exclusion Chromatography of Poly(ethylene glycol) methyl ether

M_n=500, M_w=575, Mw/Mn =1.15

After Converting terminal OH to COOH