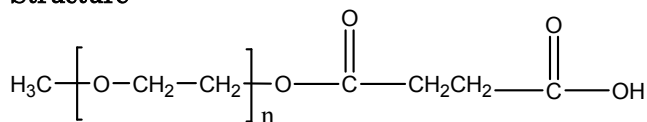


**Sample Name:**

$\alpha$ -Carboxy  $\omega$ -methoxy Terminated  
Poly(ethylene glycol)

Sample #: P7392-EGOCH<sub>3</sub>COOH

**Structure:****Composition:**

$M_n \times 10^3$	PDI
1.8	1.05

**Synthesis Procedure:**

$\alpha$ -Carboxy  $\omega$ -methoxy terminated poly(ethylene glycol) was synthesized by reacting methoxy poly ethylene glycol with succinic anhydride

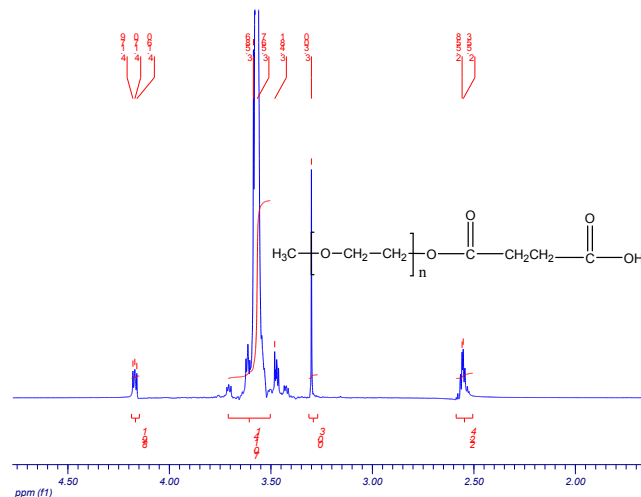
**Characterization:**

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 acid base titration and from H NMR analysis.

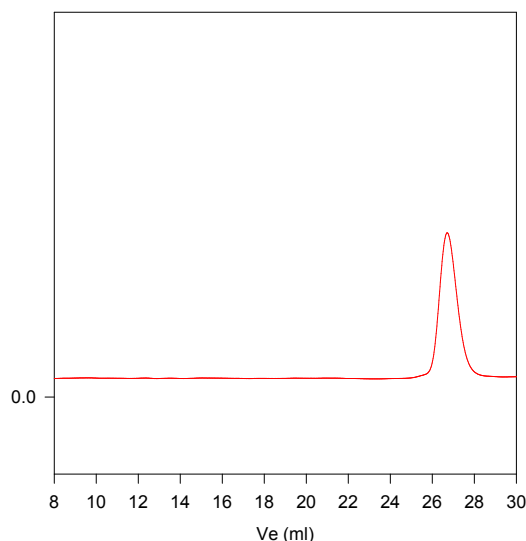
**Solubility:**

Polymer is soluble in water, methanol and ethanol, THF, CHCl<sub>3</sub>. It is precipitated out from cold ethanol, isopropanol, hexane and ether.

**NMR of the product**

**SEC of the product:** Before converting the terminal end group to COOH (reacting with succinic anhydride)

**P7392-EGOCH<sub>3</sub>**



Size Exclusion Chromatogram of Poly(ethylene glycol)methylether  
 $M_n=1800$ ,  $M_w=1900$ ,  $M_w/M_n=1.05$  before reaction with succinic anhydride

**Reference:**

S. K. Varshney, J.X. Zhang, US patent 7,009,033 B2, 2006 Assigned to Polymer source, Inc. Canada Heterofunctional Polyethylene glycol and Polyethylene oxide, process for their Manufacture.

## Thermal analysis of the P7392- EGOCH<sub>3</sub>COOH

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature ( $T_g$ ).

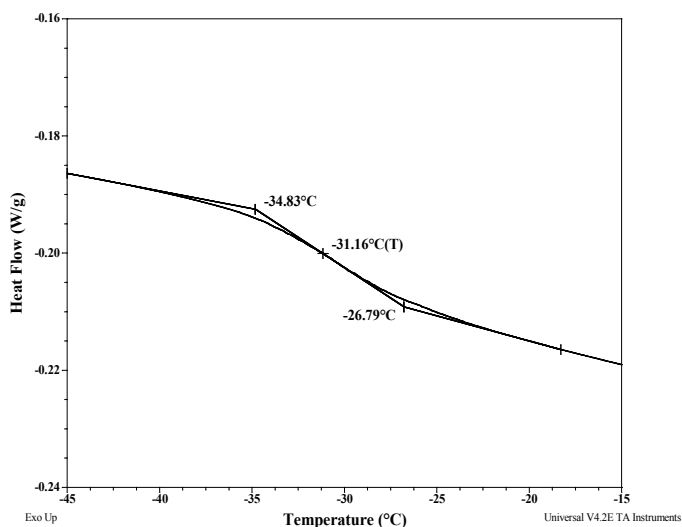
### Melting and crystallization curve for the sample

The melting temperature ( $T_m$ ) was taken as the maximum of the endothermic peak where as the crystallization temperature ( $T_c$ ) was considered as the minimum of the exothermic peak.

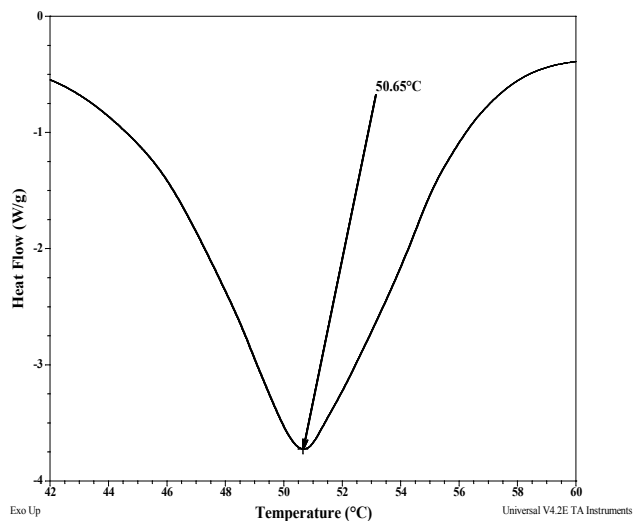
### Thermal analysis results at a glance

Sample	$T_m$ (°C)	$T_c$ (°C)	$T_g$ (°C)
EGOCH <sub>3</sub> NH <sub>2</sub>	51	32	-31

### Thermogram for the PEO block



### Melting curve for the polymer:



### Crystallization curve for the polymer:

