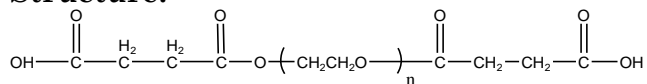


Sample Name:

**$\alpha$ - $\omega$ - dicarboxylic acid (succinic acid)  
Terminated Poly(ethylene glycol)**

Sample lot# P 7570-EG2SA

**Structure:**

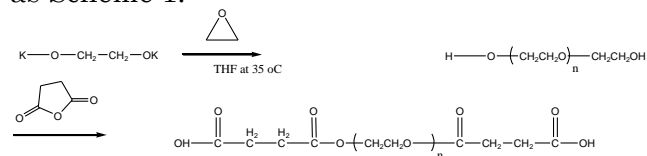


**Composition:**

Mn	PDI	Functionality (f)
1940	1.05	>98%

**Synthesis Procedure:**

$\alpha$ - $\omega$ - disuccinic acid 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 succinic anhydride. The reaction is illustrated as Scheme 1.



**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.

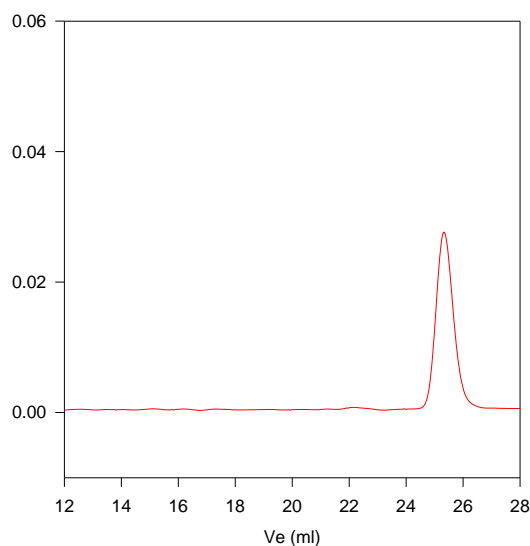
**Functionality:** Functionality of the polymer was determined by H NMR analysis or FT-IR spectroscopy.

**Solubility:**

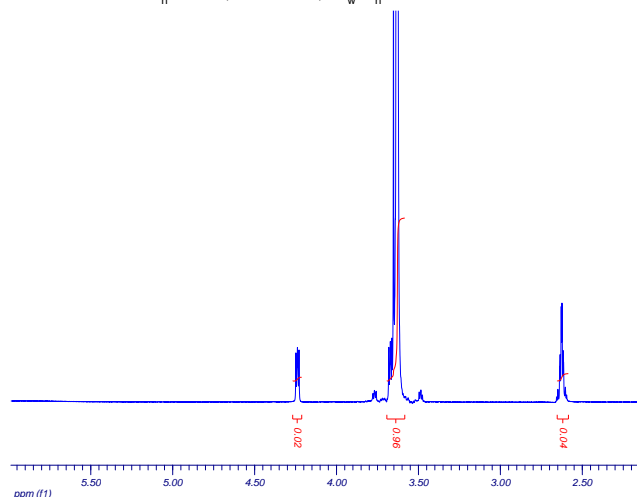
Polymer is soluble in water, methanol and ethanol, THF, CHCl<sub>3</sub>. It is precipitated out from cold ethanol, isopropanol, hexane and ether.

**SEC of Sample:**

**P7570A-EG2COOH**



Size Exclusion Chromatography of Poly(ethylene glycol)  
(parent polymer of P8331-EG2OH before reacting with succinic anhydride)  
 $M_n = 1940$ ,  $M_w = 2040$ ,  $M_w/M_n = 1.05$



**Reference:**

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