# Sample Name:

 $\alpha,\omega\text{-}$  dihydroxy terminated-polypropylene glycol Oligomer  $\underline{\text{Nanomer}}$ 

Sample #: **P9822F** 

### Structure:

$$100 - \overset{\text{CH}_5}{\overset{}_{5}} - \text{CH}_5 - \overset{\text{CH}_5}{\overset{}_{5}} - \overset{\text{CH}_5}{\overset{\text{CH}_5}{\overset{}_{5}}} - \overset{\text{CH}_5}{\overset{\text{CH}_5}{\overset{}_{5}}} - \overset{\text{CH}_5}{\overset{\text{CH}_5}{\overset{}_{5}}} - \overset{\text{CH}_5}{\overset{\text{CH}_5}{\overset{}_{5}}} - \overset{\text{CH}_5}{\overset{\text{CH}_5}{\overset{}_{5}}} - \overset{\text{CH}_5}{\overset{\text{CH}_5}{\overset{}_{5}}} - \overset{\text{CH}_5}{\overset{\text{CH}_5$$

Composition:

Mn x 10 <sup>3</sup>	PDI
0.540	1.06

#### Synthesis Procedure:

Polypropylene oxide is synthesized by anionic polymerization of propylene oxide as illustrated in the reaction scheme below

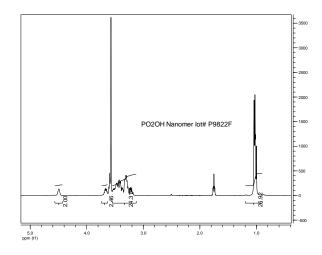
 $\begin{array}{c} CH_{3} \\ H \longrightarrow \begin{pmatrix} CH_{3} \\ CH \longrightarrow CH_{2} \end{pmatrix} = \begin{pmatrix} CH_{2} - CH_{2} - CH_{2} - CH_{2} \\ CH_{3} \\ CH_{3} \end{pmatrix} \begin{array}{c} CH_{2} - CH_{2} - CH_{2} \\ CH_{3} \\ KO \longrightarrow CH \longrightarrow CH_{2} - CH_{2} \\ CH_{3} \\ CH_{3} \\ CH_{3} \end{array} \begin{array}{c} CH_{3} \\ RK \\ HCL \\ CH_{3} \longrightarrow CH_{2} \longrightarrow CH_{2} - CH_{2} - CH_{2} - CH_{3} \\ CH_{3} \longrightarrow CH_{3} \longrightarrow CH_{2} - CH_{2} - CH_{3} \longrightarrow CH_{3} \\ CH_{3} \longrightarrow CH_{3} \longrightarrow CH_{3} \longrightarrow CH_{3} \\ CH_{3} \longrightarrow CH_{$ 

### Characterization:

The molecular weight and polydispersity index (PDI) are obtained by size exclusion chromatography.

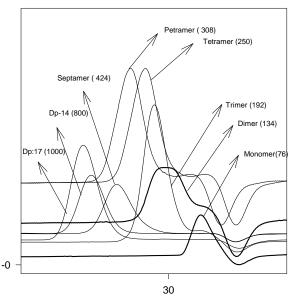
#### **Purification:**

The reaction mixture is filtered to remove the precipitated KCl after which the solvent is removed under reduced pressure.



## **SEC of Homopolymer:**

# Oligomers of Poylpropylene glycol



Ve (ml) Size exclusion chromatography of oligomers:

- ---- 1. Monomer (Mass 76) 2. Dimer (Mn: 134) 3. Trimer: Mn (192)
- 4. Tetramer (Mn 250) 5. Pentamer (Mn 308) 6. Septamer (Mn 424)
  - 7. Dp=14 (Mn 800) 8. Dp: 17 (Mn 1000)