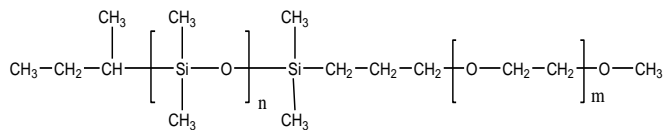


**Sample Name:** Poly(dimethyl siloxane -b- ethylene oxide)

**Sample #:** P7259-DMSEO

**Structure:**

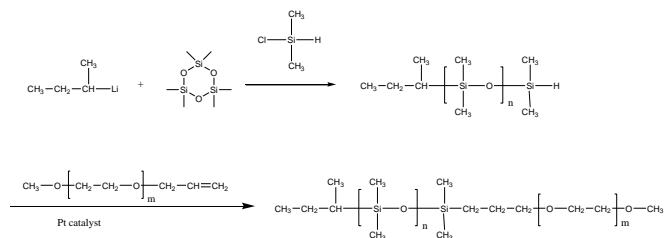


**Composition:**

|                                 |      |
|---------------------------------|------|
| $M_n \times 10^3$<br>PDMS-b-PEO | PDI  |
| 1.0-b-2.1                       | 1.12 |

**Synthesis Procedure:**

The polymer is prepared by living anionic polymerization of hexamethyl cyclotrisiloxane followed by hydrosilylation reaction with allyl PEO using Pt catalyst. The reaction scheme is shown below:



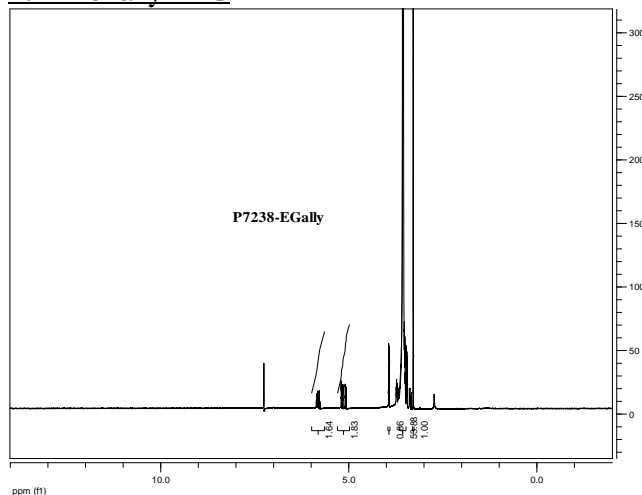
**Characterization:**

An aliquot of the Poly(dimethyl siloxane) block was terminated before hydrosilylation analyzed by size exclusion chromatography (SEC) and NMR to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from  $^1\text{H-NMR}$  spectroscopy by comparing the peak area of the siloxane protons at about 0.08 ppm with the peak area of ethylene oxide protons at about 3.4ppm.

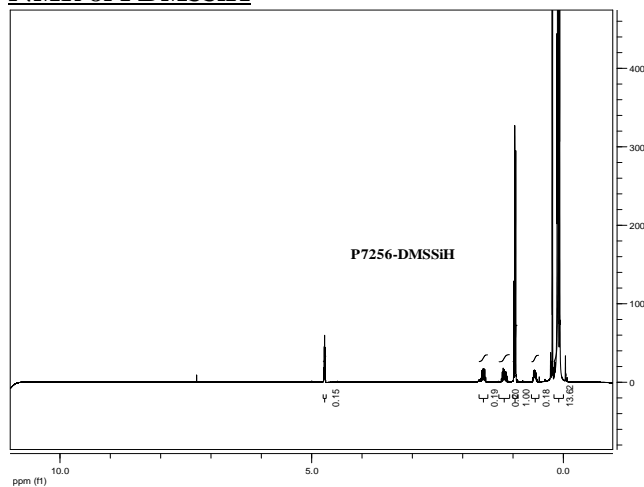
**Solubility:**

The polymer is soluble in THF, not soluble in MeOH, ether and hexane.

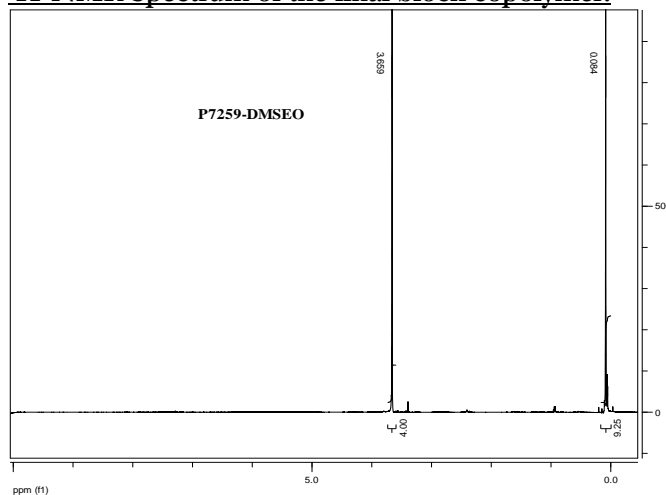
**NMR of ally PEG**



**NMR of PDMSSiH**

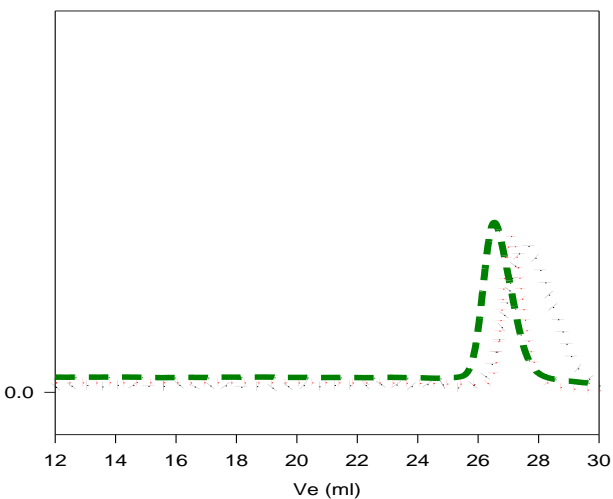


**$^1\text{H-NMR}$  Spectrum of the final block copolymer:**



**SEC of the polymer**

**P7259-DMSEO**



Size exclusion chromatography of the polymer

- Allyl PEO,  $M_n=2100$ ,  $M_w=2300$ ,  $PI=1.08$
- PDMSSiH:  $M_n=1000$ ,  $M_w=1200$ ,  $PI=1.2$
- Final block copolymer: PDMS(1000)-b-PEO(2100),  $PI=1.12$   
Composition from  $^1\text{H-NMR}$

## Thermal analysis of the sample# P7259-DMSEO

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 ( $T_g$ ).

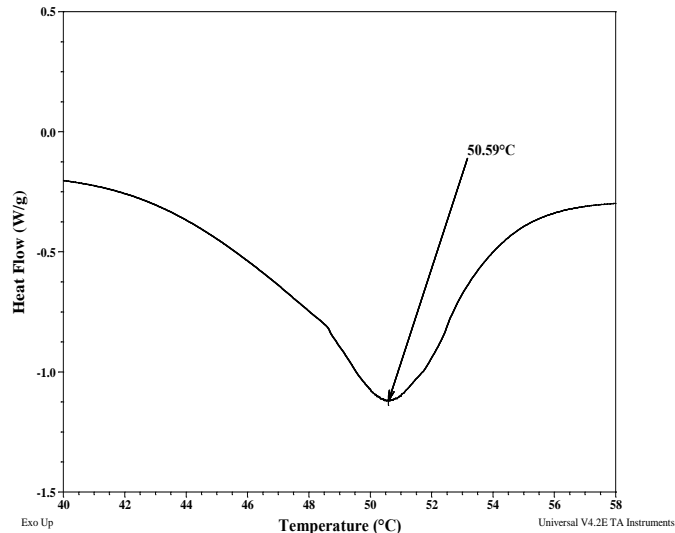
### Melting and crystallization curve for the sample

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.

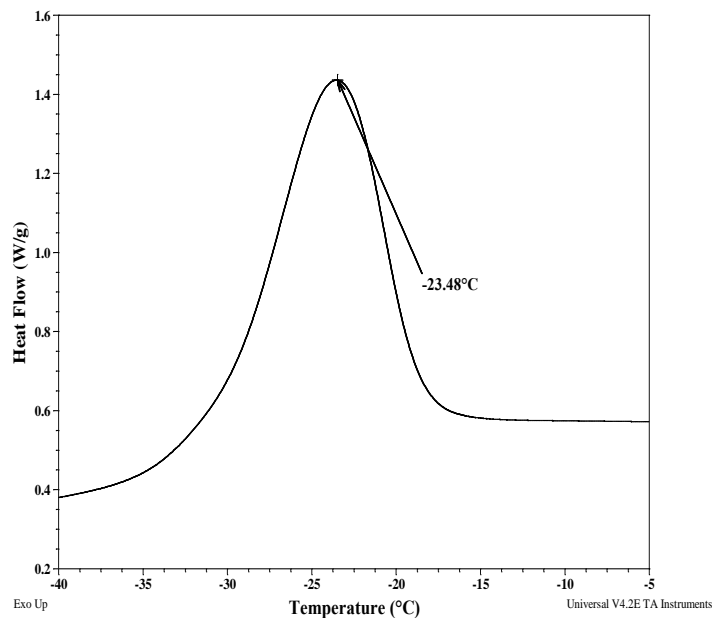
### Thermal analysis results at a glance

| Sample | $T_m$ (°C) | $T_c$ (°C) | $T_g$ (°C) |
|--------|------------|------------|------------|
| PEO    | 51         | -23        | Not found  |
| PDMS   | -40        | Not found  | -127 (Lit) |

### Melting curve for PEO block:



### Crystallization curve for DMS block:



### Melting curve for DMS block:

