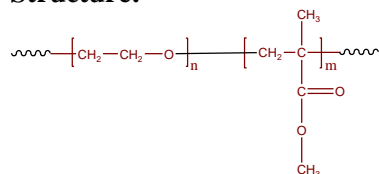


Sample Name:

**Poly(ethylene oxide-b-methylmethacrylate)**

Sample #: **P4777-EOMMA**

**Structure:**

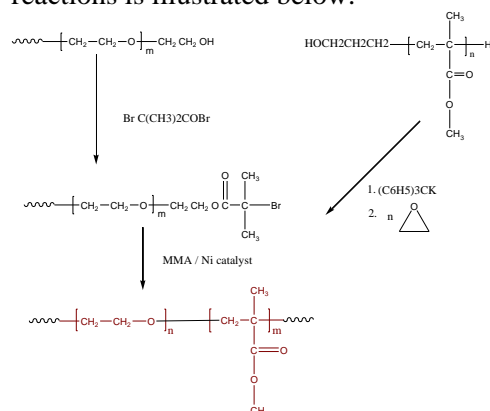


**Composition:**

Mn x 10 <sup>3</sup> PEO-b-MMA	PDI
11.5-b-15.0	1.2

**Synthesis Procedure:**

Poly (methyl methacrylate -b- ethylene oxide) is prepared by different routes. The scheme of the reactions is illustrated below:



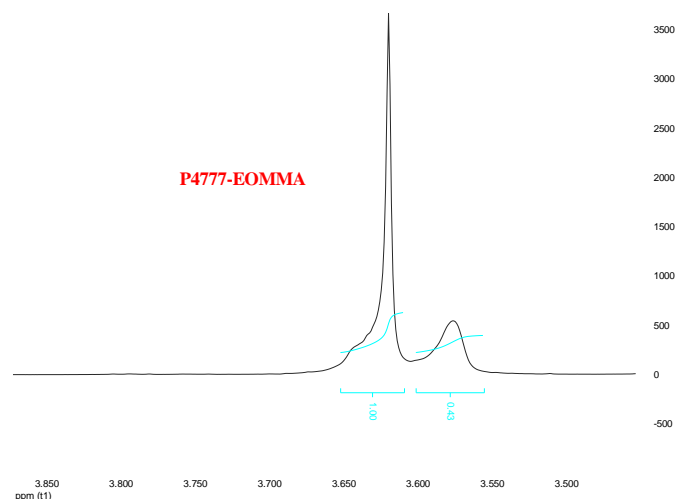
**Purification of the polymer:**

From the obtained polymer the un- reacted PEG can be removed by stirring the polymer in hot water. The obtained polymer dissolved in CHCl<sub>3</sub>/Toluene and pass through the column packed with silica. The Diblock copolymer obtained by second route where the macroinitiator of PEG bearing Br terminal group was used to initiate polymerization of MMA. The obtained polymer dissolved in toluene/CHCl<sub>3</sub> was passed through a column packed with silica to remove the traces amount of Nickel catalyst. The polymer was further purified by stirring in hot water to remove un- reacted PEG macroinitiator. The polymer was recovered by precipitation in cold ether/hexane mixture.

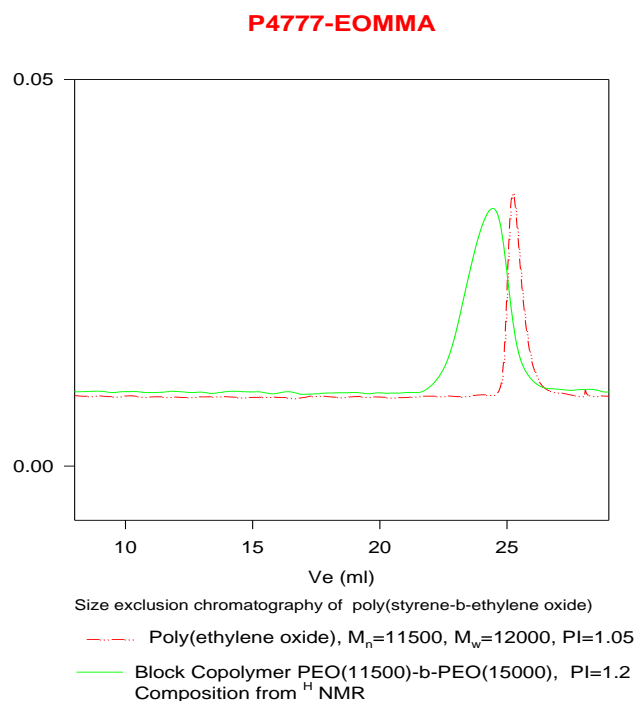
**Solubility:**

Poly (ethylene oxide -b- MMA) is soluble in CHCl<sub>3</sub>, THF, toluene. The polymer precipitated out from hexane.

**<sup>1</sup>H-NMR Spectrum of the block copolymer:**



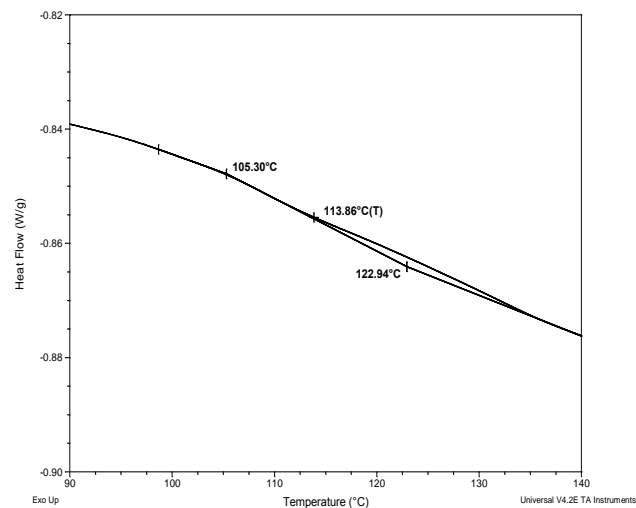
**SEC of the block copolymer:**



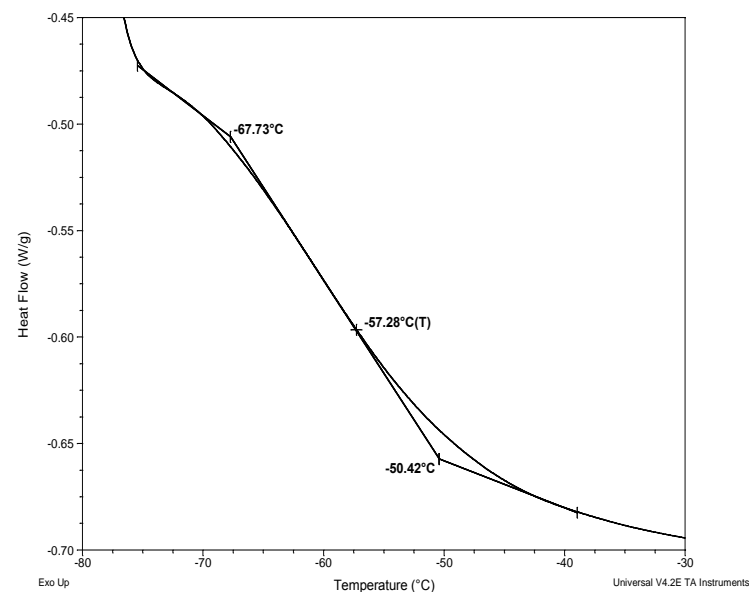
Thermal analysis of the sample# P4776-EOMMA

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 20°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 ( $T_g$ ).

Thermogram for the MMA block



Thermogram for PEO block



Thermal analysis results at a glance

For PMMA block		
$T_g$ : 114°C	$T_m$ : -	$T_c$ : -
For PEO block		
$T_g$ : -57°C	$T_m$ : 49°C	$T_c$ : Not found

Melting curve for the sample

The melting temperature ( $T_m$ ) was taken as the maximum of the endothermic peak.

Melting curve for PEO block

