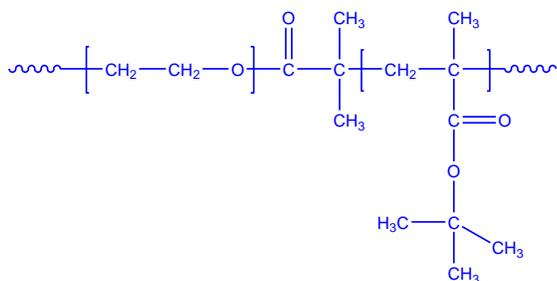


Sample: Poly(tert-butyl methacrylate-b-ethylene oxide)

Sample #: P6352-tBuMAEO

Structure:

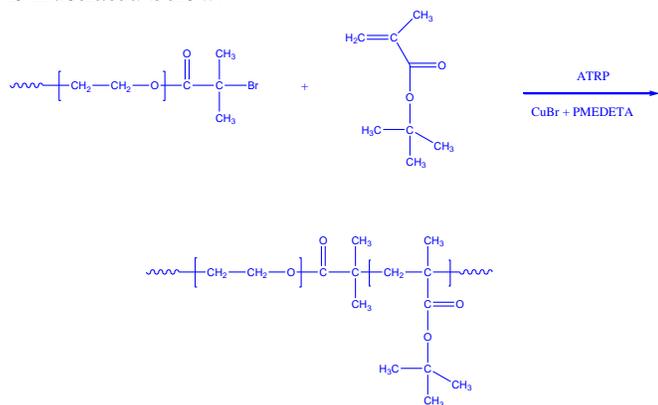


Composition:

Mn x 10 ³ PtBuMA-b-EO	PDI
4.3-b-5.0	1.20

Synthesis Procedure:

Poly(ethylene oxide -b- tert-butyl methacrylate) is prepared by ATRP using bromo-terminated poly(ethylene glycol) as the macro-initiator. The scheme of the reaction is illustrated below:



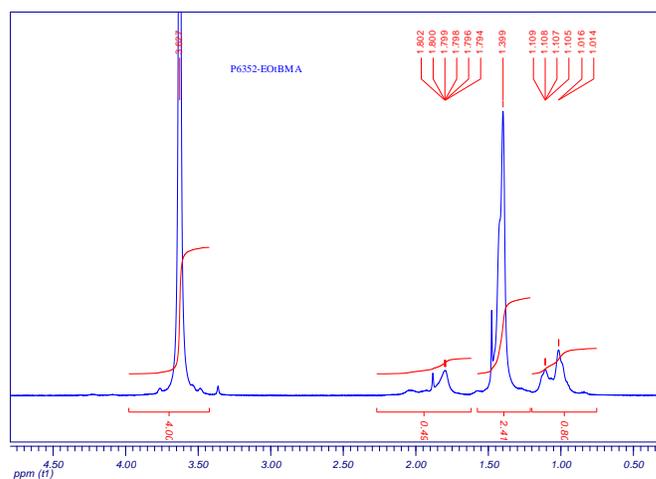
Characterization:

PEG-Br and final block copolymer were analyzed by size exclusion chromatography (SEC) to obtain the molecular weight of PEG and polydispersity index (PDI) for both PEG and block copolymer. The final block copolymer composition was calculated from ¹H-NMR spectroscopy by comparing the peak area of the ethylene oxide protons at about 3.6 ppm with the tert-butyl protons at about 1.4 ppm.

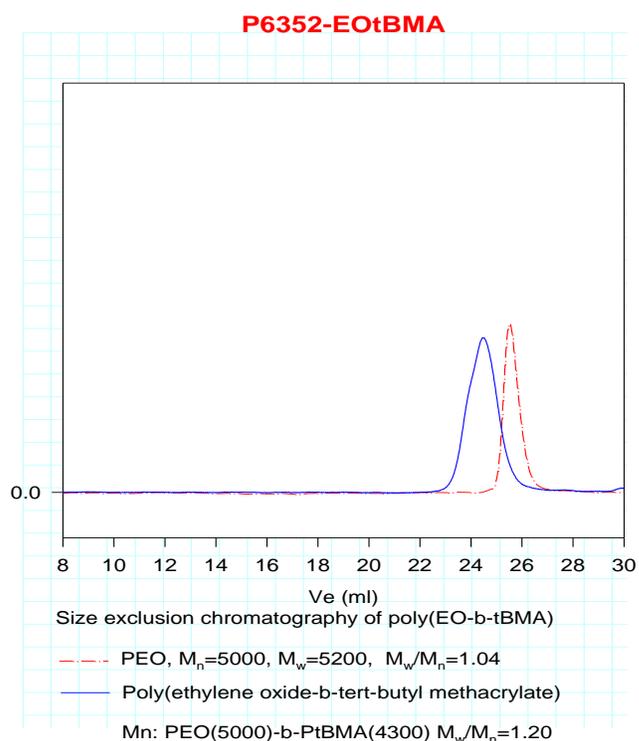
Solubility:

Poly(ethylene oxide -b- t-butyl methacrylate) is soluble in THF, acetone, and chloroform and it precipitates out in hexane if t-butyl methacrylate block is not that long.

¹H-NMR Spectrum of the block copolymer:



SEC of the block copolymer:



Thermal analysis of the EOtBuMA-6532

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

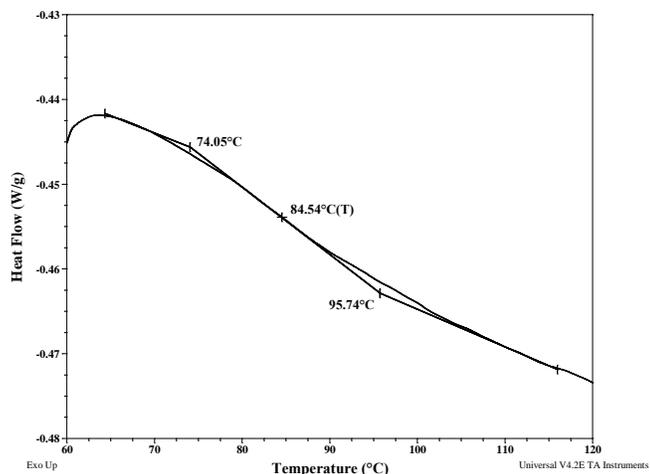
The melting temperature (T_m) was taken as the maximum of the endothermic peak where as the crystallization temperature (T_c) was considered as the minimum of the exothermic peak.

Thermal analysis results at a glance

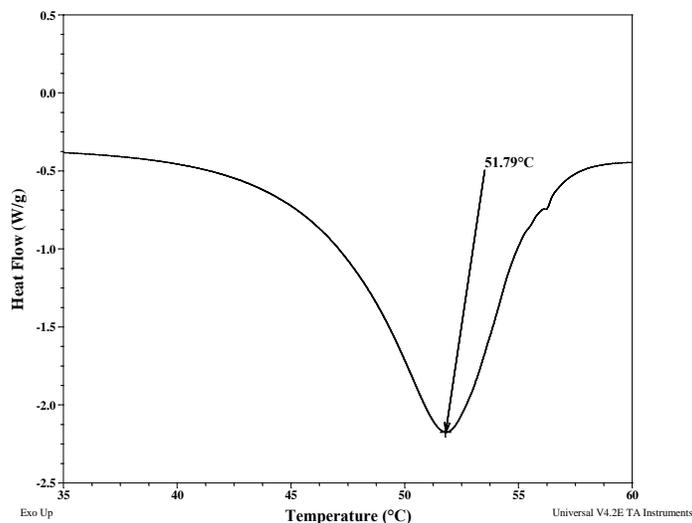
Sample	T_m (°C)	T_c (°C)	T_g (°C)
EO	52	16	-50
tBuMA	-	-	85

Thermogram for the PEO block

Thermogram for the tBuMA block:



Melting curve for EO block:



Crystallization curve for EO block:

