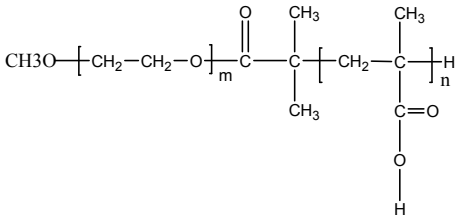
Sample Name: **Poly(ethylene oxide -b-methacrylic acid)**

Sample #: **P18024-EOMAA**

Structure:



Composition:

Mn x 10^3 PEO-b-MAA	PDI
5.0-b–9.5	1.3

Synthesis Procedure:

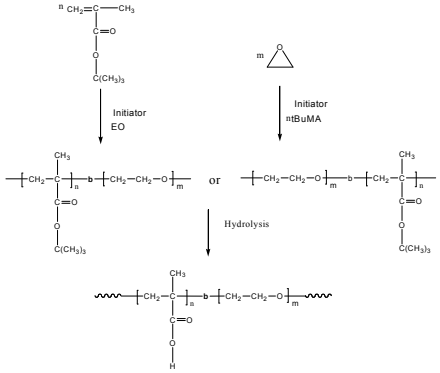
Poly(ethylene oxide -b- tert-butyl methylacrylate) is prepared by ATRP using bromo-terminated poly(ethylene glycol) as the macro-initiator.

Synthesis Procedure:

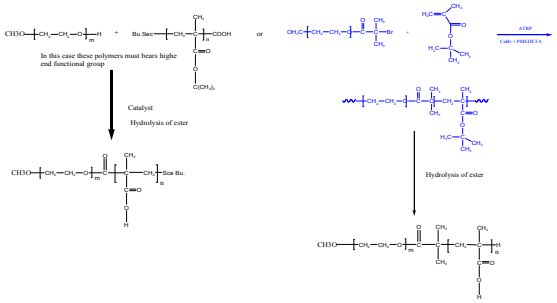
Poly(ethylene oxide -b- methylacrylic acid) is prepared by 2 different routes:

A. By living anionic polymerization of sequential addition of EO and tBuMA (ethylene oxide or t-butyl methacrylate) followed by hydrolysis of the t-butyl group[1]

B. by chemical coupling reaction of the corresponding functionalized polymer. The scheme of the reaction is illustrated below:



or



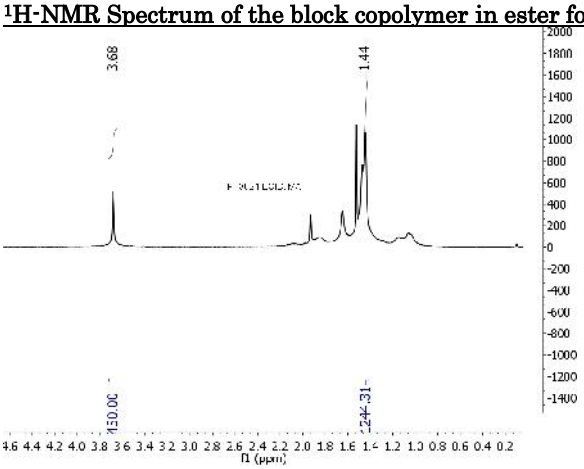
Characterization:

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 ^{1}H-NMR spectroscopy by comparing the peak area of the ethylene oxide protons at about about 3.6 ppm with the tert.butyl protons at about 1.4 ppm.

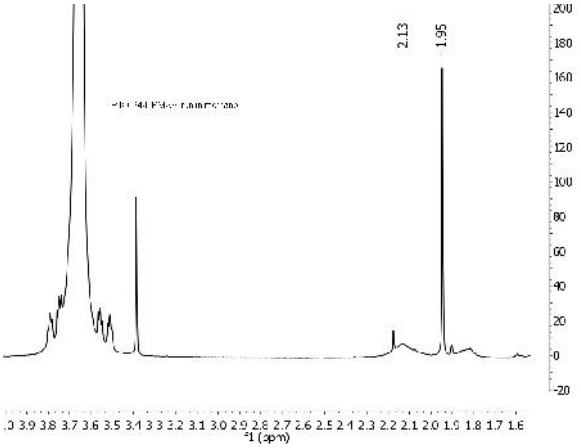
Solubility:

Poly(ethylene oxide b-MAA) this lot is not soluble in water and it solubilize in methanol ethanol.

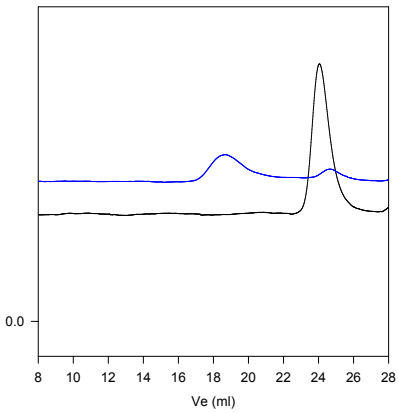
^{1}H-NMR Spectrum of the block copolymer in ester form:



EOMAA run in methanol:



P18024-EOtBuMA



Size exclusion chromatography of poly(EO-b-tBuMA)

PEO, M_n=5000, M_w=5200, M_w/M_n=1.04

Poly(ethylene oxide-b-tBuMA) 5000,-b-19,500

After hydrolysis: PEO(5000)-b-PMAA(9,500), Mw/Mn=1.3