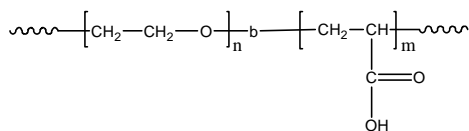


Sample Name:
Poly(ethylene oxide-b-acrylic acid)

Sample #: P20129-EOAA

Structure:

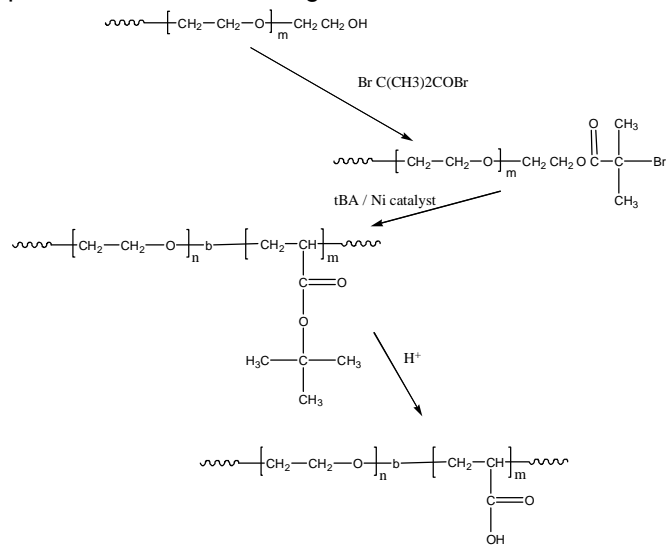


Composition:

Mn x 10 ³ PEO-b-PAA	PDI
22.5-b-5.5	1.35

Synthesis procedure:

Synthesis of the PEO-PAA diblock copolymer is presented on the following scheme:



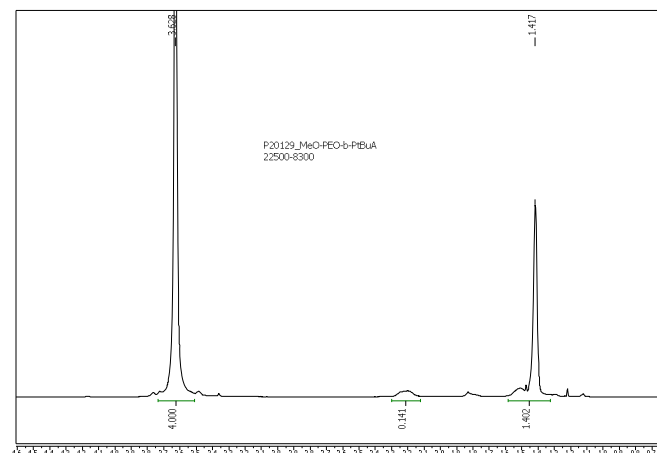
Characterization:

The final block copolymer composition was calculated from ¹H-NMR spectroscopy of poly(ethylene oxide -b- t-butyl acrylate) by comparing the peak area of the t-butyl acrylate protons at 1.43 ppm with the peak area of the ethylene oxide protons at 3.6 ppm, then transferred to the EOAA form accordingly. Copolymer PDI is determined by SEC of poly(ethylene oxide -b- t-butyl acrylate).

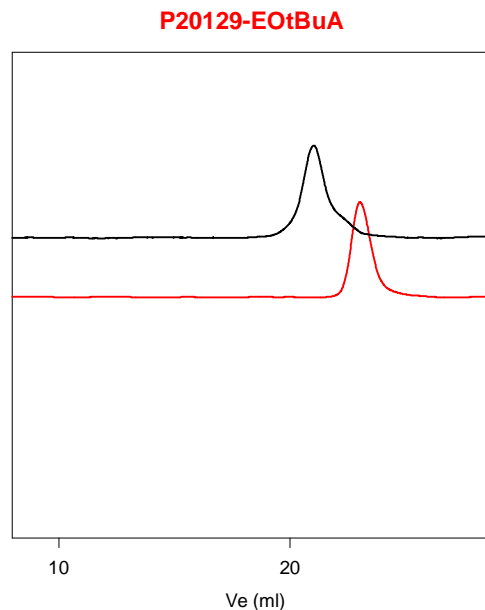
Solubility:

The polymer is soluble in water, methanol, THF and precipitated out from cold hexane or ether.

¹H-NMR (500 MHz, CDCl₃) spectrum of the diblock copolymer before hydrolysis:



SEC elugram of the PEO-PAA diblock copolymer before hydrolysis:



Size exclusion chromatography of the product:

— Poly(ethylene glycol methylether) : M_n=22,500, M_w=24,000, M_w/M_n=1.09
EotBuA: Mn 22,500-b-10,000 Mw/Mn 1.3
after Hydrolysis of ester : Mn 22,500-b-5,500 Mw/Mn 1.3

Thermal analysis of the P20129-EOAA

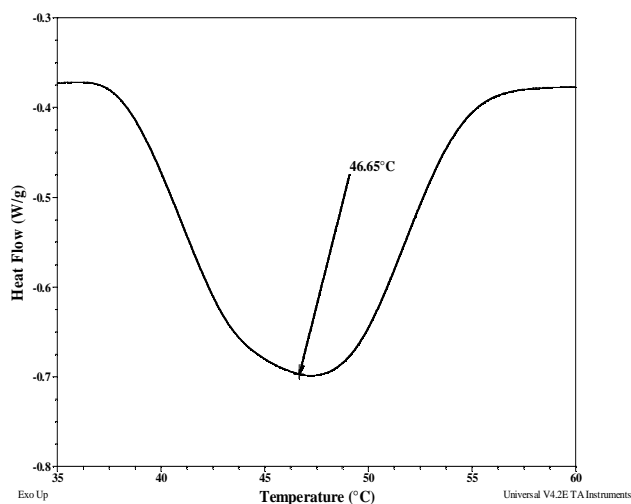
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

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.

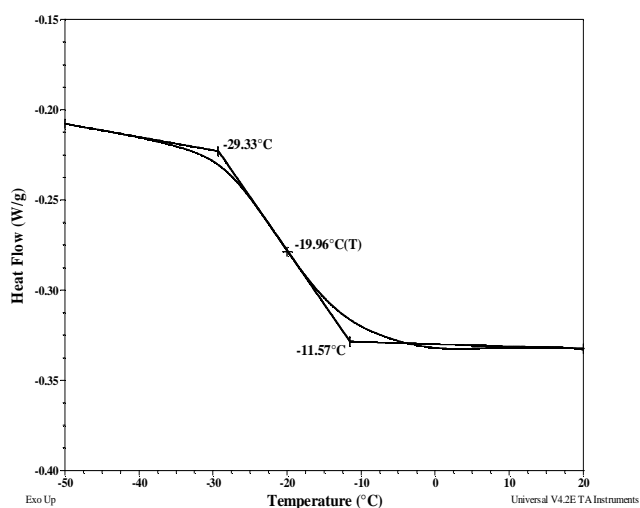
Summary of typical thermal analysis results:

Polymer	T_m (°C)	T_c (°C)	T_g (°C)
EO	47	—	-20
AA			20

Melting curve for EO block:



Thermogram for the EO block



Thermogram for AA block:

