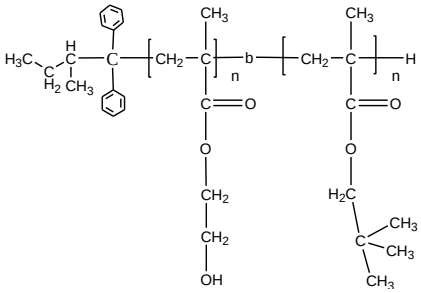
Sample Name: **Poly (2-hydroxyethyl methacrylate)-b-neopentyl methacrylate)**

Sample #: **P42169F-HEMANPMA**

Structure:

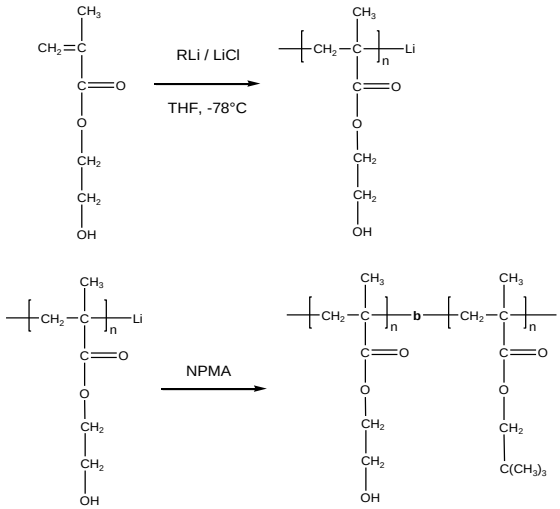


Composition:

Mn × 10^3 HEMA-NPMA	PDI
30.0-b-706.0	1.11
T_g for NPMA block: 126 ^oC	

Synthesis Procedure:

Poly (2-hydroxy ethyl methacrylate-b-neopentyl acrylate) is synthesized by living anionic polymerization with sequence addition of hydroxyl ethyl acrylate followed by neopentyl methacrylate. The scheme of the reaction is illustrated below:



Characterization:

An aliquot of the anionic poly (hydroxyl ethyl methacrylate) block was terminated before addition of neopentyl methacrylate and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from SEC result since the first block is very short.

Thermal analysis

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10^{o}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).

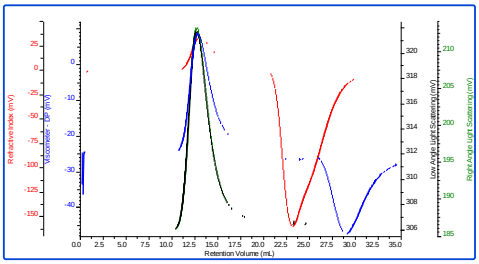
Solubility:

Poly (2-hydroxy ethyl methacrylate-b-neopentyl methacrylate) is soluble in DMF, THF and $CHCl_3$ (depends upon block composition) but insoluble in water. The polymer is insoluble in hexane while HEMA chain is too long.

SEC of the block copolymer:

p42169-F-HEMANPMA

dn/dc	0.0650
Flow Rate	0.7000
Solvent	DMF with LiBr
Method	PSS column-PMMA60K-Jan3-2019-0009.vcm



Sample	Mn	Mw	Mp	Mw/Mn
HEMANPMA-A_1_2019	736,760	818,280	790,129	1.111

DSC thermogram for NPMA block: