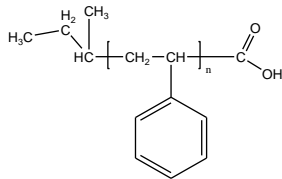


Sample Name:

Mono carboxy Terminated Polystyrene

Sample #: **P18083-SCOOH**

Structure:



Composition:

Mn x 10 ³	PDI
1.4	1.13
Functionality %	99

Synthesis Procedure:

Carboxy Terminated Poly(styrene) was prepared by anionic living polymerization of styrene in THF followed by termination with dried CO₂.

Characterization:

The molecular weight and polydispersity index of this polymer were determined before addition of the CO₂H function, by size exclusion chromatography (SEC) using a Varian liquid chromatograph equipped with a UV and refractive index detector. Polymer functionality was determined by titration with NaOH using phenolphthalein as the indicator.

Solubility:

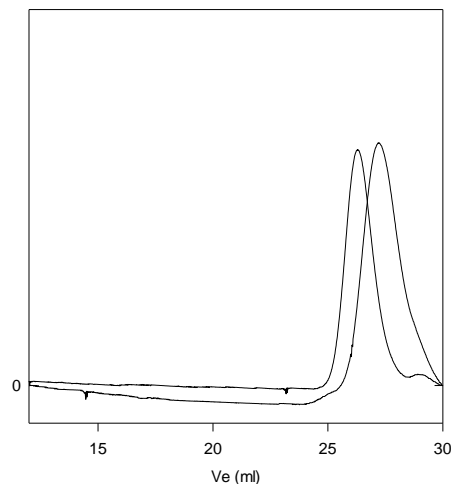
Polymer is soluble in toluene, THF, CHCl₃ and can be precipitated in water and cold methanol.

Comparison of T_g between polystyrene and carboxy terminated polystyrene

The glass transition temperature (T_g) between polystyrene (PS) and carboxy terminated polystyrene (PSCOOH) both having M_n of 2000 are compared at heating rate of 10°C/min. It has been found that the T_g of PSCOOH was 15°C higher (79°C) than the corresponding PS (64°C). Thermograms for both samples are shown below:

SEC of Sample:

P18083-SCOOH



Size exclusion chromatography of monocarboxy terminated polystyrene (before adding CO₂).

M_n=1,400, M_w=1,500 PI=1.13 functionality >95%

After attaching COOH the elution retarded

