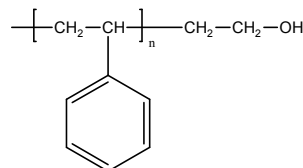


**Sample Name:**  
**Hydroxy Terminated Polystyrene**

**Sample #: P11121- SOH**

**Structure:**

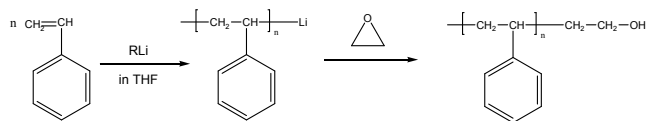


**Composition:**

$M_n \times 10^3$	PDI
1.2	1.09

**Synthesis Procedure:**

$\omega$ -Hydroxy terminated Polystyrene was prepared by living anionic polymerization of styrene using a monofunctional initiator in THF followed by termination with ethylene oxide. The scheme of the reaction is illustrated below:



**Characterization:**

The molecular weight and polydispersity index of this polymer were determined 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.

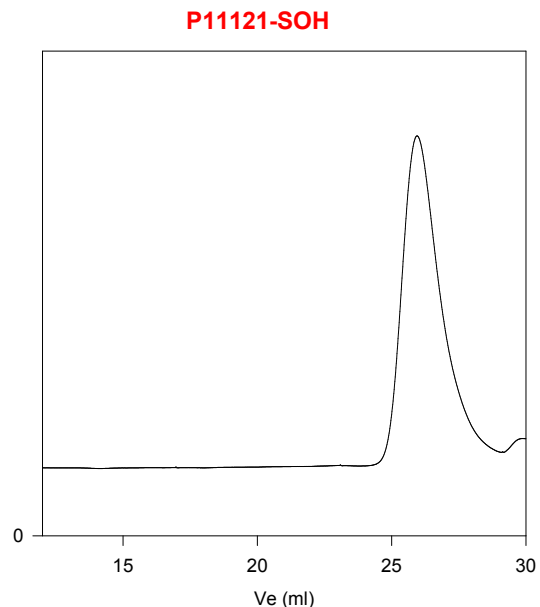
**Thermal analysis:**

Thermal analysis of the samples was carried out using a differential scanning calorimeter (TA Q100) at a heating rate of 10°C/min. The inflection glass transition temperature ( $T_g$ ) has been considered.

**Solubility:**

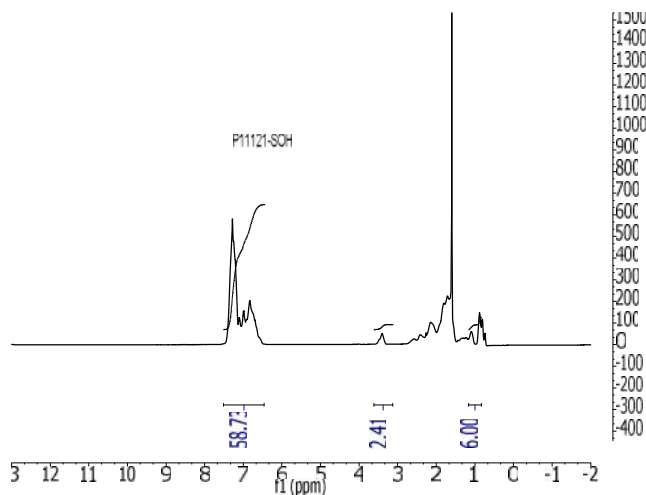
Polymer is soluble in toluene, THF,  $\text{CHCl}_3$  and can be precipitated in water and cold methanol.

**SEC of the Polymer:**



Size Exclusion chromatography of Hydroxy end poly styrene  
 — Polystyrene,  $M_n=1,200$ ,  $M_w=1,300$  PI=1.09

**$^1\text{H}$  NMR Spectrum of the polymer:**



(PSOH) both having  $M_n$  of 1700 are compared at heating rate of 10°C/min. It has been found that the  $T_g$  of PSOH was 13°C higher (64°C) than the corresponding PS (51°C). Results are shown below:

Polystyrene		Hydroxy terminated PS	
$M_n \times 1000$	$T_g$ (°C)	$M_n \times 1000$	$T_g$ (°C)
0.95	27	0.90	37
1.7	51	1.7	64
3.7	71	3.7	72