

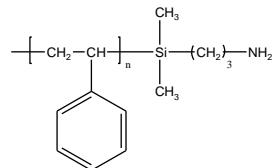
Sample Name:

## Amino Terminated Polystyrene

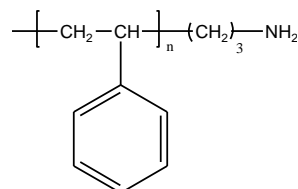
Sample #: P10457-SNH2

This bears structure # 2

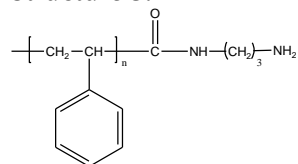
### Structure 1:



### Structure 2:



### Structure 3:

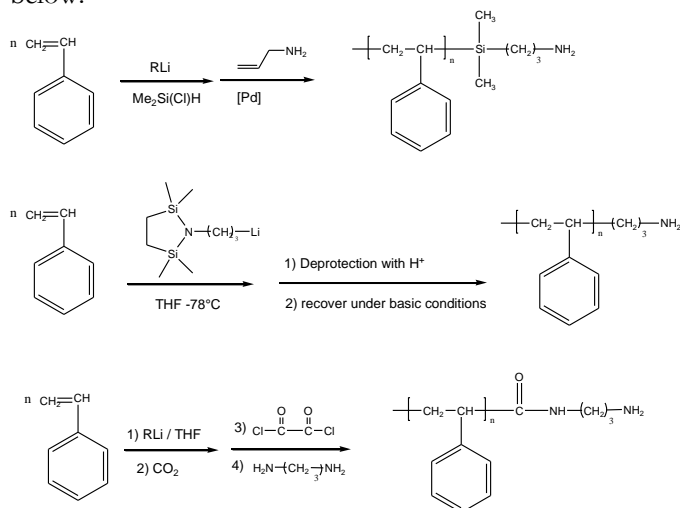


### Composition:

$M_n \times 10^3$	PDI
46.0	1.07
$T_g (^{\circ}\text{C})$	102 oC

### Synthesis Procedure:

$\alpha,\omega$ -amino terminated polystyrene was synthesized by anionic living polymerization with different end-grouping strategies. The reaction schemes are shown 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. However, amino terminated polystyrene was found to interact with chromatography columns and therefore the amino group was protected by reaction with 1-naphthyl isocyanate before GPC analysis. Removal of the protecting group was confirmed by UV spectroscopy and the degree of functionality was confirmed by titration with  $\text{HClO}_4$  using crystal violet as the indicator.

### Thermal analysis:

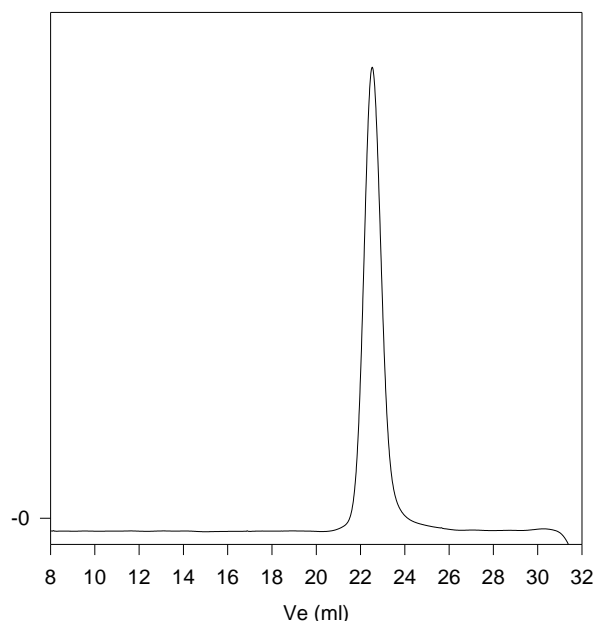
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of  $10^{\circ}\text{C}/\text{min}$ . The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature ( $T_g$ ).

### Solubility:

Polymer is soluble in THF,  $\text{CHCl}_3$ , toluene and precipitated out from methanol and hexane.

### SEC of Sample:

**P10457-SNH2**



Size exclusion chromatography of Amino Terminated polystyrene

$M_n=46,000$ ,  $M_w=49,500$ ,  $PI=1.07$  functionality > 0.98%