Sample Name: **Polystyrene (electronic grade)**

Sample #: **P1495P-S**

**Structure:**

$$\sim\sim\left[CH_2-CH\right]_n\sim\sim$$

(phenyl group)
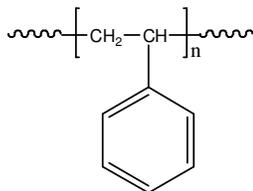
Composition:

$Mn \times 10^3$	PDI
494.0	1.04

Synthesis Procedure:
Polystyrene was obtained by living anionic polymerization of styrene as illustrated below:

$$H_2C=CH \quad \xrightarrow[\text{THF at -78}^{o}\text{C}]{\text{Appropriate initiator}} \quad \sim\sim\left[CH_2-CH\right]_n\sim\sim$$
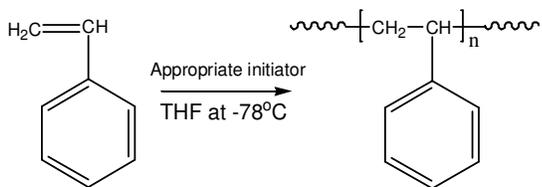
Characterization:
The molecular weight and polydispersity index (PDI) were obtained by size exclusion chromatography (SEC) in THF. SEC analysis was performed on a Varian liquid chromatograph equipped with refractive and UV light scattering detectors. Three SEC columns from Supelco (G6000-4000-2000 HXL) were used with triple detectors from Viscotek Co.
Thermal analysis of the sample 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:
Polystyrene is soluble in DMF, THF, toluene and $CHCl_3$. It precipitates from methanol, ethanol, water and hexanes.

Purification:
The obtained polymer was dissolved in benzene and filter through a membrane 0.5 μ nylon filter. The obtained solution was freeze-dried under reduced pressure.

SEC elugram of the product:

Sample ID-P1495-S

Concentration (mg/mL)	0.6654
Sample dn/dc (mL/g)	0.1850
Method File	PS80K-June30-2015-0000.vcm
Column Set	3x PL 1113-6300
Solvent	THF

P1495-s_01.vdt:	Refractive Index	Right Angle Light Scattering
	Low Angle Light Scattering	Viscometer - DP
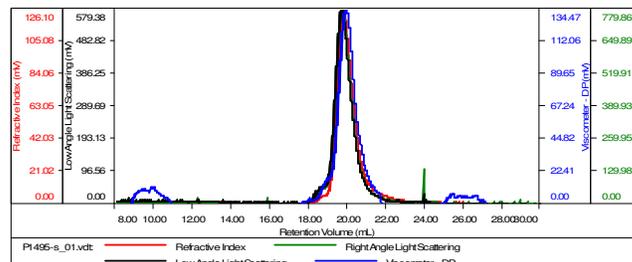
Sample	MW Number Average (Da)	MW Weight Average (Da)	MW at Peak (Da)	Polydispersity	Intrinsic Viscosity (dL/g)
P1495-s_01.vdt	493,904	510,024	507,506	1.033	6.7524

DSC results for polystyrene:

T_g of polystyrene as function of molecular weight