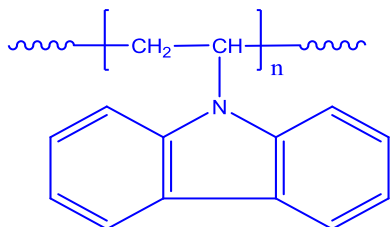


Sample Name:

**Poly(9-vinyl carbazole) or Poly (N-vinyl carbazole)**

Sample #: **P9002-VK**

**Structure:**

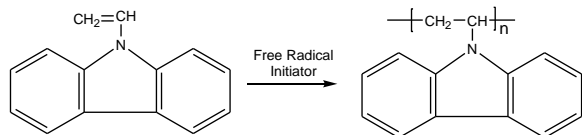


**Composition:**

$M_w \times 10^3$	PDI
1,000.00	1.7
$T_g (^{\circ}C)$	157

**Synthesis Procedure:**

Poly(N-vinyl carbazole) is obtained by free radical polymerization of N-vinyl carbazole and the reaction scheme is shown below.



**Characterization:**

The molecular weight and polydispersity index (PDI) are 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:**

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of  $10^{\circ}C/min$ . 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(N-vinyl carbazole) is soluble in DMF, THF, toluene and  $CHCl_3$ . It precipitates from methanol, ethanol, water and hexanes.

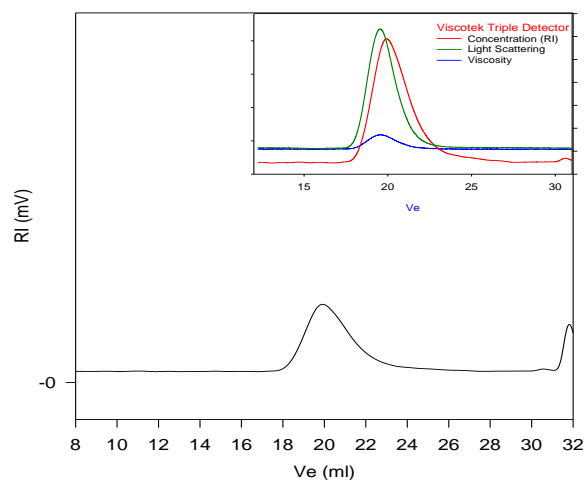
**Purification of the Polymer:**

Since the polymerization carried out in methanol and ter.butanol mixture it is necessary to purify the obtained polymer by removing the un-reacted monomer. Purification carried out as follows:

1. First precipitation in Hexane.
2. Redissolved in  $CHCl_3$  and precipitated in hot methanol.
3. In hot methanol vinyl carbazole monomer is soluble and the absence of monomer in the polymer can be checked by GPC - absence of Vinyl carbazole elution at 29.8 elution count.
- 4.

**SEC of Homopolymer:**

**P9002-VK**



Size Exclusion Chromatography of polymer:

$M_w = 1,000,000$ ,  $M_n = 588,000$ ,  $M_w/M_n = 1.7$   
 $dn/dc$  in THF: 0.222 ml/g  
**Solution Viscosity in THF at 35 oC: 1.341 dl/g**  
**Rgw: 31.61 nm**

**DSC thermogram for the polymer:**

