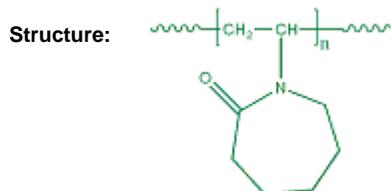


**Sample Name:**  
**Poly(N-vinyl caprolactam)**

**Sample #: P8993-NVCL**



**Composition:**

$M_v \times 10^3$ Viscosity Average Molecular weight	PDI
240.0 [ $\eta$ ]= in water at 25 °C 0. 53dl/g	3.0 (from SEC in DMF)

**Synthesis Procedure:**

Polymer is obtained by free radical polymerization using AIBN as free radical initiator.

**Characterization:**

The molecular weight and polydispersity index (PDI) are obtained by size exclusion chromatography (SEC) in DMF. 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.

**Solution Viscosity:**

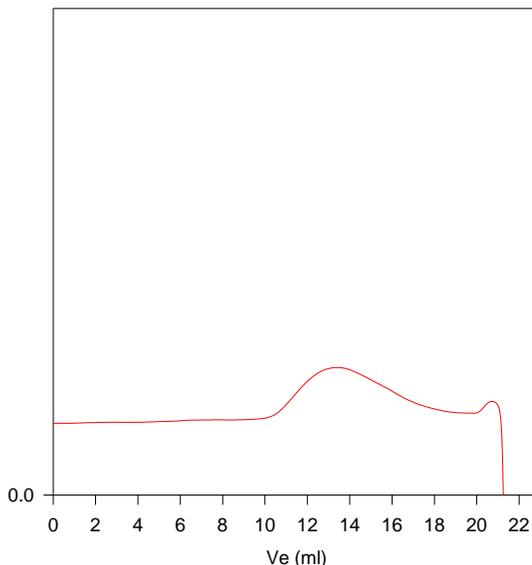
The viscosity average molar masses ( $M_v$ ), is determined from the intrinsic viscosity employing the Mark-Houwink relation  $[\eta]=KM\alpha$  with  $K= 0.0105\text{ml/g}$  and  $\alpha=0.69$  Ref: Krish, Yu E. Yanul N A, Kalninish K.K. Eur. Polym., J. 1999, 35, 305 .

**Purification of the Polymer:**

Polymer was purified after dissolving in water (distilled) and adding acetone. (acetone : water 3:7). At room temperature a clear solution is formed. The solution was warmed up to 80 °C and the product separated out. This was repeated at least three times to ensure the removal of the unreacted vinyl caprolactam monomer from the polymer. The obtained polymer was dried and than re-dissolved in de-ionized water and freeze-dried.

**SEC of Homopolymer:**

**P8993-NVCL**



Size exclusion chromatography of poly(N-Vinyl caprolactam):  
MV by viscosity in water: 240,000  $M_w/M_n=3.0$  in DMF  
With reference to Polystyrene  $M_n$  72,000