

Molecular Weight of Polymers

Polymers are macromolecules that consist of repeating units. Molecular weight of polymers is important because physical properties of polymers as mechanical properties, strength, viscosity and stiffness depend on their molecular weight. For example, if molecular weight is low, generally mechanical properties will be low. All synthetic polymers consist of mixtures of large molecules, so synthetic polymers don't have single value molecular weight. This describes the molecular weight averages that are commonly used. The average molecular weight of a polymer sample can be determined by various methods. These methods don't result in the same average molecular weight. The number-average molecular weight (M_n) is determined by gel permeation chromatography (GPC), osmometry, freezing point depression and boiling point elevation. The weight-average molecular weight (M_w) is determined by light-scattering and x-ray scattering.