

## **POLYVINYL CHLORIDE (PVC)**

**Physical and mechanical properties:** PVC is an atactic polymer and therefore essentially uncrystallized. However, it sometimes happens that, locally, over short chain segments, PVC is syndiotactic and can assume the crystalline phase, but the percent shear fracture never exceeds 10 to 15 %. The density of PVC is 1.38 g/cm<sup>3</sup>. Uncrystallized PVC is transparent and relatively permeable for steam. PVC offers excellent rigidity up to the vicinity of its vitreous transition temperature. PVC offers excellent resistance to abrasion. PVCs are fragile with respect to shocks at low temperatures. The addition of plasticizers reduces the vitreous transition temperature, which makes it possible to provide a flexible PVC at ambient temperature.

**Chemical properties:** Unplasticized PVC resists very well (up to 60°C) acids and bases as well as oils, alcohols and aliphatic hydrocarbons. By contrast, it is sensitive to aromatic and chlorinated hydrocarbons, esters and cetones that produce a swelling. Flexible PVC is sensitive to atmospheric agents and sunlight.

Physiological action - suitability for contact with food: vinyls can be suitable for making objects satisfying regulations concerning food products and objects in contact with food.

**Electrical properties:** PVC has good insulating properties but the electrical losses in the material are sufficiently high so as to permit high-frequency welding.

**Thermal properties:** PVC (uncrystallized) has a vitreous transition temperature lying between 75 and 80°C, i.e. at ambient temperature it is rigid and above 90°C it is rubbery (low resistance, high distortion). PVC decomposes in a flame, releasing gaseous chlorohydric acid, but it is self-extinguishing.

**Dimensional properties:** PVC shows good dimensional stability and limited retraction due to its uncrystallized structure.

**Implementation properties:** PVC can be easily hot-formed for the inner appointments of our "PLASTICASE" boxes.

*Summary by GAGGIONE SAS*

*Information taken from MATIERE PLASTIQUE NATHAN - SEPTEMBER 2007*