MECHANICAL

ERTALYTE® PET-P

Ertalyte® is an unreinforced, partly crystalline thermoplastic polyester based on polyethylene terephthalate (PET-P). It is characterized as having excellent wear resistance and a low coefficient of friction, together with high modulus, low creep and superior dimensional stability. Ertalyte's specific properties make it especially suitable for the manufacture of mechanical precision parts which are capable of sustaining high loads and wear conditions. Eralyte's continuous service temperature is approximately 10% higher than acetals, and its melting point is almost 150˚ F higher.

In addition, Ertalyte® PET-P offers good strength combined with good chemical and abrasion resistance. Its low moisture absorption enables its mechanical and electrical properties to remain virtually unaffected by ambient moisture. These qualities, combined with FDA compliance, make Ertalyte® PET-P an excellent candidate for food contact applications. Ertalyte® PET-P can be intricately machined on standard metal working equipment.

POLYETHYLENES

Polyethylene materials are divided into categories based on their specific gravity:
(a) low density polyethylene having specific gravity of 0.910 — 0.925,
(b) medium density polyethylene, specific gravity of 0.926 — 0.940, and
(c) high density (linear) polyethylene, specific gravity 0.941 — 0.965.

The major advantages of polyethylenes are light weight, excellent chemical resistance, low moisture absorption, good impact strength, excellent low temperature properties, superb dielectric properties and low coefficient of friction. Unmodified polyethylenes can be produced from resins which are approved for food applications.

Increases in density result in: improved chemical resistance, greater hardness and tensile strength, better gas barrier properties, greater creep and temperature resistance.

Polyethylenes can be shaped and formed by standard heat forming techniques. If polyethylene is heated to within 5˚C of its melting point, it can be shaped easily and will retain its imposed form on cooling. High density polyethylene for instance should be heated to a range of 130˚C — 135˚C for forming.

Polyethylenes are very sensitive to the influence of oxygen in the air. The material becomes brittle and breakable after long exposure to air. The damaging effect of oxygen in the air is accelerated by ultra-violet rays. It is for this reason that articles made of polyethylenes which are exposed to sunlight and air must be protected by special additives. Carbon black is the most effective additive for this purpose. In all other respects polyethylenes are very stable.

Polyethylenes can be readily welded with HOT AIR. However, since oxygen at high temperatures has a tendency to degrade these materials, inert gas such as nitrogen should be used to weld this material.

LOW DENSITY POLYETHYLENE:

Softest of the polyethylenes with lowest tensile strength but highest impact strength. Recommended for use in temperatures ranging from -70˚ C to 80˚ C. Common mill shapes are: film, sheet, rod, tubing and lay flat tubing.

HIGH DENSITY POLYETHYLENE:

Very versatile material used in many food contact, chemical and wear resistant applications. Recommended for use at temperatures ranging from -70˚C to 82˚C. Standard mill shapes are: sheet, rod, tubing and pipe.

ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE:

UHMW has a very low coefficient of friction. Frictional wear on unlubricated surfaces in contact with UHMW is less than with any other plastic. UHMW also displays extraordinary resistance to abrasive wear by gritty materials. It is recommended for use at temperatures ranging from -30˚C to 82˚C. Not recommended for thermo forming. Standard mill shapes are: sheet, rod, tubular bars and profiles.

TIVAR 88®:

Tivar 88® is a premium grade UHMW. A special low coefficient of friction, excellent shock strength and high abrasion and corrosion resistance help solve material flow, abrasion and corrosion problems.