ICON
Injection Molding, Inc.

Common Material Types

Acetal - Acetal displays good impact resistance, dimensional stability and outstanding surface hardness due to their high degree of crystallinity. They have high dielectric strength and are resistant to many solvents. They also exhibit negligible water absorption. Typical applications include roller bearings, gears, reels, counters, control cams, valves, and pump parts.

ETPU - urethane resins are high tensile strength, chemically resistant resins originally developed for medical use. They are available in long glass fiber-filled grades. Isoplast combines the toughness and dimensional stability of amorphous resins with the chemical resistance of crystalline materials. The long fiber reinforced grades are strong enough to replace some metals in load bearing applications.

PA 6/6 - Nylon 6/6- All grades possess toughness and resiliency and have high fatigue strength. Resistance to oils and hydrocarbon solvents is also good. Almost all formulations are also self-extinguishing and retain stable mechanical properties at temperatures from -75ºF to above 225ºF. They are widely used for latches, cams, gears, and many other moving parts due to their excellent abrasion and impact resistance. Nylon is also available in a variety of cast forms and mobdylidenum disulphide filled grades.

PA 4/6 - Nylon 46 - Bridges the price-performance gap between traditional nylons and high performance materials. Suitable for both extrusion and injection molding, Nylon 46 offers a range of functionality including extensive UL classifications and specialized wear and bearing grades.

PAI - Polyamide-imide possesses a combination of great mechanical strength, the ability to withstand radiation, usability from approximately -300ºF to 500ºF, and resistance to most chemicals at room temperature. It is also flame retardant and gives off almost no smoke when burned. It is available in unreinforced and reinforced grades and is readily machinable. This combination of assets makes it a good metal substitute for aerospace and electronic applications. It is commonly used for bushings, seals, and distributors in engines and machinery.

PC - Polycarbonate - This material exhibits the highest impact strength over a range of temperatures from -60ºF to 270ºF. It is fine for all precision parts or where transparency is desired. Its water-clear transmittance (89%) makes it excellent for visors or guards. It shows good creep resistance and has a temperature-independent dielectric constant, as well as good insulating properties.

PE - Polyethylene - Because of its flexibility at low temperatures, excellent electrical resistance and low dielectric constant, Polyethylene is unique. PE's self-lubricating properties also make it ideal for applications such as rollers, skids and other end-uses which call for a non-stick, low-friction material. PE is available in a wide range of densities and formulations.

PEEK® - Polyetheretherketone is a new material which has excellent chemical resistance and is rated for continuous service to 470ºF. It is tough and strong, with low creep, and has the best fire safety rating of all thermoplastics. It tolerates radiation to 1100 M rads without undergoing significant change. Applications include engine parts, aerospace components and other uses which require PEEK's unique qualities.

PEI - Unreinforced polyetherimide keeps its hardness, and mechanical properties from -40ºF, up to temperatures of 356ºF. It is radiation-resistant, microwave transparent and is naturally flame-retardant. Reinforced grades have even higher mechanical strength. Because of its unequaled properties, polyetherimide is the ideal replacement for steel and other metals. It also has a wide range of electronic and medical applications.

PES - polyethersulfone resin offering high heat deflection temperatures, excellent toughness and dimensional stability, and superior resistance to steam, boiling water, and mineral acids. Other desirable properties include thermal stability, creep resistance, and inherent flame resistance. Grade A-200 is a medium viscosity grade that can be used for either extrusion or injection molding. It is transparent and injection-moldable to close tolerances.

PP - Polypropylene has good impact resistance and structural rigidity. It is unaffected by any solvent at room temperatures. It has excellent insulating properties and is extremely lightweight. Its high fatigue strength makes it a top choice under cyclic loading conditions.

PPE - Modified polyphenylene ether is one of the more widely known engineering plastics and has gained UL and FDA approval for a broad spectrum of moldable and foamable grades. It has good impact strength at low temperatures and is resistant to many agents, including steam. It may be furnished in either unreinforced or reinforced grades and remains stable when processed. Yield strength of reinforced grades is comparable to aluminum. Typical end uses include computer and electric housings, automotive body parts, and piping.

PPS - This exceptionally strong, thermally stable, corrosion resistant engineering thermoplastic retains structural integrity under the most demanding conditions of temperature and physical abuse. In continuous-service applications, Ryton® PPS boasts UL temperature indices up to 240ºC with outstanding dimensional stability, and it can withstand short-term exposures to temperatures greater than 500ºF. It is inherently flame retardant and exhibits low smoke emission and nontoxic gas generation. Ryton® PPS is resistant to a broad spectrum of solvents, organic acids and alkalies.

PS - Polystyrene - is naturally clear. It exhibits excellent chemical resistance and is more resistant to irradiation than is PE or PP. Electrical resistance is also good. This, plus the ease with PS can be painted or shielded, has led to extensive electrical and electronic applications. PS is also often used in appliances and housings. Special high gloss and high impact grades are also widely available.

PSO - Polysulfone is a naturally transparent, true engineering plastic whose electrical and mechanical properties are constant up to temperatures above 320ºF. It is also rated for continuous service in steam to 300ºF. It shows excellent resistance to alkalies, acids and salts, as well as to many hydrocarbons. PSO is suited for microwave use, and may also be plated or glass-filled. Amongst its varied uses are many medical, automotive, and electronic applications.

PTFE - An extremely low coefficient of friction makes Polytetrafluoroethylene the ideal choice where surface wear might otherwise be a problem. PTFE also exhibits a useful service life from below-100ºF, to temperatures of over 500ºF. Its resistance to solvents is also excellent throughout a wide range of temperatures. Its low dielectric constant and electrical resistance also remain constant throughout this range.