

quick guide to m

plastics

Material	Properties	Chemical Resistance	Max. Temp.
ABS Acrylonitrile Butadiene Styrene	Stable over a wide range of temperatures, especially good in cold environments, high impact strength and ductility, good chemical resistance and rigidity.	Mostly resistant to solutions of salts, inorganic acids, food acids and alkalines. Not resistant to solvents, aromatics and some chlorinated hydrocarbons.	+80°C
Corzan PVC-C Post-chlorinated Polyvinyl Chloride	Excellent chemical resistance, good mechanical strength and rigidity, high heat resistance, excellent flammability properties (self-extinguishing), low thermal conductivity and good abrasion resistance.	Resistant to many acids, bases, salts, paraffinic hydrocarbons, halogens and alcohols. Not resistant to solvents, aromatics and some chlorinated hydrocarbons.	+100°C
ECTFE Ethylenchlorotrifluo- retylene (Halar)	Excellent mechanical and chemical resistance, fire retardant, wide operating temperature range, very good weathering resistance.	Resistant to most acids, alkalis, salts, halogens, alcohols and chlorinated hydrocarbons, especially good with caustics and chlorine solutions.	+150°C
PC Polycarbonate	Excellent combination of toughness, transparency, heat and flame resistance and dimensional stability. Good electrical insulating properties and wide operating temperature range.	Generally unaffected by greases, oils and acids. Not resistant to solvents, esters and ketones, which can cause cracking. Continuous exposure to hot water causes embrittlement.	+135°C
PEEK Polyetheretherketone	Very high operating temperatures, high rigidity and hardness, strength and thermostability. Very good chemical resistance, good dielectric characteristics, self-extinguishing and resistant to radiation.	Very good resistance to most solutions. Not resistant to concentrated sulphuric acid, fuming nitric acid and some halogen hydrocarbons.	+260°C
PEI Polyetherimide	High strength, dimensional stability and creep resistance. Excellent chemical resistance, good resistance to hydrolysis and radiation, self-extinguishing.	Widely resistant to a broad range of acids, alkalis, salts, halogens, alcohols and chlorinated hydrocarbons. Can be attacked by partially halogenated solvents, strong bases and aromatic hydrocarbons.	+170°C
PES Polyethersulfone	High strength, rigidity and hardness over a wide temperature range, withstanding prolonged exposure to elevated temperatures. Good electrical properties and chemical resistance.	Widely resistant to most acids, alkalis, salts, halogens, alcohols and chlorinated hydrocarbons. Not resistant to polar solvents.	+200°C
PET Polyethylene- terephthalat	Hard, rigid and tough, with good abrasion resistance and low coefficient of friction, dimensionally stable, good electrical and weatherability properties.	Good resistance to oil, greases, fuels, non-polar and weak polar solvents. Not resistant against hot water, concentrated acids, caustic solutions and polar solvents.	+100°C
PMMA Polymethyl Metacrylate (Acrylic)	Strong, stable, weather resistant and thermoformable, high levels of hardness and scratch resistance. Suitable for a wide temperature range and extended exposure to UV light without discolouring and deteriorating.	Generally good with many chemicals, but not resistant to alcohols, benzene, acetone, strong acids, solvents and chlorinated hydrocarbons.	+95°C

Material selection

plastics

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Polyethylene	Tough, excellent chemical resistance and electrical properties, low coefficient of friction, lightweight, very low moisture absorption, excellent flexibility and good strength in cold environments.	Good resistance to acids and caustic substances. Resistant to organic and inorganic solvents at a wide range of temperatures. Not resistant to strong oxidising acids.	+65°C
Polypropylene	Has excellent chemical resistance, high heat resistance and good mechanical strength. Lightweight, good insulating properties, excellent dielectric strength but poor UV resistance and low impact strength at freezing temperatures.	Very good resistance to chemicals and solvents. Good with aqueous, salts, acids or alkaline solutions. Can be attacked by halogens, some acids and oxidizing agents, and by aromatic and chlorinated hydrocarbons at high temperatures.	+100°C
PS Polystyrene	Rigid, hard and stable, with extremely good surface finish. Generally low temperature range compared to other materials, UV resistance low, good chemical resistance.	Soluble in most solvents, but resistant to alcohols such as methanol, ethanol, normal heptane and acetone. Most foods, drinks and household fluids have no effect, but attacked by petrol, turpentine and thinners.	+70°C
PSU Polysulfone	Good heat resistance, very high stability, self extinguishing, good impact strength. Very good electrical properties, resistance to hydrolysis and high radiation proofness (permeable for microwaves). Poor weathering resistance.	Can be used with a wide range of acids, alkalis, salts, halogens, alcohols and chlorinated hydrocarbons. Not resistant to polar solvents.	+150°C
PVC-U Unplasticised Polyvinyl Chloride	Excellent chemical resistance and dielectric properties, good tensile, flexural and mechanical strength, low moisture absorption, excellent dimensional stability and good flammability characteristics.	Resistant to most solutions of acids, alkalis, salts and organic compounds miscible with water. Not resistant to solvents, aromatics and some chlorinated hydrocarbons. Not recommended for compressed air or gases.	+60°C
PVDF Polyvinylidene Fluoride	Outstanding mechanical, physical and chemical properties, very wide operating temperature range, high impact strength and thermal stability, excellent abrasion resistance, self-extinguishing.	Resistant to most acids, alkalis, salts, halogens, alcohols and chlorinated hydrocarbons. Strong polarized solvents, such as ketones and esters, can cause the material to swell.	+140°C
PTFE Polytetrafluoro- ethylene	Outstanding chemical resistance, lowest dielectric constant and lowest coefficient of friction of almost any solid material. Very wide operating temperature range.	Virtually inert to most chemicals and solvents.	+260°C

elastomers

EPDM Ethylene-Propylene Diene Monomer	A terpolymer elastomer with good abrasion and tear resistance, good resistance to a variety of acids and alkalis.	Resistant to many solutions of acids, alkalis, salts and organic compounds miscible with water. Good for use with caustic soda. Not recommended for petroleum oils, strong acids or strong alkalis.	+100°C
FPM Fluorine Rubber	A fluoroelastomer with good abrasion and tear resistance, excellent resistance to a variety of acids, alkalis and petroleum oils.	Resistant to most solutions of acids, alkalis, salts and organic compounds. Good for use with petroleum oils. Not recommended for use with caustic soda.	+150°C