



ASHLEY POWER



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Suppliers to Industry

Industrial Plastics Technical Specifications

| | |
|---|---|
| ABS | A tough, hard and rigid material with excellent resistance to stress cracking. Low flammability and good resistance to solvents and chemicals. Weather resistant. Widely used as pipes and fittings in drains and wastes and also within the automotive industry. |
| ACETAL | A high strength, temperature resistant, highly crystalline thermoplastic with a high melting point. Low coefficient of friction, good abrasion resistance and dimensional stability make it suitable for machining as per nylons, having much lower moisture absorption. Ideally suited for electrical insulators requiring exceptional structural strength at high temperatures or moisture conditions and for machining mechanical parts. |
| CAST NYLONS & CONTINUOUS CASTING SYSTEM | <p>Compared to extruded Nylons, Cast Nylons have a very high molecular weight, between 500,000 and 1,000,000 being one of the factors separating Cast Nylon from other types of Nylons.</p> <p>The casting method allows a so-called cross-linking to occur throughout the material during Polymerisation, giving Cast Nylon its wear resistance and toughness characteristics.</p> <p>As a result of the lower temperatures used in Cast Nylon manufacture, the molecular weight is not reduced. Extruded Nylons are reprocessed from polymer in granular form and require two heat processes during manufacture, compared to Cast Nylons, which are a form of chemical liquid, requiring only one heat process. This eliminates the stability problems when manufacturing intricate machined parts.</p> |
| CAST NYLON OIL FILLED (OILON) | <p>Primarily used for unlubricated moving parts due to the addition of mineral oil during the processing stages. The lubricant is evenly distributed and an integral part of the material and will not drain on spin out, even under arduous working conditions and never needs replenishing</p> <p>An increased bearing life – up to 5 times that of Natural Cast 6. The addition of the mineral oil also reduces the coefficient of friction when running dry, resulting in better dimensional stability and rate of wear.</p> <p>Used for bearings, gears, bushes, rollers, wheels etc.</p> |
| CAST NYLON HEAT STABILISED | <p>In addition to the specialist pigment used to obtain the colour during processing, UV blocking and heat stabilising substances are also added, enabling the material to retain mechanical properties even at high operating temperatures, i.e., short term 140°C and long-term 110°C.</p> <p>Used in high temperature components, cable sheaves, bushes, rollers, bearings, wear strips, pads etc.</p> |
| CAST NYLON MOS ² FILLED | <p>During the processing, a small amount of Molybdenum Disulphide, a dry powder lubricant, is added, creating an increase in tensile strength, a reduction in the coefficient of friction and linear expansion.</p> <p>Due to the reduced moisture absorption, this grade is usually specified to improve lubrication.</p> <p>However, the addition of Molybdenum Disulphide does have an adverse effect on the impact strength and “toughness” of the material. Used for bushes, bearings, gears, rollers, track plates, and high temperature components.</p> |
| CAST NYLON LMA GRADE | <p>A specialist grade nylon with a low moisture absorbency. Used mainly in applications with a high humidity or water content. A high impact strength, even at low temperatures and the greatest resistance to chemicals of all nylons.</p> <p>The processing of the material makes it expensive and should only be used in specific application where its low moisture absorbency is necessary.</p> <p>Used in food and chemical industries and underwater applications.</p> |
| EXTRUDED NYLONS | Hard, resilient materials with low coefficient of friction and good resistance to chemicals. Excellent mechanical strength and good vibration and sound dampening properties. |



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Moisture and temperature influence both the stiffness and strength of nylons. As temperatures rise, elongation occurs thereby break and creep increases. Nylon is more moisture absorbent than other thermoplastics, the rate depending on the type of plastic used, the relative humidity and size of the material itself. Moisture absorption results in reduced hardness and tensile strength but increases flexibility and impact strength.

Natural nylons can be affected by ultra violet and black nylon is recommended for external use.

Extruded Nylon 6

A tough, general-purpose nylon with a wide range of applications. Highest impact strength of all nylons, good vibration and dampening qualities and suitable for parts due to stress, and capable of withstanding dynamic stress without failure. As with all nylons, impact strength improves with humidity.

Extruded Nylon 6.6

The hardest form of all nylons and the most rigid of all extruded nylons. High resistance to abrasion and heat but highly moisture absorbent. The humidity of the application needs to be taken into account and the dimensional changes allowed for. Easy to machine and widely used for gears, bushes, rollers, wheels, sprockets and bearings.

Nylon 6 Glass Filled Black

The addition of 20% glass produces a material with reinforced dimensional stability, flexibility and increased tensile strength. The additive reduces the coefficient of linear thermal expansion and moisture absorptions. Excellent for applications demanding stiffness, creep resistance and resistance to high temperatures.

Nylon 6.6 / 6 GX Black

A co-polymer of Nylon 6.6 and Nylon 6, combining the benefits of both materials in terms of durability and absorption resistance but also being easier to process and machine. The addition of graphite as a lubricant enhances the life of the material.

UHMWPe

Ultra High Molecular Weight Polyethylene with superior physical properties. Chemical resistance, impervious to water and has a high impact strength. Lightweight and resistant to low temperatures, excellent coefficient of friction, its thermal stability makes it ideal for guide rails, gear wheels, pulley and sprockets.

PTFE

The lowest coefficient of friction of all solid plastics, excellent chemical resistance against most solvents and chemicals and good thermal stability. Non-combustible, almost nil water absorption and excellent weather resistance. Ideal for chemical plants, electrical components, seals, insulators and chain guides and for use in high temperature applications i.e., ovens.

PVC

Polyvinyl Chloride in its unplasticised form is a widely used stock shape plastic, being low in price, widely resistant to chemical attack and having mechanical properties making it suitable for many general engineering applications. Normally available in a grey colour, coloured grades are also available. In addition, special food approved and chlorinated versions are also available.

Applications include change parts, water treatment plant tanks and components, chemical tanks, pipe works and lightly stressed mechanical components.

PVDF

A tough, hard and mechanically strong material with good chemical resistance and low coefficient of friction. Excellent electrical insulation properties, low moisture absorption and good resistance to weathering. Widely used in water systems and as linings for pipes, valves, pumps and water tanks, due to being physiologically safe. Not as resistant to high temperatures as PTFE but is stronger and has a greater load and creep resistance at low temperatures. Good mechanical, electrical and chemical properties make it ideal for use in the nuclear engineering, electrical and chemical processing industries.



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- POLYPROPYLENE** A low density, hard and rigid Hydrocarbon Polymer. Excellent resistance to fatigue from flexing, being almost unbreakable. Good electrical properties, resistant to chemicals, solvents, oils and greases. Good temperature resistance and low flammability make it ideal for use in the chemical industry and for claddings.
- POLYESTER
PET-P** A semi-crystalline thermoplastic Polyester which exhibits high tensile strength and wear resistance properties. Good chemical resistance to organic chemicals and oils (but note that the material is attacked by oxide mineral acids and hydrolysed by hot water). The material has excellent dimensional stability, both in terms of low moisture absorption and good creep resistance. Also suitable for food contact.
- Used for bushes, bearings, sliding parts, gears, cams, rollers etc.
- POLYCARBONATE** A hard, rigid material noted for good impact strength and high modulus of elasticity, combined with excellent electrical, low moisture absorption and weathering properties. May be subject to some stress cracking when exposed to certain solvents, paints and adhesives. Widely used in the manufacture of electrical and electronic components, while sheet forms of the material are used to make glazing and safety guard products.
- PEEK
(POLYETHER-
ETHERKETONE)** PEEK is a semi-crystalline thermoplastic used for high temperature applications. The material is suitable for continuous use for temperature up to 240°C and offers excellent chemical resistance, low moisture absorption and excellent wear and abrasion resistance. The material is V-0 rated and exhibits very low toxic gas and smoke emission when exposed to flame. It should be noted that once temperature is above the glass transition temperature of 143°C there is a decline in the stiffness of the material under load.
- Glass filled PEEK (450GL30) uses glass fibre in order to reduce the thermal expansion rate of the material and increases flexural strength. This is especially apposite where temperatures of above 143°C are present
- Bearing grade PEEK (450FC30) is a grade with added carbon fibre, graphite and PTFE to enhance low friction capabilities of the material coupled with heat dissipation.
- Applications include valve seats, seals, bearings, bushings, electrical insulation components, semiconductors processing equipment parts, oil field tooling components, etc.