

## ENGINEERING PLASTICS

- NYLON • ACETAL • ERTALYTE • POLYPROPYLENE
- PEEK • POLYETHYLENE • PVC • TEFLON®
- VESCONITE • POLYCARBONATE • URETHANE • ACRYLIC



**“WE WILL SUPPLY CUT TO SIZE OR CUSTOM MACHINED TO YOUR REQUIREMENTS”**

**ARMSTRONG ENERGY**

## NYLON

### STANDARD GRADES

#### ERTALON® 6 SA natural (white) / black PA 6

This material offers an optimal combination of mechanical strength, stiffness, toughness, mechanical damping properties and wear resistance. These properties, together with a favourable electrical insulating ability, and a good chemical resistance make ERTALON 6 SA a 'general purpose' grade for mechanical construction and maintenance.

#### ERTALON® 66 SA natural (cream) / black PA 66

Material with a higher mechanical strength, stiffness, heat and wear resistance than ERTALON 6 SA. It also has a better creep resistance but its impact strength and mechanical damping ability are reduced. Well suited for machining on automatic lathes.

#### ERTALON® 66 SA-C natural (white) PA 66/6

ERTALON 66 SA-C, a modified polyamide 66, offers a well balanced combination of the remarkable properties of PA 6 and PA 66:

- toughness and impact strength (PA 6)
- stiffness and heat deflection resistance under load (PA 66)

#### ERTALON® 6 PLA natural (ivory) PA 6G

The characteristics of this cast nylon grade come very close to those of ERTALON 66 SA. Its production method (direct polymerization in the mould) offers the possibility of manufacturing large-sized stock shapes as well as custom castings which require only minimal machining.



### MAIN CHARACTERISTICS

- high mechanical strength, stiffness hardness and toughness
- good fatigue resistance
- high mechanical damping ability
- good sliding properties
- excellent wear resistance

- Available in Rod, Tube and Sheet
- Wear Pads can be milled or panel saw cut
- Custom machined to your requirements

### SPECIAL GRADES

#### ERTALON® 4.6 (reddish brown) PA 66

Compared with the conventional nylons, ERTALON 4.6 (STANYL\*) features a better retention of stiffness and creep resistance over a wide range of temperatures as well as a superior heat ageing resistance. Therefore, applications for ERTALON 4.6 are situated in the 'higher temperature area' (80-150 °C) where stiffness, creep resistance, heat ageing resistance, fatigue strength and wear resistance of PA 6, PA 66, POM and PETP fall short.

#### NYLATRON GSM (grey/black) PA 6G + MoS2

NYLATRON GSM contains finely divided particles of molybdenum disulphide to enhance its bearing and wear behaviour without impairing the impact and fatigue resistance inherent to unmodified cast nylon grades. It is a very commonly used grade for gears, bearings, sprockets and sheaves.

#### ERTALON® LFX (green) PA 6G + OIL

ERTALON LFX is an internally lubricated cast nylon 6 which is self-lubricating in the real meaning of the word. ERTALON LFX, specifically developed for unlubricated moving parts applications, yields a considerable enlargement of the application possibilities of nylons. This is because of its reduced coefficient of friction (-50%) and improved wear resistance (up to x 10).



### APPLICATIONS

ERTALON and NYLATRON are used for a wide range of industrial components both for Original Equipment Manufacturing and maintenance.

- High Load Bearings
- Wear Pads
- Support and Guide Wheels
- Conveyor and Tension Rollers
- Buffer Pads
- Gears, etc.

## ACETAL

### STANDARD GRADES

**ERTACETAL® C natural (white) / black POM-C**

**ERTACETAL® pt H natural (white) POM-H**

These are QUADRANT's virgin copolymer (POM-C) and homopolymer (POM-H) acetal grades. The acetal copolymer is more resistant against hydrolysis, strong alkalis and thermal-oxidative degradation than the acetal homopolymer. The latter, however, has higher mechanical strength, stiffness, hardness and creep resistance as well as a lower thermal expansion rate and very often it also presents a better wear resistance. ERTACETAL is very well suited for machining on automatic lathes and is particularly recommended for mechanical precision parts.



### MAIN CHARACTERISTICS

- high mechanical strength, stiffness and hardness
- excellent resilience
- good creep resistance
- high impact strength, even at low temperatures
- very good dimensional stability
- good sliding properties
- excellent machinability
- physiologically inert (suitable for food contact)

### APPLICATIONS

- gear wheels with small modulus
- cams
- heavily loaded bearings and rollers
- bearings and gears with small clearances
- valve seats
- snapfit assemblies
- all kinds of dimensionally stable precision parts for machine construction
- insulating components for electrical engineering
- parts which operate continuously in water of 60 - 80 °C (ERTACETAL C)

- Available in Rod, Tube and Sheet
- Custom machined to your requirements

## ERTALYTE (PETP)

### STANDARD GRADE

**ERTALYTE® natural (white)/black PETP**

The specific properties of this virgin PETP make it specially suitable for the manufacture of mechanical precision parts which have to sustain high loads and/or are subject to wear.

### SPECIAL GRADE

**ERTALYTE TX® (pale grey) PETP**

ERTALYTE TX is a polyethylene terephthalate based compound incorporating a uniformly dispersed solid lubricant. Its specific Formulation yields a premium internally lubricated bearing-grade.

ERTALYTE TX has not only an excellent wear resistance but offers, in comparison with ERTALYTE an even lower coefficient of friction as well as higher Pressure-Velocity capabilities.

### MAIN CHARACTERISTICS

- high mechanical strength
- good creep resistance
- low and constant coefficient of friction
- excellent wear resistance
- very good dimensional stability
- physiologically inert (suitable for food contact)

### APPLICATIONS

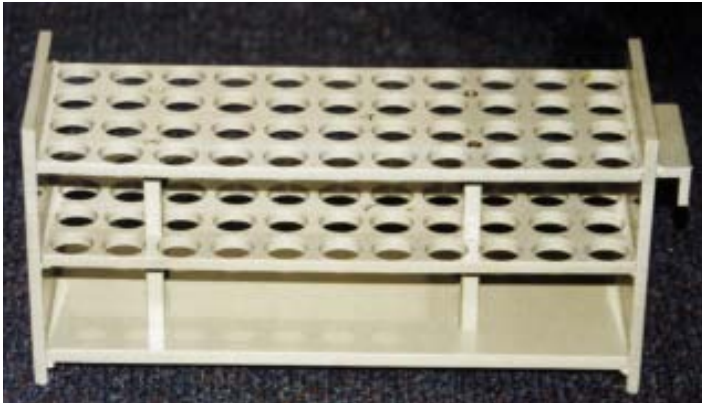
- components for precision engineering (dimensionally stable)
- insulating parts for electrical engineering
- gears, rollers, bushes and thrust washers
- bearings



- Available in Rod, Tube and Sheet
- Custom machined to your requirements

## POLYPROPYLENE (PP)

This material is a thermoplastic polymer used in a wide variety of applications.



### MAIN CHARACTERISTICS

- very high chemical resistance
- excellent impact resistance
- higher scratch resistance than HDPE
- thermoformable
- excellent moisture resistance
- food grades

### APPLICATIONS

- food or corrosive storage vessels
- cooling or scrubbing towers
- pump bodies and components
- wall cladding
- plating tanks and hoods
- bench tops, etc.
- Available in Rod and Sheet
- Cut to size or fabricated
- Custom machined to your requirements

## PEEK

### KETRON® PEEK 1000 natural (brown/grey)/blk PEEK-1000

KETRON PEEK-1000 stock shapes are produced from virgin polyetherether-ketone resin and offer the highest toughness and impact strength of all KETRON PEEK grades. Both KETRON PEEK-1000 natural and black can be sterilised by all conventional sterilisation methods (steam, dry heat, ethylene oxide and gamma irradiation). Additionally, the composition of the raw materials used for the production of KETRON PEEK-1000 natural stock shapes complies with the directives of the European Union and the American FDA regulations with respect to food compatibility as well as to the USP-standard class VI (United States Pharmacopoeia) with respect to biocompatibility. These features make this grade very popular in medical, pharmaceutical and food processing industries.

### KETRON® PEEK-HPV (black) PEEK HPV

The addition of PTFE, graphite and carbon fibres results in a KETRON PEEK "Bearing Grade". Its excellent tribological properties (low friction, long wear, high PV-limits) make this grade the ideal material for wear and friction applications.

### KETRON® PEEK-GF30 natural (brown/grey) PEEK-GF30

This 30% glass fibre reinforced grade offers a higher stiffness, strength and creep resistance than KETRON PEEK-1000 and has a much better dimensional stability. This grade is ideal for structural applications supporting high static loads for long periods of time at elevated temperatures. The use of KETRON PEEK-GF30 is not recommended for sliding parts since the glass fibres tend to abrade the mating surface.

### KETRON® PEEK-CA30 (black) PEEK-CA30

This 30% carbon fibre reinforced grade combines even better mechanical properties (higher E-modulus, mechanical strength and creep resistance...) than KETRON PEEK-GF30 with an optimum wear resistance. Moreover, the carbon fibres provide 3.5 times higher thermal conductivity than unreinforced PEEK - dissipating heat from the bearing surface faster.

### MAIN CHARACTERISTICS

- very high max. allowable service temperature in air (250°C continuously going up to 310°C for short periods of time)
- high mechanical strength, stiffness and hardness, also at elevated temperatures
- excellent chemical and hydrolysis resistance
- excellent wear and frictional behaviour
- very good dimensional stability
- outstanding UV resistance
- excellent resistance to high energy radiation (gamma-rays and X-rays)
- inherent low flammability and very low levels of smoke evolution during combustion

### APPLICATIONS

Applications include gears, pump components, valve seats and bearings, and can be found in the aerospace, nuclear, chemical, automotive and electrical industries, as well as in all kinds of military equipment.



- Available in Rod and Tube
- Cut to size
- Custom machined to your requirements

## POLYETHYLENE (PE)

Is a Polymer consisting of long chains of the monomer ethylene and is classified into several different categories.

### PRODUCTS

- POLYSTONE 300 HDPE - Black/Natural 0.3mil g/mol
- POLYSTONE 500 HMWPE - Natural/Colours 0.5mil g/mol
- POLYSTONE 7000 UHMWPE - Natural 7mil g/mol
- POLYSTONE ULTRA UHMWPE - Green 7.3mil g/mol
- POLYSTONE 7000 SR UHMWPE - Black, static reduced 7mil g/mol

### MAIN CHARACTERISTICS

- excellent abrasion resistance
- very low co-efficient of friction
- very high surface release properties
- high chemical resistance
- excellent impact resistance
- very good clamping properties

- Available in Rod and Sheet
- Cut to size and shape
- Custom machined to your requirements

### APPLICATIONS

- flow promoting liners to resist sliding abrasion and to assist release
- conveyor components subject to high wear and requiring low friction
- parts subject to high impact
- components in direct contact with food stuffs



## PVC (POLYVINYLCHLORIDE)

This is the third most widely used thermoplastic polymer, after Polyethylene and Polypropylene.

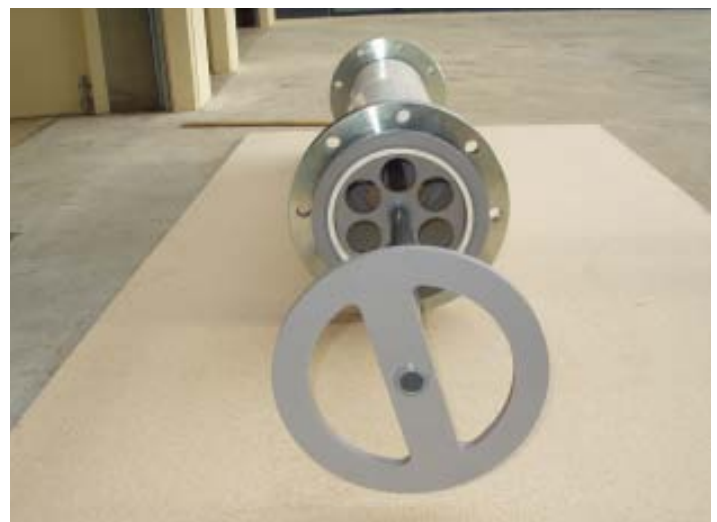
### MAIN CHARACTERISTICS

- excellent electrical insulating properties
- very high chemical resistance
- thermoformable
- moderate impact resistance and service temperature
- very good moisture resistance
- good dimensional stability
- bondable
- self extinguishing

### APPLICATIONS

- chemical storage vessels
- tank liners and fittings
- fume cupboards
- pump components
- electrical insulators

- Available in Rod and Sheet
- Cut to size and shape
- Custom machined to your requirements



## **TEFLON® (PTFE)**

History shows PTFE to be one of the most incredible thermoplastics. Resistant to practically every chemical known to man and a surface that is slippery as ice on ice which no substance will adhere to. With temperature resistance to 327 °C, this material can operate in harsh conditions for long periods and will not degrade when exposed to long term sunlight.

### **MAIN CHARACTERISTICS**

- not affected by almost all chemicals and solvents
- outstanding dielectric properties
- capable of continuous use at 260°C
- excellent low temperature toughness
- slippery non stick surface
- excellent UV resistance

### **FILLERS ENHANCE THE PROPERTIES**

- improved resistance to cold flow or creep
- reduction in wear and friction
- increases in stiffness and surface hardness
- improved thermal conductivity and dimensional stability
- increased electrical conductivity

### **APPLICATIONS**

- dynamic and static seals
- mechanical seals
- bearing pads
- gaskets
- electrical insulating
- bearings and bushings
- pipe and tubing
- valve and pump packings
- expansion bellows
- coatings and linings

### **GLASS FILLED**

Improved creep resistance at high and low temperatures, is chemically stable, with little effect on electrical properties. Improved wear and friction properties.

### **CARBON FILLED**

Improved creep and wear resistance. Anti Static. Self lubricating properties. Suited to fluids with poor lubricity.

### **BRONZE FILLED**

Best creep resistance. High thermal conductivity. Good wear properties for hydraulic system components. Low, chemical resistance. Not suited for electrical applications.



- Available in Rod, Tube and Sheet
- Cut to size
- Custom machined to your requirements

## VESCONITE

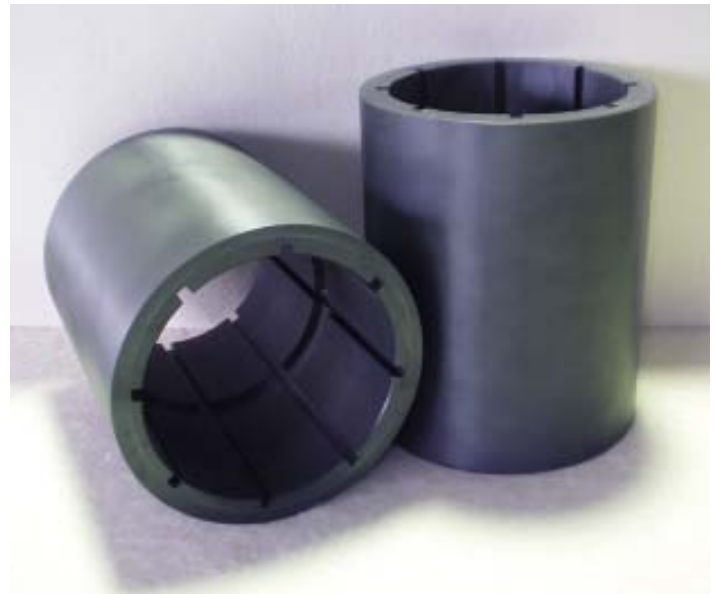
Vesconite and Vesconite Hilube are specialised plain bearing materials made from internally lubricated low friction polymers. Vesconite bushes give excellent wear in harsh, wet, dirty or unlubricated conditions. Vesconite and Vesconite Hilube have proven advantages over traditional bushing material.

### MAIN CHARACTERISTICS

- low wear rate
- low friction
- internally lubricated
- high compression
- low water swell
- low thermal expansion
- resistant to chemicals
- does not contaminate

### APPLICATIONS

- bearings and bushes
  - wear plates
  - valve stem bushes
  - pivot bushes
  - lineshaft bearings
  - casing wear bearings
  - impeller wear bearings
  - hanger bearings
  - mast slides
  - thrust washers
  - pump vanes
- Available in Rod, Tube and Sheet  
• Cut to size  
• custom machined to your requirements



## POLYCARBONATE

A tough clear material unique for its impact resistance 250 times that of glass.

### MAIN CHARACTERISTICS

- excellent impact resistance
- very good optical properties
- ability to be cold formed in thinner gauges
- moderate chemical resistance
- self extinguishing
- excellent acoustic properties
- UV resistant

### APPLICATIONS

- safety and vandal resistant glazing
- machine guards
- sight glasses
- safety visors
- transparent instrument components
- electrical components



- Available in Rod, Tube and Sheet
- Cut to size or fabricated
- custom machined and polished

## URETHANE

Polyurethane Elastomers are unique design and construction materials combining many of the advantages of rigid plastics, metals and ceramics, with the extensibility of rubber.

There are many different types of Polyurethanes. The four basic types are:

POLYETHER/TDI  
POLYETHER/MDI1

POLYESTER/TDI  
POLYESTER/MDI

Polyurethanes compete against many other materials including rubber, plastic and metals. The most common method of classifying polyurethanes is according to their hardness.

### MAIN CHARACTERISTICS

- polyethers have resistance to dynamic stress, advantages in resilience, low temperature performance and resistance to hydrolysis. They have lower viscosity and specific gravity
- polyesters based urethanes have superior cut, tear, abrasion and oil solvent resistance
- MDI products have lower isocyanate odour than TDI, have superior hydrolysis resistance and higher resilience
- TDI products are less sensitive to moisture, have shorter demould times and lower cure temperature requirements than MDI

### APPLICATIONS

- automotive
- coated fabrics
- engineered components
- mining
- rollers
- wheels and tyres
- building and construction
- electrical
- food storage
- oil, chemical and marine
- seals and gaskets
- bearings and bushes



- *Stocked in Rod, Tube and Sheet*
- *Hardness to 70-90. Durometer (Shore A)*
- *Colours red, green and black*
- *Special hardness and colour available on order*
- *Cut to size*
- *Custom machined to your requirements*

## ACRYLIC

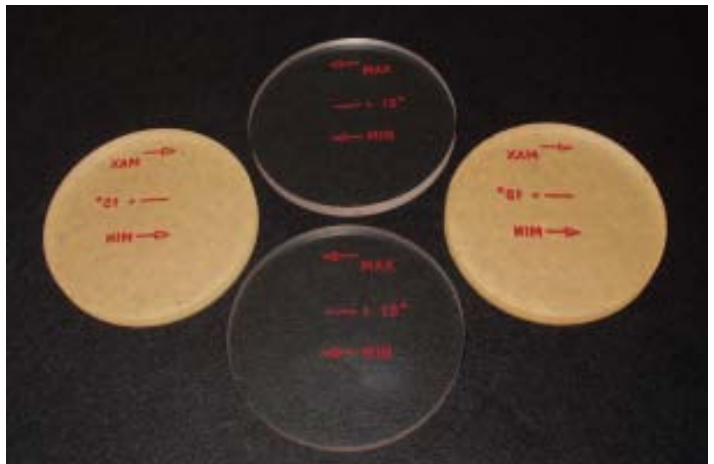
A crystal clear material that has a perfectly smooth surface free of striation.

### MAIN CHARACTERISTICS

- half the weight of glass
- stronger than glass
- clearer than glass (93% transparency rate)
- can be shaded
- can be chemically welded
- can be manufactured in colours

### APPLICATIONS

- sight glasses
- fluid level indicators
- inspection windows
- furniture and displays
- lighting



- *Available in Rod, Tube and Sheet*
- *Cut to size or fabricated*
- *Custom machined and polished*