

ATRON® ERTACETAL® CE

# Engineering Plastic Solutions for Construction & Heavy Equipment



**Global Leader in Engineering Plastics**

FLUOROSINT® TECHTRON® SYMALIT®  
ATRON® ERTACETAL®  
OLE® TIVAR® KETRO  
KETRON® TECHTE  
ALYTE® ERTALON



**QUADRANT**

You inspire ... we materialize®

# You inspire ... we materialize

## Quadrant history:

The first engineering polymer shapes for machining.

## Quadrant today:

The broadest range of engineering polymer shapes allowing the most effective material choice.

## Quadrant tomorrow:

New products for new needs, developed by QEPP's global product and application development team.

For over 60 years, the companies that today form Quadrant have been developing new materials to meet changing demands of customers around the world. The innovative, collaborative spirit between our people and our customers has shaped our success and led to the industry's broadest range of engineering plastic shapes for machining. Our investment in innovation will only increase in the years ahead, to support your requirements for higher levels of performance, productivity and value.

## Quadrant Engineering Plastics - Global Scope



# Quadrant's Values to the Construction and Heavy Equipment Market

## INCREASED PERFORMANCE

- Improved wear performance in unlubricated conditions
- Lower in-use noise level versus metals

## REDUCE TIME TO MARKET

- Extensive technical know-how and support from development to market
- In house design and engineering capabilities

## COST REDUCTION

- Improved performance & reduced maintenance programs
- Better and faster machining in comparison to traditional materials like aluminium and bronze
- Value in use

## WEIGHT REDUCTION

- Lower weight which leads to lower surface pressure on the roads
- Higher lifting loads possible



## Engineering Plastic Solutions balance Performance and Costs

All engineers share the same goal, whether the final product is a new building, heavy equipment or a unique plastics formulation. It all aims to provide the best price performance relationship.

It's no surprise then that engineering plastics are finding wider application in the construction and heavy equipment industries. They deliver better performance than metal, stainless steel components, and other materials at better price points. By definition, engineering plastics are formulated to fulfill specific application requirements and they always meet high standards for strength, reliability, and safety.

## ADVANTAGES OF ENGINEERING PLASTICS

- High mechanical strength and stiffness
- Excellent sliding properties
- Outstanding wear and abrasion resistance
- High mechanical dampening ability
- High impact strength even at low temperatures
- Very good dimensional stability
- Good weather and chemical resistance (corrosion)



These are very general statements which, however, do not apply to all materials.

# Material Solutions for Construction & Heavy Equipment

Quadrant EPP's materials produce tough, strong, resilient and highly wear-resistant parts that are cost-effective alternatives to cast iron and steel for many construction and heavy machinery applications. In addition, Quadrant EPP provides Monocast grades in standard or custom formulations, including Monocast 6PLA, MC 901, LFX, NSM, GSM and GSM 30P.

Customers can choose from a selection of standard formulations, as well as from custom-formulated grades for targeted and even extreme applications.



## STANDARD GRADES: FOR EXTREME PERFORMANCE

### NYLATRON \* 703 XL

This high performance cast nylon 6 bearing grade provides an even better wear resistance than NYLATRON \* NSM, combined with superior pressure-velocity capabilities and an industry first: a near zero level of "stick-slip".

The elimination of stick-slip, mostly associated with chatter or squeaking, provides an extraordinary amount of motion control for high-precision applications.

### ERTALYTE \* TX

Polyethylene terephthalate (PET) compound incorporating a solid lubricant to yield a premium bearing grade with outstanding wear resistance, a low coefficient of friction and high pressure-velocity capabilities.

STANDARD GRADES: BALANCED PERFORMANCE FOR TARGETED APPLICATIONS

### ERTALON \* 6 PLA and ERTALON \* 6 SA

General engineering nylon 6 grades combining good mechanical strength, stiffness, toughness, mechanical damping properties and wear resistance.

### NYLATRON \* MC 901

Modified cast Nylon 6 grade exhibiting higher toughness, flexibility and fatigue resistance.

### ERTALON \* 6 XAU+

Heat stabilised cast Nylon 6 offering superior heat ageing performance in air.

### ERTALON \* LFX

Internally lubricated cast Nylon 6 providing excellent wear resistance.

### NYLATRON \* GSM

Molybdenum disulphide-filled material with enhanced bearing and wear behaviour as well as good impact and fatigue resistance.

### NYLATRON \* NSM

Cast nylon 6 formulation with lubricant additives that provide excellent frictional properties and wear resistance. Pressure-velocity capabilities up to five times higher than conventional cast Nylons.

### TIVAR \* DS

An ultra high molecular weight polyethylene grade (PE-UHMW) with built-in lubrication for superior wear and abrasion resistance.

### TIVAR \* TECH

This PE-UHMW grade with extremely high degree of polymerisation contains molybdenum disulphide, resulting in a material with improved wear resistance and sliding properties.

### TIVAR \* Ceram P

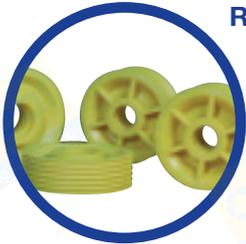
TIVAR \* Ceram P is a wear improved PE-UHMW material with incorporated micro glass beads.

# Typical Applications for the Construction Industry



## Cable Sheaves

With the development of MONOCAST® cable sheaves Quadrant EPP achieved greatly improved wire rope life, improved lifting and transport with reduced weight, non-corrosive benefits for land or sea use and easier handling.



## Rollers

QEPP materials offer better load capacity, wear resistance, noise reduction and fatigue resistance than other materials in a variety of roller applications.



## Sliding Pads and Bearings

NYLATRON®'s low coefficient of friction enables smoother and quieter operation, extends part life, reduces or eliminates lubrication and increases functionality.



## Nylatrack Trackplates

Lightweight Nylatrack polyamide trackplates can accommodate slopes up to 40 percent. Their intrinsic flexibility absorbs the bending force of track chains, reducing strain.

## Pile Driver Caps

MONOCAST® MC 904P Pile Driver Caps last about 20 to 50 times longer than conventional fillers and deliver a good coefficient of restitution for optimal piling efficiency.



## Outrigger Pads

MONOCAST® polyamide outrigger pads can stand up to 60 MPa surface pressure and will not scratch or break pavement, eliminating the need for expensive cribbing plates.



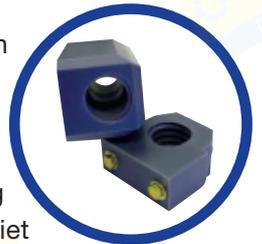
## Chain Sprockets

Chain sprockets made from lightweight, self-lubricating NYLATRON® GSM Nylon or TIVAR® Cream P require less energy to operate, allowing more power to be used to drive the chain. Their self-lubricating performance and low wear also extends chain life and reduces overall maintenance downtime.



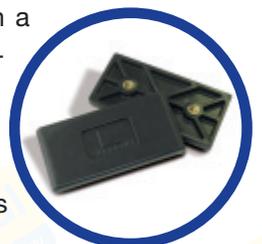
## Spindle Nuts

Spindle nuts fabricated with NYLATRON® 703 XL Nylon are not subject to corrosion by prolonged exposure to harsh environments. Their low-wear and self-lubricating material enables smooth, quiet operation and reduces overall maintenance downtime.



## Wear Pads

Self-lubricating pads, in NYLATRON® 703 XL enable precise motion control with a unique property of near zero stick-slip, safety and elimination of external lubrication for crane booms. NYLATRON® 703 XL also provides high strength and stiffness and excellent wear resistance



# Production Capabilities

Quadrant EPP's wide range of manufacturing technologies enables it to produce cost-effective parts and components large and small. All are available with complete batch traceability and documentation in line with relevant ISO standards:



## CUSTOM CASTING

Custom casting is often more economical than machining or injection moulding, particularly for small or medium quantity production runs of parts that are too large or too costly to injection mould. It can eliminate or reduce certain machining operations, reduce scrap and cycle times, and it can also produce parts of virtually unlimited size and thickness. Our mission is to provide the highest quality, economical products – from a single prototype to thousands of production pieces.

### Atmospheric Pressure Casting (APC)

APC can manufacture plastic parts without externally applied pressure and is useful for low-to-medium volume runs or for parts that have intricate design details. Tooling cost is significantly lower than Injection moulding tools. Economical production runs can be as small as 1 (ONE!) piece only. Cast weight up to 800 kg is possible.

### Low Pressure Casting (LPC)

LPC technology bridges the gap between machining and injection moulding for medium to high series, eliminating wall thickness limitations and enabling production series of a few hundred to several thousands parts per year. LPC's lower processing and injection pressures also enable the use of aluminium tools rather than hardened steel. Generally, tool cost can be significantly lower than injection-moulding tools.

### Reaction Injection Moulding (RIM)

RIM is a casting technology that applies low pressure to mix specific additives with the base material. It shows very specific properties after "injection" in the mould and the polymerisation of the material. Metal inserts can be integrated into the moulding component in one operation.

Capability	Application	Benefits
Custom Casting	For small or medium production runs, often more economical than machining or injection moulding	<ul style="list-style-type: none"> <li>eliminates / minimises machining</li> <li>reduces scrap and cycle time</li> <li>can be custom shapes, blanks near-net and cast-to-size</li> </ul>
Atmospheric Pressure Casting (APC)	For low to medium volumes of parts with intricate design details or geometry	<ul style="list-style-type: none"> <li>minimises flow-induced stress</li> <li>permits larger cross-sections than alternative means</li> <li>offers very high dimensional stability over time</li> <li>economical even with single-piece production</li> <li>part weight to 800 kg feasible</li> </ul>
Low Pressure Casting (LPC)	Provides an economical bridge between low-volume machining and high-volume injection moulding	<ul style="list-style-type: none"> <li>removes wall thickness limitations</li> <li>suitable for runs from a few hundred to several thousand</li> <li>process parameters allow aluminium tooling</li> <li>ideal for pilot and evaluation runs</li> </ul>
Reaction Injection Moulding (RIM)	Allows materials alternatives not available otherwise by mixing custom formulations in the mould	<ul style="list-style-type: none"> <li>well suited for highly-advanced materials and applications</li> <li>specially capable of incorporating inserts, multi-material designs</li> </ul>