

## Engineering Plastics Solutions for Food & Dairy Production

Metal Detectable Engineering Plastics

You inspire ... we materialize®



QUADRANT

## Metal Detectable Engineering Plastics



### Trends

The foremost goal in the food and beverage production & packaging industry is to deliver high quality, healthy and safe products. A highly regulated market where not meeting international standards can quickly become a major threat to the business, a product recall could turn into the worst case scenario for a producer. At the same time, market dynamics force a continuous cost and productivity improvement.

Producers need to prevent contamination of food caused by e.g. breakage or wear of equipment parts, using predominantly metal detectors. Replacing equipment parts with engineering plastics can improve production speed or extend productive cycles of machines due to reduced downtime significantly.

The growing demand for polymer materials as a replacement of metal parts presents strong demand for new and improved, metal detectable plastics.

### Quadrant Answers

Quadrant developed a range of traceable polymer materials, which offer superior properties compared to metal or existing plastics. The manufacturer will be able to choose from a range of products based on the application and the most critical material quality.

Key material qualities:

- Improved impact resistance resulting in less breakage of highly stressed plastic parts in production and process equipment
- Material additives allow detection of very small (27 mm<sup>3</sup> and bigger) particles via metal detectors addressing the remaining risk of occurring breakage or wear

### Key Benefits

- Improved safety supported by according to FDA and EU standards food contact compliant and metal detectable plastic materials
- Reduced contamination of food, resulting in less related costs and reduced financial and image risk
- Longer productive periods and lower maintenance costs

## Quadrant Metal Detectable (MD) Engineering Plastics

### Acetron® MD – POM – Blue

- Good balance of stiffness and impact strength for applications where higher dimensional stability is required
- Metal and visual detection by blue colour
- Detection by x-ray also possible
- Continuous use temperature up to 105 °C (221 °F)

#### Applications:

- Scrapers
- Funnels
- Guiders
- Grippers
- Gears

#### Current Size Offering:

- Extruded rods  
Ø 30/50/80 mm x 1000/3000 mm
- Extruded plates  
20/40/80 x 610 x 1000/3000 mm



Acetron® MD Rod



Gears

### Nylatron® MD – PA 6 – Dark Blue

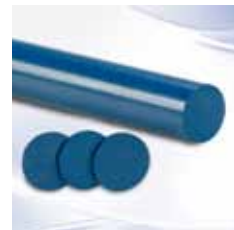
- High wear and fatigue resistance
- Lower moisture absorption than standard PA 6
- Metal and visual detection by blue colour
- Detection by x-ray also possible
- Continuous use temperature up to 85 °C (185 °F)

#### Applications:

- Thrust washers
- Seals
- Rolls

#### Current Size Offering:

- Extruded rods  
Ø 30/50/80 mm x 1000/3000 mm
- Extruded plates  
20/40/80 x 610 x 1000/3000 mm



Nylatron® MD Rod/Discs



Seals

### TIVAR® MD – PE-UHMW – Dark Grey

- Lower cost material solution for applications with the need for high impact resistance
- Medium dimensional stability due to extreme low water absorption, but high Coefficient of Linear Thermal Expansion (CLTE)
- Good performance in cryogenic environment
- Excellent release properties
- No detection by x-ray

#### Applications:

- Chain guider elements
- Funnels
- Rolls
- Bushings

#### Current size offering:

- Extruded rods  
Ø 25/50/80 mm x 1000/3000 mm
- Compression molded plates  
25/40/80 x 1220 x 3000 mm



TIVAR® Plates/Rod



Funnels for sausage filling

## Quadrant Metal Detectable (MD) Engineering Plastics

### Ketron® MD PEEK – PEEK – Dark Grey

- Used in applications where high line speeds require good wear resistance or where operating temperatures in use are higher than 130 °C (266 °F)
- For multiple sterilizable machine parts, mainly in equipment with CIP (cleaning in place) or SIP (sterilisation in place)
- Suitable for food approved parts requiring high stiffness without reinforcements
- High dimensional stability for high precision parts
- Good impact/stiffness ratio

#### Applications:

- Filling pistons
- Manifolds
- Valves
- Scrapers in cookers and high temperature mixers
- Hot oil applications in fryers and ovens
- Thrust washers
- Guiders
- Bushings



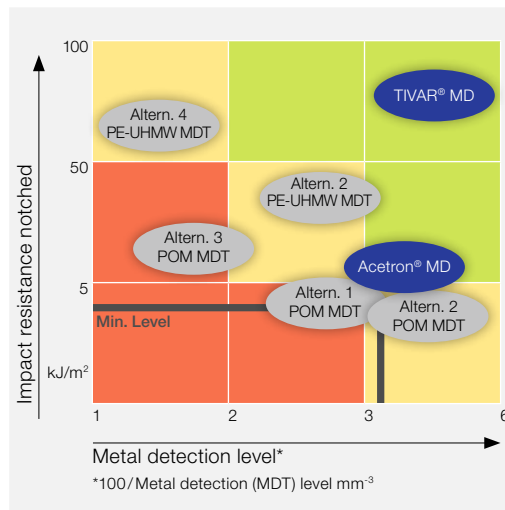
Ketron® MD PEEK



Bearing

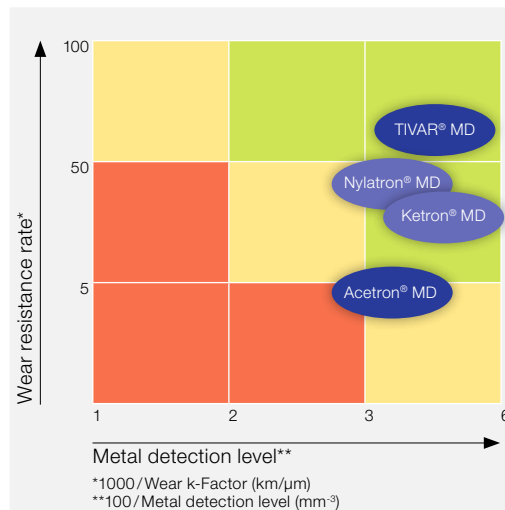
The material will be produced on demand. Please contact us with your enquiry.

### MD Products Performance Comparison



Results based on Quadrant internal tests

### Quadrant MD Products Wear Resistance Comparison



### Industries

#### Food Processing

- Meat processing
- Dairy production
- Cheese processing
- Pasta/dough processing
- Sweets processing
- Filling/bottling

#### Food Packaging

- Applications in direct contact with foodstuff

## Quadrant Material Solutions for the Food Industry

Manufacturers constantly need to look for ways to increase production speed. Quadrant's broad range of high performance proprietary machinable plastics meet that challenge whether it's the dimensional stability for increased wear, eliminating costly lubrication or withstanding increased temperatures and more aggressive chemical environments. Following an overview of our material portfolio for the food industry.

**Values based on «Temperature of deflection under load» (ISO 75 / Method A: 1,8 Mpa)\***

< 80 °C (< 176 °F)	80–120 °C (176–248 °F)	120–160 °C (248–320 °F)	> 160 °C (> 320 °F)
TIVAR® Oil Filled (PE-UHMW + oil)	Ertalon® 6 SA (PA 6)	Techtron® HPV PPS (PPS + solid lubricant)	Quadrant® PSU 1000 (PSU)
TIVAR® SurfaceProtect (PE-UHMW + other additives)	Ertalyte® TX (PET + solid lubricant)	Quadrant® PC 1000 (PC)	Duratron® U1000 PEI (PEI)
TIVAR® 1000 (PE-UHMW)	Nylatron® LFG (PA 6 + oil)	Ketron® PEEK-TX (PEEK + solid lubricant)	Quadrant® PPSU (PPSU)
TIVAR® Ceram P (PE-UHMW + glass beads + additives)	Ertalon® 6 PLA (PA 6)	Ketron® PEEK 1000 (PEEK)	
TIVAR® CleanStat (PE-UHMW + specific additives)	Ertalyte® (PET)	Ketron® MD PEEK (PEEK + additives)	
TIVAR® H.O.T. (PE-UHMW + specific additives)	Ertalon® 66 SA (PA 66)		
TIVAR® MD (PE-UHMW)	Ertacetal® C (POM-C)		
	Fluorosint® 207 (PTFE + mica)		
	Symalit® PVDF 1000 (PVDF)		
	Ertacetal® H (POM-H)		
	Acetron® MD (POM) Nylatron® MD (PA 6)		

\* Engineering Note:

A material's heat resistance is broadly characterized by both its «temperature of deflection under load» and its «max. continuously allowable service temperature». The «temperature of deflection under load», formerly called «Heat Deflection Temperature (HDT)», is related to a certain level of stiffness at elevated temperature and it is often considered as the max. temperature limit for moderately to highly stressed, unconstrained components. The «maximum continuous use temperature» on the other hand is related to a certain level of permanent physical property degradation which occurs after long term exposure to elevated temperature (thermal-oxidative degradation).

### Material Recommendations for Various Applications

Applications	Products	Applications	Products
Seals	Fluorosint® 207	Gears	Nylatron® LFG
Separation Disc	Ertacetal® C	Bushings	Ertalyte® TX
Stripper	TIVAR® 1000	Needle Guides	Ertacetal® C
Guide for Cutter	TIVAR® 1000	Holding Blocks	TIVAR® 1000
Grinder Bushing	Ertalyte® TX	Chain Blocks	Ertacetal® C
Trust Washers	Ertalyte® TX	Chain Guides	TIVAR® 1000
Cams	Ertalyte® TX	Wear Strips	TIVAR® 1000
Forming Plates	Ertacetal® C	Mixing Paddles	Ketron® 1000 PEEK

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Quadrant has extensive product and machining information available online. Our website is a portal to a wealth of technical data and the easiest way to contact our application specialists. Our team stands ready to help offer solutions to your toughest problems.

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