

# **Machined Components made of engineering plastics**



Thermoplastics

# Röchling Competence in Plastics

Contents	Page
Röchling Group	2
Business Unit Machined Components	3
Global presence	3
Competence in machining	
Unlimited possibilities	4
Overview of our processes	5
Competence in materials	
Competence in Plastics	6
Unparalleled range	7
Research and development	8
Competence in industry	
Understanding customer applications	9
Engineering and plant construction	10
Beverage and packaging industry	11
Paper industry	12
Food technology	13
Logistics	14
Medical technology	15
Electrical and electronics industry	16
Hydraulics and harbour construction	17
Lining technology	18
Agricultural technology	19
Special vehicle construction	20
Sports and leisure industry	21
Renewable energies	

Legal information 23

The Röchling Group is a global plastics group. With some 7,500 on the workforce at 60 locations in 20 countries, Röchling today ranks internationally amongst the leading enterprises in the field of plastics processing.

With their two divisions, High-Performance Plastics and Automotive Plastics, the Group, with its companies on the American, European and Asian continents, generates an annual turnover of around 1.3 billion euros.

# **Röchling High-Performance Plastics**

The High-Performance Plastics Division covers the range of high-performance plastics within the Röchling Group. With world-wide subsidiaries as well as sales and distribution offices, the Röchling High-Performance Group has a leading position internationally in producing and machining thermoplastics and composites for the capital-goods industry.

The product range covers extruded, polymerised and pressed semifinished products, such as round rods, flat rods and sheets, foils, tubes, extruded profiles, special polyamide cast parts, fibre-reinforced plastics and machined finished components.



**Business Unit Machined Components Everywhere close to you** 



Turnover: 1.3 billion Euro

Employees: 7,500

Division

## **High-Performance Plastics**

- Röchling Engineering Plastics
- Röchling Sustaplast

Within the High-Performance Plastics Division, the Business Unit Machined Components has over 800 employees and is the world-wide leader in machining plastics. The flexible companies have specialised in the manufacture of high quality machined components for virtually every sector of the capital goods industry. We develop optimum solutions jointly with the customer, then realise them efficiently.

## Division

## Automobile Plastics

- Röchling Automotive
- Röchling Technical Parts

#### Your ideas become high quality components

This one-of-a-kind, international network of companies provides you with the material expertise of one of the most innovative manufacturers of semi-finished plastic parts, as well as outstanding industry know-how and machinery that is unparalleled in the world.

You benefit from the synergies of the global locations of the Business Unit. We look forward to meeting your most challenging needs.

## Röchling Group Global presence: 60 companies in 20 countries



## Competence in machining Unlimited possibilities

- Worldwide largest processing centre

  processin
- Over 100 CNC milling machines
  - State-of-the-art process technologies



#### Flexible, powerful, precise

The machining companies of the Röchling Group provide you with virtually unlimited processing possibilities and a leading manufacturer with one-of-a-kind installations and machinery. We have invested in the most modern technology and thus, provide top quality with reliable tolerances and outstanding surface quality.

We have modern, high-performance CNC machining centres. Large-size CNC milling machines offer the possibility of producing products in the largest dimensions with narrow tolerances.

For our customers this means:

- High degree of material utilisation
- Reduced assembly times
- Fewer welding seams
- Narrow length tolerances

Our high-precision CNC systems are equipped with dry and wet processing as well as internally cooled tools.

This enables production of complex geometries and narrow tolerances, while at the same time maintaining a high degree of surface quality. In addition, we are also able to perform 5-axis machining.

We also offer processing of other materials in combination with machined plastic parts.

Currently we have, among others, more than:

- 100 CNC milling machines
- 50 CNC lathes
- 15 automatic profiling machines
- and a wide variety of profile extruders with over 500 tools

#### **Combined components**

The workflows in our machining companies are also designed for the production and assembling of complete assembly groups. Thus, thread inserts, ball bearings or other inserts can be added in further processing steps and combined with other components into complete assembly groups.

## **Competence in machining**

## **Overview of our processes**

## **Planing**

Straight planing Length: max. 12,000 mm Width: max. 2,500 mm



## Sawing / Blank Cutting

- Dividing saws for panels
- Band saws for rods and tubes
- Round blank saws



## Milling

Length: 1-14,000 mmWidth: 1-2,500 mmThickness: 1-730 mm

### **Round components**

Ø up to 3,500 mm Larger dimensions available upon request



## **Turning**

 $\emptyset 2 - 2,000 \text{ mm}$ 

## Large-size turned parts

Ø max. 2,000 mm Length: max. 800 mm

#### **Tubes**

Ø max. 750 mm Length: max. 2,300 mm



## **Profiling**

Length: max.12,000 mm<sup>1)</sup>
Width: max. 235 mm
Thickness: max. 165 mm

1) > 12,000 mm see profile extrusion



## **Profile Extruding**

Polystone® M (PE-UHMW) > 550 pcs. tools



### **Skiving**

#### Strip material

Polystone® M (PE-UHMW) Width: max. 100 mm Thickness: 1-8 mm

#### **Films**

Thickness: 0.25-3 mm
Width: 100-300 mm
Length: 11-136 m



### **Punching**

Length: continuous Width: max. 1,500 mm Thickness: up to 8 mm



## **Thermoforming**

Length: max. 1,600 mm Width: max. 1,200 mm

Panel

thickness: max. 30 mm



## 3D printing

• selective laser sintering



## **Competence in materials**

## **Competence in Plastics**

#### Plastics know-how from the semi-finished products manufacturer

Röchling counts among the leading manufacturers of semifinished plastic products worldwide. We are not only concerned with the production of sheets, rods and profiles, but also with the particular requirements of the industries which we supply. Our logistics centres for semi-finished products are the largest in Europe and guarantee the fastest product availability.

We know precisely which material to recommend for your application. If necessary, we will develop special formulations for your application, to ensure you get the best plastic for your needs.

## **Outstanding material characteristics**

We live in the "age of plastics". Plastics are customisable and have characteristic profiles that often surpass those of traditional materials such as steel, wood or concrete, which they increasingly replace.

Today, there is virtually no industrial product that does not come into indirect contact with plastic components in its manufacturing process or contain them itself.

## Important advantages of plastic over steel

- Good sliding characteristics (self-lubricating) Low weight No corrosion



Polystone.

Robalon

# Competence in materials An unparalleled range

## Röchling offers you a unique range!

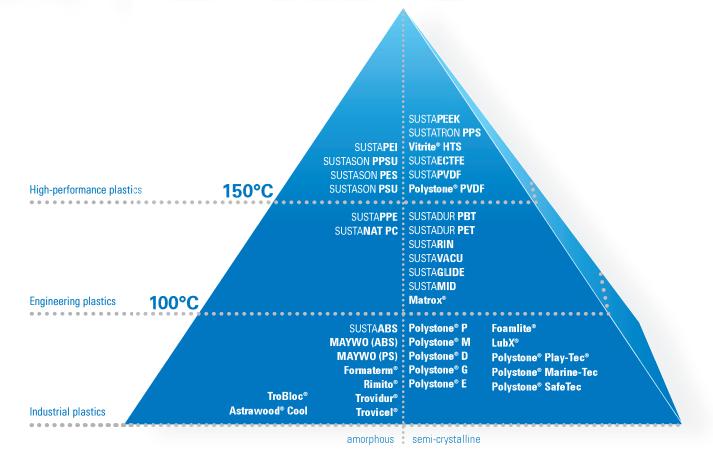
- Extraordinary selection of semi-finished products
- Experienced plastics and industry experts
- Own materials laboratories and training centres

For nearly 100 years Röchling has specialised in the processing of plastics. Today, the product range is comprised of **more than 140 different types of plastics** – from standard plastics to high-performance plastics for withstanding high operating temperatures. The wide variety of modifications and special developments is also unparalleled worldwide.

You can benefit from this offer and the knowhow of our excellently trained plastics experts, our technological leadership, own training centres and materials laboratories.

### **Important characteristics of plastics**

- Excellent sliding properties
- High abrasion resistance
- High degree of resistance to aggressive chemicals
- Remarkable flexibility or mechanical strength
- High degree of impact strength
- Flame-resistant or self-extinguishing
- Electrostatically conductive, dissipative or insulating
- Non-ageing
- UV resistant
- Suitable for use with foodstuffs



In addition to thermoplastics, Röchling also offers a wide product range of fibre-reinforced plastics. All Röchling materials are available for machining.

## **Competence in materials**

## **Research and development**

## More value for our customers

- Product and materials development Modification of existing compositions
- Practical testing facilities
- Cooperation with scientists State-of-the-art materials laboratory



## Competitive advantages through innovation

At Röchling, our top priority is innovation. This allows us to present the market with product developments that provide our customers with competitive advantages.

We develop new products and manufacturing processes to fit the specific problem definitions of our customers in our excellently outfitted materials laboratory, and in close cooperation with suppliers, scientists and institutes.

Our quality management system is regularly inspected in audits in accordance with DIN EN ISO 9001:2008 ff. and its compliance ensured. Moreover, our products undergo ongoing controls in all phases of the production process.



We actively engage in serving the industries through our collaboration with numerous advisory boards and committees, and thus, help define the quality standards of the future.



## **Understanding customer applications**

## Our products and services

- Advice on plastic selection
- Review of constructions for functionality Technical product design on the most
  - modern CAD systems Precisely fitting, bespoke parts

#### The specialist for your industry

Every industry has different requirements for materials and products. For this reason, we analyze in-depth the specific needs of our customers in the various industries.

Our goal is to develop products that are a perfect fit for the respective intended applications and to introduce new paths for achieving this.

In the following pages we present you with several practical examples for select industries.

## **Construction support**

Upon request, we also assist you with the configuration and design of your plastic components. We know what different plastics can do and which types of processing are practicable from a technological perspective. As such, we provide you with support from the selection of materials, to the design on the most advanced CAD systems to the precise machining and customisation of a part that will function optimally for your application.

Our experts are here to assist you with all aspects of your project. We would be delighted to visit you and examine in detail your challenging task on site.

## Advantages for you

- Cost savings in production and assembly
- Reduced material and parts costs
- Additional construction resources
- Optimum functionality



## **Engineering and plant construction**

# Röchling supplies materials with special properties for use in engineering and plants

- High impact strength
  Outstanding sliding characteristics
  Resistant to high temperatures
- Complex geometries









# Competence in industry **Beverage and packaging industry** Advantages of LubX® Energy-savingCoefficient of sliding friction can be reduced by up to 75 % Suitable for contact with foodstuffs. Noise-reducing HLING New material LubX® saves energy

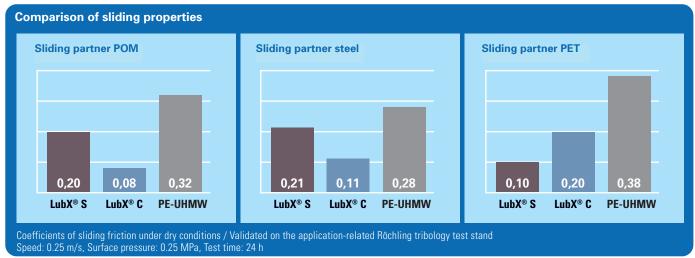
In the face of long-term increasing energy prices, the reduction of energy costs in production, storage and logistics processes plays an increasingly important role. The use of parts with optimised sliding friction in a conveying process can reduce the required conveying strength – and thus, the amount of energy used – to a minimum. In this way, the performance and efficiency of the plant can be significantly improved.

With LubX®C and LubX®S, Röchling has developed two new, PE-based highperformance materials, with outstanding dry running capacities, especially for use in conveying and automation technology. The slide friction coefficient can be reduced by as much as 75 percent.

When compared to conventional sliding materials, conveying systems equipped with LubX® required significantly less energy, the process stability was increased and the noise level was considerably reduced.



Conveying system with chain slide rail made of LubX® C



## **Competence in industry Paper industry**

20 Patents confirm our competency!



# Wear parts from Röchling stand for

- Extension of service life of a least one
- Customer-specific solutions through well-founded technical advice Few adjustments e.g. exchange of
- Current plant preserved e.g. no conversion of the paper machine



Rubber-graphite sealing strip

#### Worldwide leading partner for wear parts

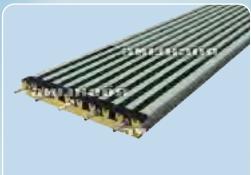
The number one manufacturer of superior plastic wear solutions for the paper industry, we absolutely know the needs of our customers. We offer a complete range of high quality wear parts (a total of 100 different products depending upon customer requirements).

We intend to continually further develop the products with the goal of reducing the friction and wear on the product so that the service life of the product itself as well as that of the friction partners (e.g. screens/filters, felt) will be increased. This is achieved through continual improvement processes in product development and ongoing quality improvement.

The right selection of wear partners and materials can effect a positive change in the energy balance, without changes to the geometric shape and without technical conversions.



Sealing elements in the dryer section



Ceramic dewatering elements

## Food technology

# Röchling offers the food industry

- A broad spectrum of plastics in compliance, with the EU regulations 1935/2004/EC, 10/2011/EU, 2023/2006/EC

   Ne positive influence on the health of the positive influence.
- No negative influence on the health of the consumers and composition, taste, smell and appearance of the foodstuff



#### For direct contact with foodstuffs

Röchling has several plastics designed especially for use in the food industry, which are suitable for direct contact with foodstuffs. These can be used in machines for the industrial processing of foodstuffs as well as cutting surfaces and boards.

We ensure that our plastic products, which are intended for direct contact with foodstuffs, fulfil the requirements of the framework regulations 1935/2004/EC, 10/2011/EU as well as of 2023/2006/EC. Suitability for foodstuffs is verified via migration tests in accordance with regulation 10/2011/EU. The tests were conducted on our products with all necessary stimulants under the strictest test conditions regarding temperature and test length.

This means you can be confident that the tested plastics are considered suitable for contact with all kinds of food as stated in our declarations of compliance.

It goes without saying that our manufacturing processes are in line with "Good Manufacturing Practice" (2023/2006/EC).





## **Competence in industry** Logistics

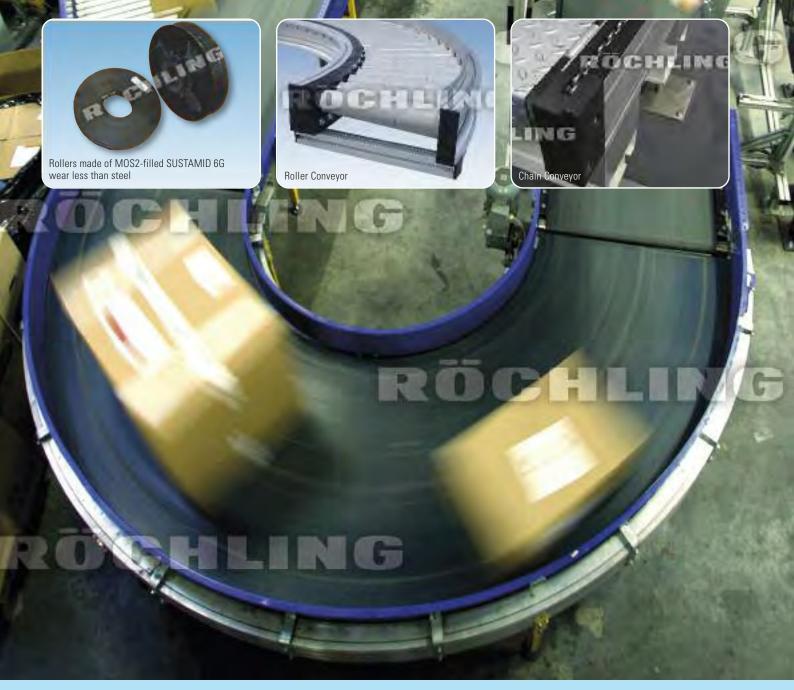
# Plastics properties for Efficient material flow

- Minimal sliding friction
  High degree of abrasion resistance
  Impact strength
  Antistatic properties

## For a smooth process

The intra-company transport of goods and merchandise must be quick, reliable and economical. Plastics from Röchling come as CNC machined components or milled and extruded profiles for use in e.g. conveyor and storage systems, chain or roller conveyors, pallet magazines or high bay shelving elements.

The special characteristics of plastics such as low sliding friction, high abrasion resistance, impact strength or even antistatic characteristics guarantee a reliable material flow and economical transport processes.









## Precision to the highest degree

Röchling is a strong partner of medical technology and knows best the requirements of this industry. Numerous high-tech processing machines gaurantee the narrowest tolerances and perfect surfaces.

Along with standard materials for medical technology, we use the Röchling Medical Grade materials, which fulfil the requirements of the ISO 10993 and of the USP Class VI for biocompatibility and which can be cleaned with common sterilisation and disinfection processes.

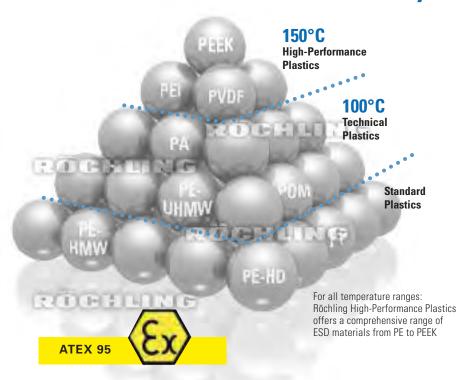
In addition, we have a comprehensive management system for the design and manufacture of medical devices in accordance with ISO 13485:2012.

We would be delighted to advise you about your parts development and the selection of the right materials. Just ask us. Our service package accelerates your development process, simplifies the approval of the medical devices and thus, reduces your costs.





## **Electrical and electronics industry**



Röchling provides plastics that meet the prerequisites for compliance with the explosion protection directive 94/9/EC ("ATEX 95")





## **Comprehensive Product Range**

Uncontrolled discharges can cause costly damages, particularly in microelectronics and potentially explosive atmospheres, which is why the electrostatic discharges must be prevented.

Röchling offers a large selection of ESD plastics for industries that have requirements on the electrical conductivity of plastics. They have defined electrical properties – from antistatic to conductive.

### **Soldering masks**

Röchling counts among the market leaders worldwide when it comes to the Durostone® PCB solder pallet materials and precise machining. For soldering of electronic parts the solder pallets are precisely adjusted to the layout of the PC boards. The soldering masks must remain dimensionally stable at high temperatures and be able to withstand thousands of soldering cycles.





## In use all around the world!

Contact with fresh water and salt water requires materials with extreme: corrosion resistance, UV stability, impact and wear resistance as well as slide characteristics. Our large machined parts, up to six metres, are in use all around the world in the construction of harbour plants and lock gate systems: for instance, in the expansion of the Panama Canal, the new construction of the Kaiserschleuse in Bremerhaven or the Ems barrier at Gandersum.

## Fender systems

Mounted to fender systems, plastics serve as a sliding coat for ship hulls and protect quay bulkheads and ships during mooring, harbour manouevering and during idle periods.

#### Slide rails

Thanks to outstanding wear resistance the plastic slide rails are able to withstand long-term the strain of the steel doors in harbour locks, which often weigh several tonnes.





Fender on a quay wall

## **Lining technology**

## **Economical advantages of Matrox** over steel

- Reduced costs: approximately 60 percent cheaper than structural steel

  • Reduced weight: for a 200 m<sup>2</sup> silo
- Matrox provides a weight saving
- Longer service life: in sand-slurry wear tests Matrox achieved a value 46 % better than steel with an index

#### **Matrox** improves productivity

Everywhere, where bulk materials are transported, stored or further processed, wear and caking cause standstills in the work process. The flowability of the bulk materials is thus, of great importance for a smooth running procedure. Conventional steel surfaces become raw or start to corrode, so that the bulk goods begin to stick. This has a negative impact on productivity and process reliability.

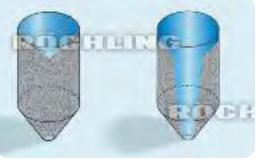
With the Matrox family, Röchling combined the best surface friction with the highest abrasion resistance especially for use in lining technology. This improves the mass flow of bulk goods and prevents abrasion during the roughest conditions.

The products from Matrox are used as linings in a variety of industries that work with bulk goods: for example in mining, the transport industry, with storage and transshipment as well as the processing of bulk materials. We will recommend the right material from the Matrox family for your individual needs. Hereby, the durability and economic efficiency of the lining are paramount.









Silos without Matrox lining: bridge formation (left) and core flow (right) lead to production downtimes

## **Competence in industry Agricultural technology**

## Advantages of plastics in agricultural technology

- High wear resistance comparable to that
- Significant weight savings
- Facilitates pulling
- Fuel savings
- No adherence of soil No splitting or breaking

#### **Pioneer in Plastics Wear Parts**

Agricultural technology was dominated by metal for millenia. Unique manufacturing processes and the right choice of material have made us the leading supplier of plastic parts. Many well-known agricultural machine manufacturers rely on the competence of Röchling.

The use of technologically high-tech plastics in agricultural technology enables sustainability in soil cultivation through less soil compaction, fuel economy and improved efficiency.

The independent Austrian Federal Institute for Agricultural Engineering (BLT) in Wieselburg certifies to excellent test results for plough mould boards made of Robalon® in comparison to steel:

- Up to 13 % less tractive force
- Up to 14 % fuel savings









## **Special vehicle construction**

## Bespoke parts for special requirements

Röchling is your reliable partner when it comes to special vehicle construction. Our materials fulfil the custom requirements on parts for piste equipment, cranes or amphibious vehicles.

## Piste equipment

Extreme temperatures and heavy loads require dependable materials, especially in the alpine business. Drive sprockets made of Robalon® in piste equipment transfer the engine power reliably to the snow, even on the steepest ski slope.

#### **Cranes**

In telescopic cranes slide elements made of SUSTAMID G in various sizes and geometries enable the telescoping of the boom and take up the high compressive forces with heavy loads.

## Materials from Röchling meet special characteristics for use in special vehicle construction

- Outstanding sliding characteristics High impact strength
- High abrasion resistance
- Resistance to lubricants







## **Sports and leisure industry**

## Applications in the sports and leisure industry

- Play and leisure equipment
- Nursery facilities
- Wellness area and swimming pool facilities Signs and educational games



#### Precisely tailored solutions for numerous applications

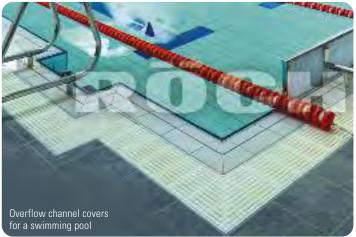
Röchling is your competent partner for numerous applications in the sports and leisure industry. With our extensive experience we offer ideal solutions made of plastic for versatile ideas.

Röchling won't lead ice skating lovers onto thin ice: With special plastic panels, people are able to skate on a plastic ice rink that requires no cooling even in the summer. The high energy expenditure normally required in ice rinks for ice making and cooling are not necessary here.

We stand for made-to-measure solutions: our products are tailored to the particular requirements of each application and offer a long service life and bespoke quality.

We would be delighted to advise you regarding the development and implementation of your idea. Just ask us.







## **Renewable energies**

## Special properties of plastics when using renewable energies

- Outstanding slide characteristics High degree of chemical resistance
- Excellent wear resistance



### **Broad Product Range for Renewable Energies**

A broad product range of our high-performance plastics are in use in the generation of wind and solar energy as well as in biogas plants. Our many years of experience as a supplier in traditional areas of energy production and distribution, for instance the generator, transformer and switchgear construction, is the basis for becoming the design partner and supplier for promising future forms of energy production.

### **Solar plants**

Machined components from Röchling are slide bearings in the tracking of solar plants and ensure a precise adjustment of the solar cells to the altitude of the sun. Our products for solar plants are distinguished by a high degree of pressure resistance, UV resistance and a long service life.

#### Wind power

In wind power stations machined parts made of Durostone® fibre-reinforced plastics as well as of thermoplastics are taking over many mechanical, insulating or slide tasks and are replacing traditional materials such as steel or aluminium. Our product range for on-shore and offshore wind power stations includes bearings, shims, sealing rings or bearing housings for large ball bearings.





## **Legal information**

#### **General information**

All information contained in this delivery programme has been researched to the best of our ability. Despite our best efforts, this does not exclude the possibility of errors. For this reason, the information contained in this supply range is unconditional and carries no guarantees of any kind. Therefore, we assume absolutely no liability for any damages resulting from this information, nor any other form of liability, which in any way results from the information contained herein. We assume no liability for the completeness of the included products and information, processes, properties, etc.. The specified values regarding weight is ascertained from many individual measurements as average values, which have been calculated using the thickness and the average mean of the tolerance measurements. This work is protected by copyright.

Röchling High-Performance Plastics reserves all rights, including those for the translation, reprints and the reproduction and/or excerpting herefrom. No part of this work is permitted to be copied, processed or distributed, regardless of intended purpose or medium, without the express written consent of Röchling High-Performance Plastics.

Upon publication of this document all previous editions shall become void.

© 2014 Röchling High-Performance Plastics Gruppe

#### Applications of materials from Röchling High-Performance Plastics for implants

The materials described in this supply range are not suitable for use as medical implants. Furthermore, these materials should not be used in medical-technical products, which would require long-term direct contact between the material and the patient.

## Sterilisation and multiple applications with medical devices

For classification of the sterilisation resistance of our materials various criteria such as alteration of the mechanical properties, changes in weight or loss of transparency (amorphous materials) were used.

For this reason, this evaluation constitutes a recommendation and makes no concrete commitments as to suitability of any material for a specific preparation process. In the event that the medical device is used multiple times, it is the responsibility of the product manufacturer to determine the suitability and the number of possible preparatory cycles permitted.





### **EUROPE**

#### **GERMANY**

### Röchling Engineering Plastics SE & Co. KG

Röchlingstr. 1, 49733 Haren info@roechling-plastics.com www.roechling.com Tel. +49 5934 701-0

## Röchling Lützen SE & Co. KG

Planckstr. 3, 06686 Lützen kontakt@roechling-luetzen.de www.roechling-luetzen.de Tel. +49 34444 308-200

## Röchling Hydroma GmbH

Lemberger Str. 101, 66957 Ruppertsweiler info@roechling-hydroma.com www.roechling-hydroma.com Tel. +49 6395 9222-0

#### Röchling Roding GmbH

Bayerschmidtweg 1, 93426 Roding info@bayerschmidt.de www.bayerschmidt.de Tel. +49 9461 4026-0

### Röchling Sustaplast SE & Co. KG

Lahnstr. 22, 56412 Nentershausen formtechnik@sustaplast.de www.roechling.com Tel. +49 6485 889-0

#### **DENMARK**

#### **Röchling Meta-Plast A/S**

Tøjstrupvej 31, 8961 Allingåbro sales@meta-plast.dk www.meta-plast.dk Tel. +45 8648 1711

#### **FRANCE**

### Röchling Engineering Plastiques S.A.S.

2, Rue de Barcelone 69153 Décines Cedex/France roechling.decines@roechling-engineering.fr www.roechling.com Tel. +33 472 148960

#### **GREAT BRITAIN**

#### Röchling Engineering Plastics (UK) Ltd.

Waterwells Drive, Quedgeley, Gloucester GL2 2AA sales@roechling-plastics.co.uk www.roechling-plastics.co.uk Tel. +44 1452 72-7900

#### Röchling Machined Plastics Italia s.r.l

Via Morena 66, 28024 Gozzano info@roechling.it Tel. +39 0322 95421

#### **LATVIA**

## Meta-Plast S/A

Kapsedes Str. 2, LV-3402 Liepãja letland@meta-plast.dk www.meta-plast.dk Tel. +371 6348 8539

#### Röchling Leripa Papertech GmbH & Co.KG

Röchlingstr. 1, 4151 Oepping robaproducts@leripa.com www.leripa.com Tel. +43 7289 4611

#### Röchling Plásticos Técnos S.A.U.

Ctra. Villena, s/n. - Apartado 34, 46880 Bocairent comercial@roechling-plastics.es www.roechling-plastics.es Tel. +34 962 350165

## CZECH REPUBLIC Röchling Machined Plastics s.r.o

Průmyslová 705 39111 Planá nad Lužnicí rmp@roechling-plastics.cz www.roechling-plastics.cz Tel. +420 381 211-875

### **ASIA**

## CHINA Roechling Machined Components (Kunshan)

No. 238 Chenfeng Road Kunshan City Jiangsu Province 215300 info@roechling-kunshan.com www.roechling-rmc.cn Tel. +86 512 55132188

Röchling Engineering Plastics (India)
Pvt. Ltd.
201, 'A' Wing, Leo Building
24th Road, Khar West
400 052 Mumbai / India info@roechling-india.com www.roechling-india.com Tel. +91 22 4217-8787

## **USA**

## Röchling Leripa Papertech LLC

710 Ford Street Kimberly, Wisconsin 54136 leripa.papertech@leripa.com www.leripa.com Tel. +1 920 954 9154

### **Röchling Machined Plastics**

161 Westec Drive 15666 Mount Pleasant PA /USA rmp@roechling.biz www.roechling-plastics.us Tel. +1 724 696-5200

