

Machined Components made of engineering plastics



Thermoplastics

Röchling Competence in Plastics

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The Röchling Group is a global plastics group. With some 7,300 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 1.2 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: 1.2 billion Euro

Employees: 7,300

Business 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.

Business Division Automobile Plastics

- **8** 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 mm Width: 1 – 2,500 mm Thickness: 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 mm¹⁾
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



Welding

- Extrusion welding
- Friction welding



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

- Low weight No corrosion
- Good sliding characteristics (self-lubricating) Thermically and electrically insulating.



Palystone*

Robalon

Competence in materials An unparalleled range

Röchling offers you

• Extraordinary selection of semi-finished products

a unique range!

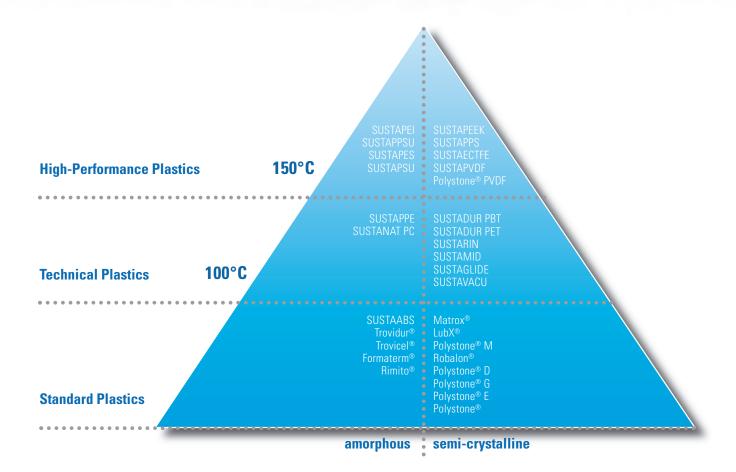
- Experienced plastics and industry experts
- Own materials laboratories and training centres

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 Conveying system with chain slide rail made of LubX® C

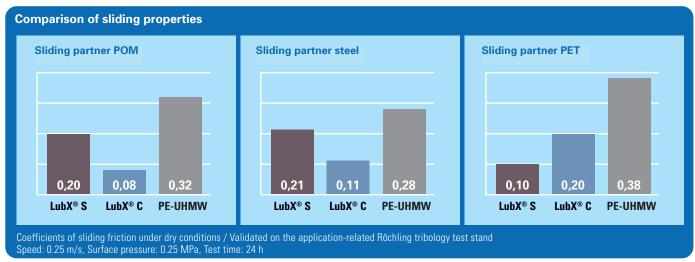
New material LubX® saves energy

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.





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

Food Grade

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

 Negative influence of the beauty of the
- No negative influence on the health of the consumers and composition, taste, smell and appearance of the foodstuff







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.

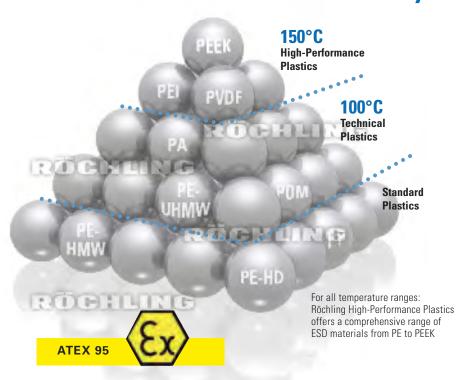
In addition, we have a comprehensive management system for the design and manufacture of medical devices in accordance with ISO 13485:2012.

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")





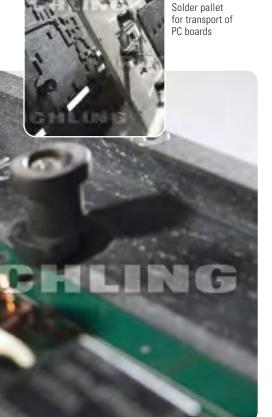
Comprehensive Product Range

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.





ender 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 m² 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

Agricultural technology

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









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



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.







Competence in industry 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.

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

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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.





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