

Prostheses



igus® solutions for
prostheses and orthoses

plastics for longer life® ... igus

Orthoses

... www.igus.eu/prostheses ...

Reduce cost...

Wear-resistant and lubrication-free plastic bearing solutions for prostheses and orthoses 95% less wear than PA66 + PTFE.

Modern prostheses and orthoses, which perform movements and are modelled on nature as closely as possible, are subjected to large forces and continuous wear at the bearing points. iglidur® bearing technology from igus® helps you increase the service life of your products and simultaneously reduce costs.

Some advantages of iglidur® for prostheses and orthoses

Able to withstand very high levels of stress and impacts, dirt-resistant, very comfortable for users, discreet size for inconspicuous appearance, suitability for daily use.

- Lubrication and maintenance-free
- Lowest wear
- Robust, even in the case of thin walls
- Resistant to impacts and edge loads
- Silent
- Resistant to dirt
- Clean
- Low coefficients of friction
- No stick-slip

30 online tools also enable you to reduce process costs. Function and service life can be calculated and our product finder quickly guides you to the igus® product you need. Also visit our industry website!

 www.igus.eu/prostheses

I look forward to speaking to you.



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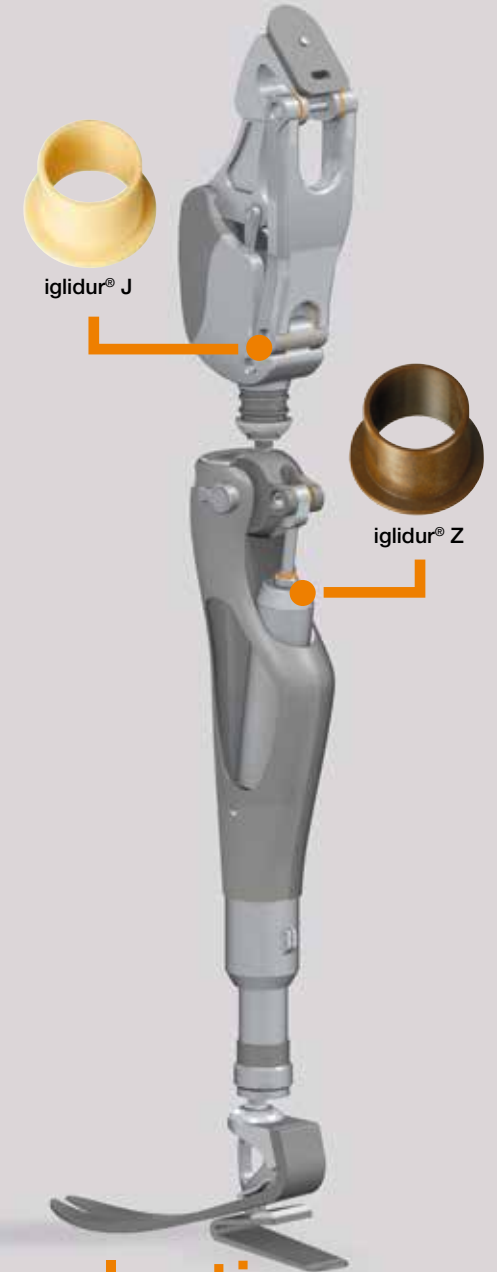
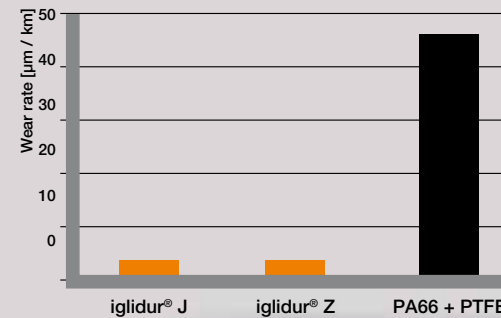
... Improve technology ...



95% less wear with iglidur® bearings than PA66 + PTFE.

The forces occurring in the prosthesis during oscillating movement have to be reliably transmitted without any noticeable increase in play. On the two main axes, bearings made of iglidur® Z were used. The maintenance-free bearings made of iglidur® Z can absorb extreme levels of stress, while having a high mechanical dampening effect at the same time. This is a definite advantage when it comes to edge loads and impacts. One of the prerequisites for the use of iglidur® bearings was the very high wear-resistance of the bearings.

Result of wear comparison test



... with motion plastics® from igus® ...

Plain bearing technology ...

Lubrication-free ... hygienic ... maintenance-free ...

Hand prosthesis



igidur® J

- Low coefficients of friction running dry
- Vibration-dampening, resistant to chemicals
- Best performance with soft shaft materials
- Low humidity absorption

www.igus.eu/J

Hip prosthesis



igidur® Z

- Excellent wear resistance especially with high loads
- High thermal resistance
- Also for high surface speeds
- Resistant to edge loads

www.igus.eu/Z

Knee prosthesis



igidur® J piston rings

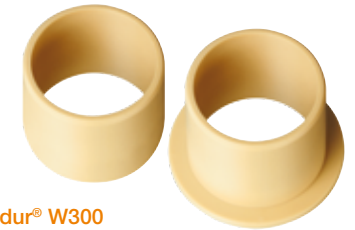
- Easy installation
- Vibration-dampening, higher load capacity
- More wear-resistant than PTFE-strip
- Different materials, e.g. iglidur® J, J350 ...

www.igus.eu/pistonring

... from igus® ... reliably in use

space-saving ... FDA/EU-compliant ... easy to clean

Knee joint prosthesis

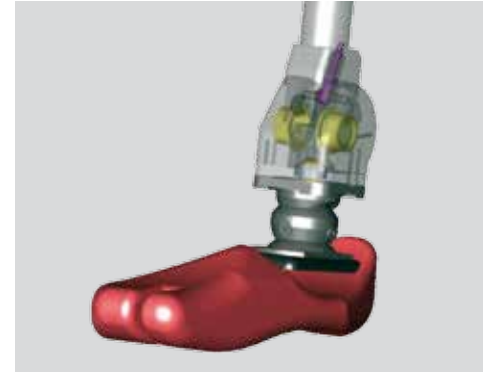


igidur® W300

- For a long service life during continuous operation
- Low coefficient of friction, extremely high abrasion resistance
- Suitable for stainless steel shafts
- Dirt-resistant

www.igus.eu/W300

Artificial joint

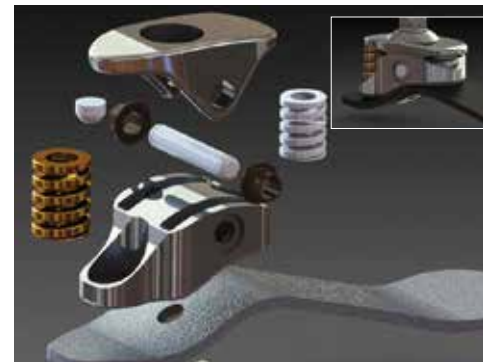


igidur® J and igubal® spherical bearings

- Low coefficients of friction running dry
- Vibration dampening and chemical resistance
- Different types of designs, e.g. spherical, double, joint, flanged and pillow block bearings

www.igus.eu/J www.igus.eu/igubal

Foot prosthesis



igidur® J and iglidur® Q

- Low friction when running dry
- Vibration dampening and chemical resistance
- High abrasion resistance
- Suitable for extreme pv values

www.igus.eu/J www.igus.eu/Q

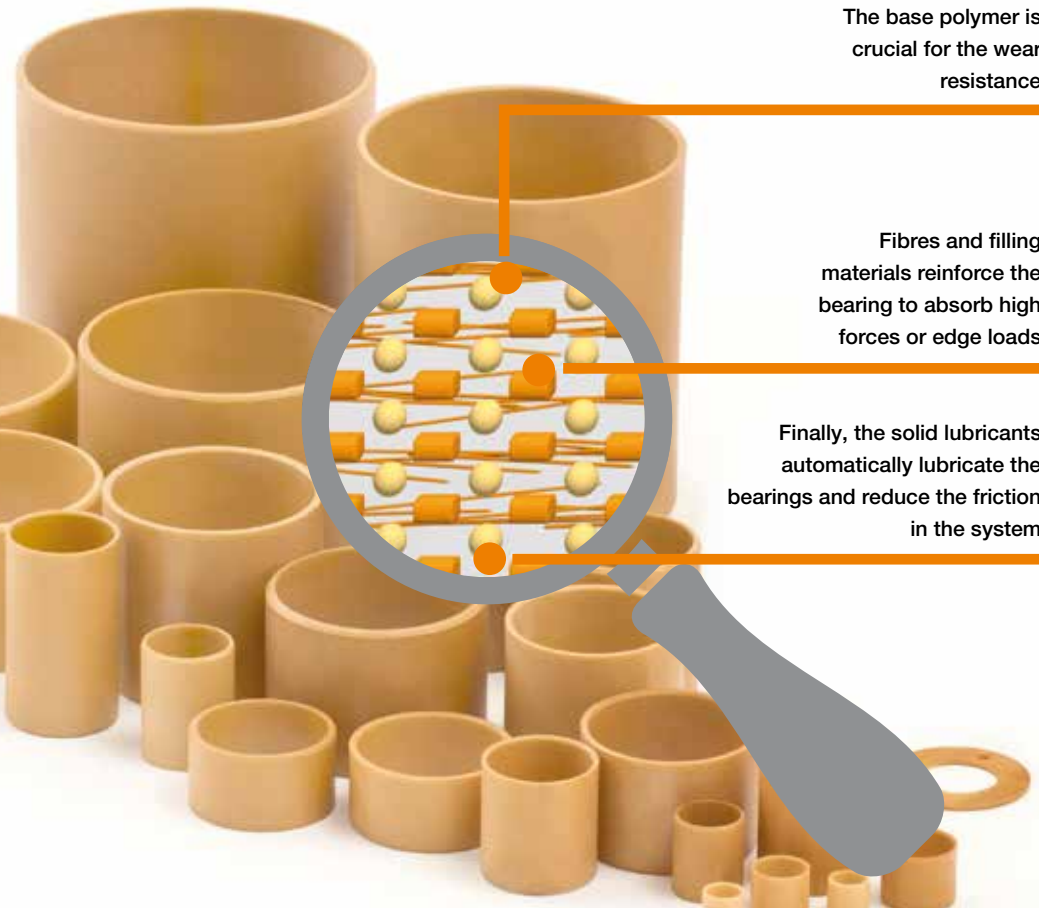
High-performance plastic ...

Lubrication- and maintenance-free polymer plain bearings ...

No lubrication or maintenance required, while cutting costs and increasing service life, everything from stock and delivered promptly – that is the central idea of all igus® products. iglidur® plastics have been extensively tested with respect to wear and friction values including other relevant material properties. iglidur® polymer plain bearings from igus® signifies the step from the plastic bearing to the tested and predictable machine component.

- Lubrication-free and resistant to dirt
- Lightweight and maintenance-free
- quiet, vibration-free operation
- High static loads
- No corrosion, high abrasion resistance
- Vibration dampening
- Metric and imperial dimensions
- Special dimension and designs

The structure of igus® plastic bearings:



The base polymer is crucial for the wear resistance

Fibres and filling materials reinforce the bearing to absorb high forces or edge loads

Finally, the solid lubricants automatically lubricate the bearings and reduce the friction in the system

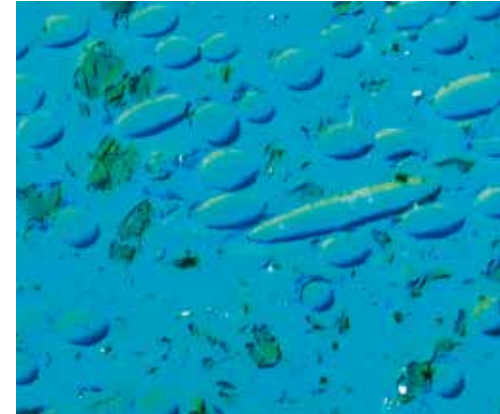
... iglidur®

... no lubrication, no maintenance

Integrated lubrication.

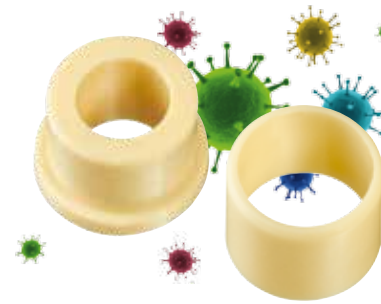
The solid lubricants are, as microscopic particles, embedded in millions of tiny chambers of the material. From these chambers, the plain bearings release tiny amounts of solid lubricants during movement. This is adequate to sufficiently lubricate the immediate surrounding area.

The lubricants help to reduce the iglidur® bearing's coefficient of friction. They are not indispensable for the bearing's function, but have a supporting effect. Since they are embedded in the tiny chambers, they cannot be forced out. They are always there as soon as the bearing or the shaft is set in motion.



Base polymer with fibres and solid lubricants, magnified 200 times, dyed

One choice out of over 50 iglidur® materials:



igidur® AB

First antibacterial iglidur® plain bearing

- Reduces the bacterial load at bearings points that are difficult to gain access to
- Lubrication and maintenance-free
- Continuous use up to +70°C
- Good media-resistance
- Universal installation

www.igus.eu/igidurAB



igidur® Q290

Durable even on soft shafts and with high loads

- Resistant to edge loads
- Continuous use up to +140°C
- Good cost/performance ratio
- Lubrication and maintenance-free
- Standard range from stock

www.igus.eu/igidurQ290

Find out more about iglidur® at www.igus.eu/igidur

More igus® products ...

... from the igus® motion plastics® product range ...



igubal® spherical bearings

Dirt-insensitive spherical bearings for different designs

igubal® pillow block bearings are self-aligning bearing elements completely made from plastics. The split and self-aligning pillow block bearings are easy to assemble, adjust to all angular variances, and in many cases were already able to replace special housings.

- Different types of designs, e.g. spherical, double, joint, flanged and pillow block bearings
- Different spherical ball materials
- Extremely cost-effective
- Service life can be calculated online

www.igus.eu/igubal



Special parts made of tribo-plastics

Tailored to your application

speedimold is simple! Special solutions just as you need it, virtually everything is possible. iglidur® offers you self-lubricating and maintenance-free plain bearing solutions, all according to your wishes, "off the shelf" or "custom made", especially for your applications. Choose from 8 iglidur® tribo-plastic materials iglidur® G, iglidur® J, iglidur® W300, iglidur® X, iglidur® M250, iglidur® P, iglidur® A180, iglidur® H2 and igumid G. Depending on the complexity of parts, you will get injection-moulded parts in 1 to 10 days with no minimum order value.

www.igus.eu/speedimold

... and solutions ...

... as you need it



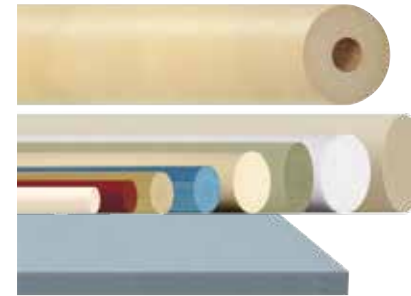
drylin® N low-profile linear guides

Linear guide for solutions with tight spaces

Low profiles in various widths. Like all drylin® products the carriages run without grease or oil in an anodised aluminium profile. The unique design make drylin® N a cost-effective and flexible guide system.

- Small installation height between 6 and 12 mm
- Lightweight
- Numerous carriage options – also with pretension
- Maintenance-free dry running

www.igus.eu/drylinN



igidur® bar stock

Enables efficient manufacture

- iglidur® materials as round bars, tubes and plates
- Currently 25 iglidur® materials to choose from
- Cut to required size without offcut removal
- Machined parts, no minimum order quantity

www.igus.eu/barstock



Tribo-tape

Easy to cut and glue

- Suitable for lining surfaces and shapes where wear is an issue
- Easy to cut and glue
- Less space required
- Optional with or without self-adhesive back

www.igus.eu/tribotape

Explore more products at www.igus.eu

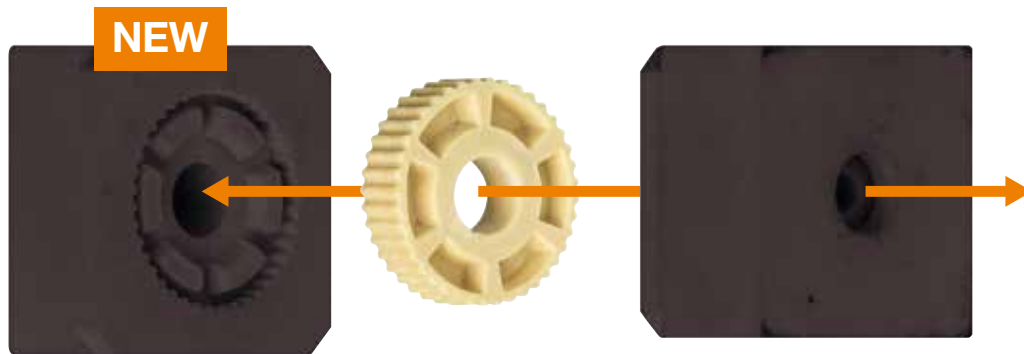
iglidur® Tribo-3D printing ...

3D printing for wear-resistant parts ...



Wear-resistant plastic parts from the 3D printer

iglidur® tribo-filaments are the only 3D printing materials specially developed for moving applications. The printed parts can be used directly in the moving application and convince their users due to the typical Tribo characteristics – they are lubrication-free and extremely wear-resistant. The wear is up to 50 times lower than that of other 3D printing materials.



3D printed injection moulding tools, quick and inexpensive

Due to 3D printing, igus® is able to make customised injection moulds in a short time with up to 80% lower costs. Maintenance-free plastic bearings to your required shape can now be made quickly and cost-effectively.

- A wide array of material types: iglidur® J – extremely wear-resistant,

- iglidur® W300 – withstands high stress,
- iglidur® A180 – FDA-compliant,
- iglidur® UW – for underwater applications and much more
- Cost-efficient and delivered quickly, from batch size 1
- For simple geometries

Find more information at www.igus.eu/tribo-printing

as good as injection-moulded

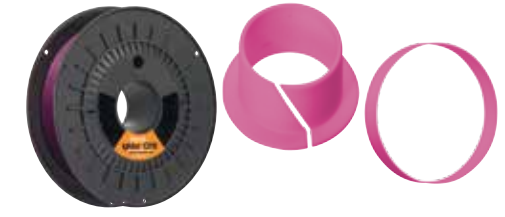
... made of high performance plastics



iglidur® I150

Makes printing even easier

- Very good resistance to wear with a pv value of up to 0.2 Nm/s
- Can be processed even without a heated printing plate
- Recommended printing surface: igus® adhesive film or "BuildTak"



iglidur® C210

Highly abrasion-resistant for printing

- Wear resistant
- Chemical-resistant
- Diameters: 1.75 mm and 3 mm
- Can be processed by commercially available 3D printers



iglidur® I180-BL

Excellent abrasion resistance, lubrication-free

- Wear resistant
- Can be processed by commercially available 3D printers
- Diameters: 1.75 mm and 3 mm
- Now also in black



iglidur® I3

Specifically developed for laser sintering

- At least 3 times more wear-resistant
- Detail accuracy with exact surfaces
- Processing similar to commercially available SLS materials

Just shop for individual 3D parts.

Wearing parts from the 3D printing service: extremely fast and online.

We print your individual component made of lubrication-free and abrasion-resistant iglidur® plastics; easy to order and quickly installed: everything from the prototype to the complex special part.



Explore the printing service at www.igus.eu/3dprintservice

Joints building blocks – light, compact, free



Tested service life!

Tested in the 2,750 m² chain and cable laboratory in Cologne. 4,100 tests, 7,512 results in the electronic database, 10 billion e-chain® cycles per year.



Better products for less – a key element is the industry's largest test lab. 2,750 m² lab, more than 15,000 tests and 2 billion test strokes per year

Low-cost easy assembly thanks to modular robotics system.

The robolink® range includes various joints, motors and connecting components. All components can be ordered separately. It is therefore possible to combine the robolink® joints and motors with your own connecting elements, for example. igus® provides CAD data for all components.

- Joints made of plastic, can be configured and extended to suit almost any application

- Articulated arms in various lengths, sizes and designs Route for additional control cables
- igus® drive unit – connection to drive and control units
- Tools (functional units) such as gripper, hooks, vacuum cups, paddles, camera, and so on can be adapted as required



Tribological testing in the plain bearing lab



Pivoted wear test to determine the wear behaviour of iglidur®



After press fitting, measurement of the inner diameter

igus® services ...



Visit our industry web pages for more information, products, application examples and useful online-tools.

www.igus.eu/prostheses



Quickly find and configure products and calculate service life – all online.

Using our online product finders, you can find the right igus® product and get a service life prediction.

www.igus.eu/online

... quick and reliable



The igus® delivery service

Over 97% availability of all catalogue parts – no need for you to stock

- Over 100,000 products from stock
- No minimum order
- No surcharges for small quantities
- No costs for cutting cables
- No packaging costs

www.igus.eu/24



Modern injection moulding technology

The igus® GmbH quality policy is based on the objective of identifying and meeting customer needs, and of always being a professional partner and reliable supplier. igus® has always been committed to producing products of the best possible quality and consistently developing innovative solutions.



The igus® lab

The industry's largest test lab (2,750m²) conducts more than two billion test cycles per year on a total of 107 test rigs.

- Extensive test databases
- Customised tests upon request

www.igus.eu/test

For any task – in any batch size

Different industries need different solutions. Whether in mechanical engineering, automotive-manufacturing or in the robot industry – igus® offers customised support for specialised applications. igus® already has many years of experience and specialised resources in many industries.

www.igus.eu/industry

igus® motion plastics®

One vision has been driving us for 50 years – motion plastics®: moving parts made of plastic that cost less and last longer. Our core technology consists of tribo-polymers – high-performance plastics, which we have optimised for friction and wear. The technology has made us into a world-wide leader for developing and manufacturing energy supply systems and plain bearings.



/9001:2008 /16949:2009

igus® is certified in accordance with ISO 9001:2008 and ISO/TS 16949:2009 in the field of energy supply systems, cables and harnessing, as well as plastic plain bearings.

/newsletter

Free of charge! Discover more about the latest trends and innovations from the world of igus® motion plastics®. Many exciting applications and videos for your industry.

Register here: www.igus.eu/newsletter

/contact

Your contact person for your industry and your country: www.igus.eu/contact

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