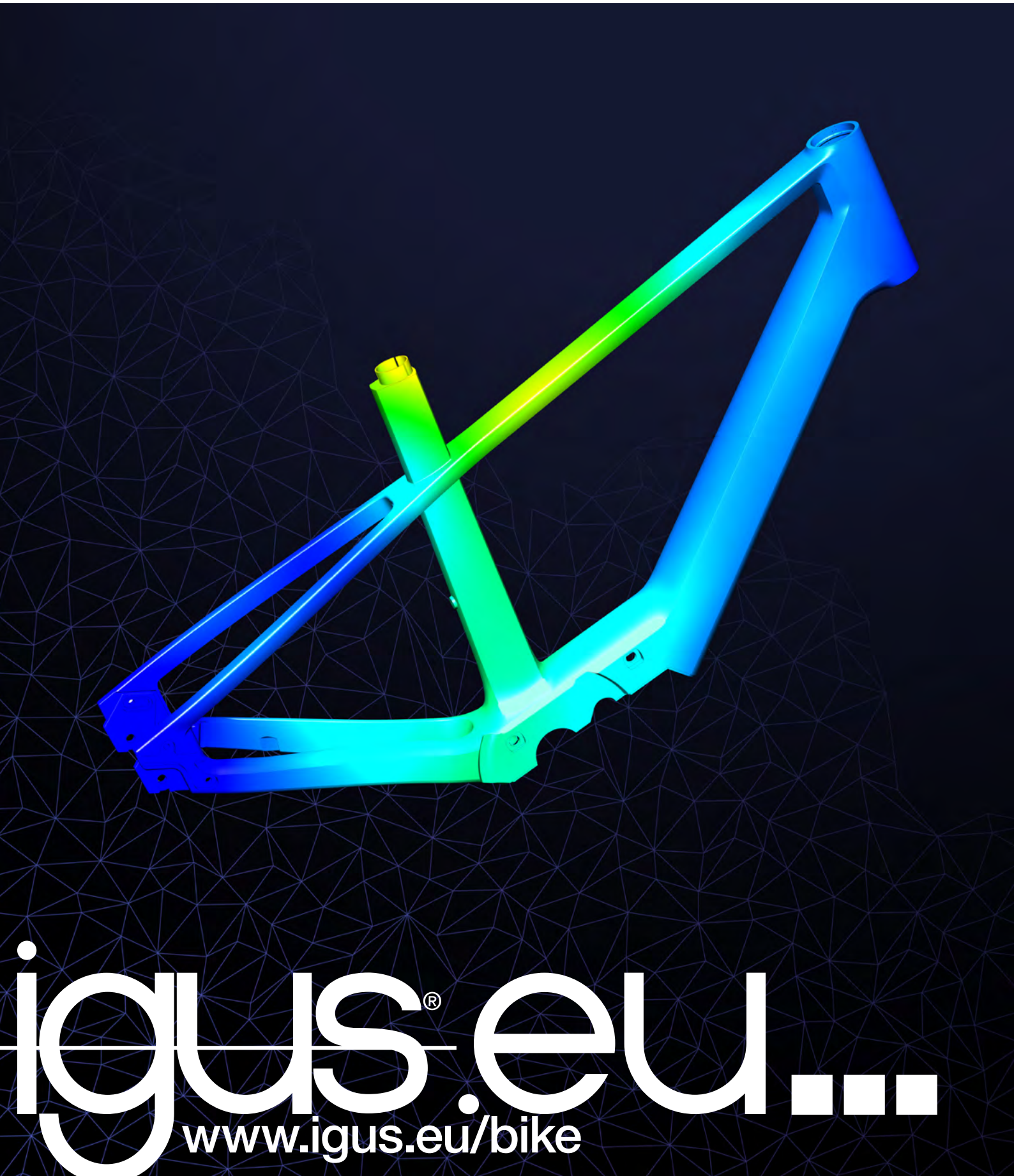
plastics for bikes:

sustainable, lubrication-free, rust-proof, recyclable. Technology: made in Germany



igus®.eu...

www.igus.eu/bike

Editorial

igus® has been manufacturing products such as plain bearings, rod ends, gears and guide rails for the bicycle industry for over thirty years - now the next step follows. Because igus® is becoming a manufacturer of bicycle components! In addition to decades of expertise in plastics processing, the development experience of the plastic bicycle igus:bike presented in 2022 will also be incorporated into the new products. The bicycle components are of course made of high-performance plastic, as is typical for igus®.

And with our repurposed plastic components, we want to be more sustainable than our competitors with aluminium or carbon. How does that work? The explanation is quite simple: plastic bicycle components require significantly less energy during production compared to their counterparts made from conventional materials, and the CO_2 footprint is smaller too. Even at the end of the product life cycle, recycling is much easier than with competing materials.

We currently use two different manufacturing processes. We offer one-piece injection-moulded frames and modular frames. In addition, there are frames that have been made in the rotomoulding process - large and small series production can thus be realised cost-effectively. And everything is "Made in Cologne"! However, we can also manufacture our products in China and the US. This keeps transport routes short, depending on the country of delivery and the CO_2 footprint is further reduced.

Of course, the bike frame isn't all. igus® also develops other components such as wheels, handlebars, cranks etc. And this already introduces our expertise: from the idea to the finished product and recycling, we carry out all steps in-house.

RCYL
You can find all the information from page 44 onwards

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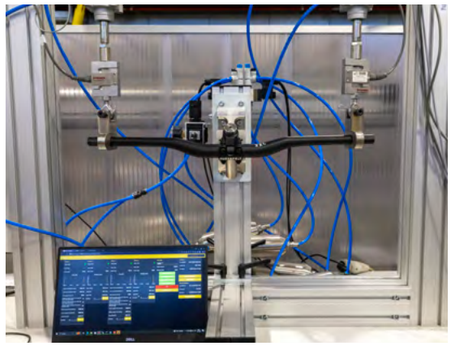


www.igus.eu/bike

iglidur®

What is iglidur®, and what can it do?
Technical polymers created by precisely measured additives consisting of reinforcing components and solid lubricants, tested thousands of times and proven millions - that is iglidur®. The individual components are not applied in layers, but instead blended together homogeneously. For instance, there is no sliding film that can be pushed away under loads, as is the case with traditional "hard shell - soft coating" solutions.

What does iglidur® do in bicycles?

- Weight reduction
- 100 % corrosion-resistant
- Vibration-dampening
- Self-lubricating, no maintenance
- Excellent price/service life ratio for your application
- Customised materials and solutions
- Everything from one source: research and development, the in-house test laboratory, application consulting, production and global logistics
- Local production

Advantages of igus® plastic components:

- CO_2-reduced manufacturing process
- Made from recycled material
- 100 % recyclable
- Local production
- Short supply chains
- Optimised stiffness to weight (STW)
- Corrosion-resistant
- Diverse design options

Revolutionise the bi:cycle

Sustainable igus® bike components made of plastic

igus® focusses on high quality and sustainability during production - but how do sustainability and plastic go together? The explanation is quite simple: plastic bicycle components require significantly less energy during production than their aluminium or carbon counterparts, and the CO_2 footprint is much smaller. Even at the end of the product life cycle, recycling is much easier than with competing materials. In addition, recycled materials are already used in the production of igus® bike components. The declared aim is to manufacture the products entirely from recycled materials and to take them back at the end of the product life cycle. These are then used to manufacture new products, creating a circular economy. Another factor that should not be neglected: thanks to production in Cologne, the usual long transport routes with container ships are no longer necessary.

New technologies

Interview on igus® expertise for bicycles

Which products from igus® can be used in bicycles?
igus® bearings can be used both as standard catalogue parts and in special geometries in many bicycle components. Our plain bearings are most commonly found in dropper posts, pedals, damper eyelet bearings and rear derailleurs, but also in suspension forks, brake levers and rear wheel swing arms.

What advantages do igus® plain bearings offer compared to metal bearings?
The biggest advantage is obvious: corrosion is no longer an issue. In addition, igus® bearings are significantly lighter, more cost-effective and lubrication-free. Another factor is the significantly thicker wear layer compared to PTFE lined bearings with steel backing. The extremely low total moisture absorption of the plain bearings is also worth mentioning. Once our bearings have been installed, you can use the high-pressure cleaner again: no lubricant can be rinsed out and nothing can rust.

Why does igus® now also offer structuralcomponents for the bicycle industry and what are they currently?
We offer the bicycle industry access to a completely new technology: bicycle components made from high-performance plastics. By using plastics, developers can completely rethink design and geometry. Our components are made from 100 % recyclable composites, which have a significantly smaller CO_2 footprint than aluminium thanks to energy-saving production. Our product portfolio currently includes frames, handlebars, cranks, wheels and forks. The use of recycled materials is already possible in some cases. In addition to catalogue products, we also address OEM manufacturers who want to innovatively implement their own ideas and designs with us.

Why should customers choose igus® solutions instead of conventional components?
igus® offers real innovations for bicycle manufacturers. Completely new design possibilities are conceivable that cannot be realised with aluminium. In addition, we can combine different plastics to provide rigidity or flexibility with pinpoint accuracy. This ensures both riding comfort and optimum power transmission. Compared to aluminium, plastic frames have no unsightly weld seams. Thanks to our modular concepts, mould costs are reduced and efficiency is increased.

Customers get everything from a single source at igus®. Be it the development of the desired components, FEM analyses, in-house material development, prototype construction, in-house toolmaking or a complete test laboratory for all relevant components. And high volume production also takes place at igus®.

Are there special challenges in the bicycle industry that igus® components solve better?
Our solutions stand out from competitors' products on several levels. Firstly, we produce locally at our production sites in Germany, the USA, Asia and other igus® locations. The delivery routes are short, transport by sea is eliminated and both time and CO_2 emissions are spared. Thanks to just-in-time production, we are able to deliver quickly and customers' storage capacity can be reduced. Business becomes more predictable and profitable thanks to production to order. In addition, our plastic components can be 100 % recycled at the end of their life cycle.

Jan Philipp Hollmann
Head of the Bicycle Components Business Unit

Injection-moulded bicycle frame

The diversity of motion plastics®

Energy-saving injection-moulding process and made from 100 % recyclable material
With our plastic bicycle frames, we are breaking new ground in sustainable bicycle construction. Before the frame reaches the end of its life and is recycled, it still offers its users many advantages: corrosion-free, very hard-wearing and durable, with excellent stability and rigidity, which ensures precise steering and optimum power transmission. At the same time, it offers a high level of comfort even on longer rides because its dampening material specifications reduce muscle fatigue caused by impact and vibration. Thanks to the injection-moulding process, our frames have no unsightly weld seams and new design concepts are possible.

Solid plastic bike frame

Robust, lightweight, recyclable

Whether a minimalist look or eye-catching colours, the injection moulding process enables creative designs and individual customisation options.

▲ **Tech up**
- New injection moulding technology
- Vibration-dampening
- Corrosion-resistant
- Diverse design options

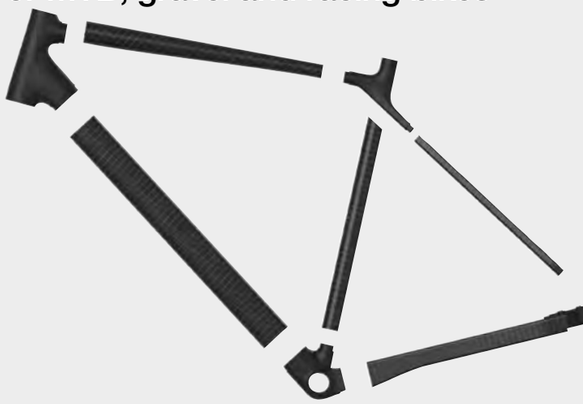
▼ **Cost down**
- Just-in-time production
- Local supply chains

■ **Proof**
- Tested in the laboratory

● **Sustainability**
- Energy-saving manufacturing process
- Recyclable
- Local supply chains

Modular performance bike frame

For MTB, gravel and racing bikes



igus® is an expert in the field of injection-moulding technology for short, long and continuous fibres and combines these with other manufacturing processes such as blow moulding, rotomoulding, extrusion and casting techniques.

▲ **Tech up**
- Economies of scale in toolmaking
- Different materials for a frame
- Optimised stiffness to weight (STW)
- Lightweight construction
- New injection moulding technology
- Vibration-dampening
- Corrosion-resistant
- Diverse design options

▼ **Cost down**
- Reduces maintenance costs
- Local supply chains

■ **Proof**
- Tested in the laboratory

● **Sustainability**
- Energy-saving manufacturing process
- Recyclable
- Local supply chains

Modular injection moulded bicycle frames

For perfect surface quality

The modular design offers several frame sizes and designs from one tool set. Simple design changes, quick response options for interface adaptations and faster implementation.

▲ **Tech up**
- Economies of scale in toolmaking
- Different materials for a frame
- Optimised stiffness to weight (STW)
- New injection moulding technology
- Vibration-dampening
- Corrosion-resistant
- Diverse design options

▼ **Cost down**
- Reduces maintenance costs
- Local supply chains

■ **Proof**
- Tested in the laboratory

● **Sustainability**
- Energy-saving manufacturing process
- Recyclable
- Local supply chains
- Use of recycled material

Rotomoulded bicycle frame

From ocean plastics to motion plastics®

Made from recycled plastic waste
For production, igus® uses specially built machines with lubrication-free and durable motion plastics®. The plastic is moulded using the rotomoulding or rotational-moulding process with low pressure and high temperature, which combines heat and biaxial rotation. The frame is made from soft plastics such as polyethylene (PE). To a large extent, it can also be made from recycled plastic waste such as discarded fishing nets. This is how the mobility of tomorrow can be created from yesterday's marine plastic.

Solid plastic wheels

Durable, sustainable, individual

Our wheels represent a new era of sustainable cycling
Manufactured using an energy-saving injection-moulding process and made from fully recyclable high-performance plastic, they offer environmentally conscious cyclists a new riding experience.

The basis of the RCYL bike. Futuristic frame from sustainable production, as mainly recycled plastic waste is used here. Shaping the mobility of tomorrow from marine plastic.

▲ **Tech up**
- New rotomoulding technology
- Low tooling costs
- Fast implementability
- Vibration-dampening
- Corrosion-resistant
- Diverse design options

▼ **Cost down**
- Reduces maintenance costs
- Local supply chains

■ **Proof**
- Tested in the laboratory

● **Sustainability**
- Use of recycled material
- Shaping the mobility of tomorrow from marine plastic
- Energy-saving manufacturing process
- Recyclable
- Local supply chains

Rotomoulded bicycle frame

Robust, futuristic look and recyclable

Plastic Wheels

Solid plastic wheels

Thanks to the reduced design with just a few strong spokes, they are particularly durable and maintenance-free. The usual hassle of bent and broken spokes is a thing of the past.

▲ **Tech up**
- New injection moulding technology
- High strength
- Corrosion-resistant

▼ **Cost down**
- Reduces maintenance and lubrication costs
- Local supply chains

■ **Proof**
- Tested in the laboratory

● **Sustainability**
- Energy-saving manufacturing process
- Recyclable
- Local supply chains

Wheels - rotomoulding

Made from recycled plastic waste

Futuristic and sustainable, as it uses mainly recycled plastic waste.

▲ **Tech up**
- New rotomoulding technology
- Low tooling costs
- Fast implementability
- High strength
- Corrosion-resistant

▼ **Cost down**
- Reduces maintenance and lubrication costs
- Local supply chains

■ **Proof**
- Tested in the laboratory

● **Sustainability**
- Use of recycled material
- Shaping the mobility of tomorrow from marine plastic
- Energy-saving manufacturing process
- Recyclable
- Local supply chains

Plastic handlebars

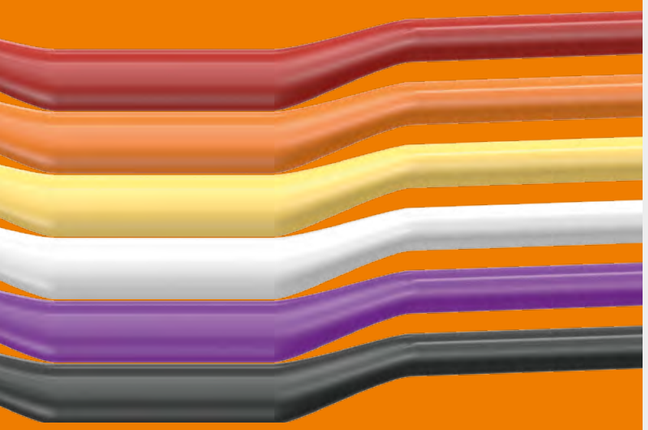
Corrosion-free, robust, recyclable

Our bicycle handle bars made of high-performance plastic are weatherproof, unaffected by cold and heat and remain in top shape even after many rides - corrosion is not an issue here. They are not only extremely robust, but also light and comfortable. The material is vibration-damping and effectively absorbs vibrations, so that hands and arms tire less quickly.

The handle bars are ideal for all those who value sustainability, because they are produced in an energy-saving injection moulding process and are 100 % recyclable. Moreover, even those who like something special will get their money's worth, because we manufacture the handle bars individually according to your wishes in a variety of colours and shapes.

Plastic bicycle handle bars

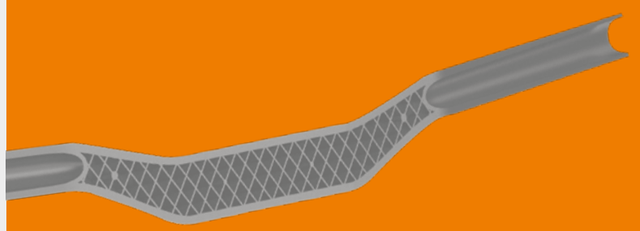
The new alternative



- **Tech up**
  - New injection moulding technology
  - Lightweight
  - Corrosion-resistant
  - Vibration-dampening
  - Various design options, different colours
- **Cost down**
  - Made in Germany
  - Local supply chains
- **Proof**
  - Tested in the laboratory
- **Sustainability**
  - Energy-saving manufacturing process
  - 100% recyclable
  - Local supply chains

igucore performance handlebars

For MTB



Integrated perfomance handlebars

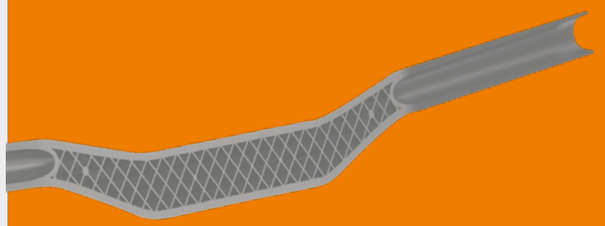
With integrated electronics

One-piece handlebars

For city and trekking

igucore handlebars

For city and trekking



Handlebar-stem combination

Lightweight construction

More information about our handlebars in the video from the igus® test laboratory:

Drive components

Maintenance-free and made from motion plastics®

Simply ride your bike instead of maintaining it
Dirt and grime are particularly hard on a bike's drive components. And it is precisely these that need to run smoothly if you want to enjoy your ride. This is where our motion plastics® play to their strengths: lubrication-free and corrosion-resistant. This reduces maintenance to an absolute minimum.

Pulleys

Wear-resistant polymer gears

The pulleys made of high-performance polymers ensure a lubrication-free and maintenance-free use. Thanks to their special combination of base polymers, fibres, extenders and solid lubricants, they are extremely wear-resistant.

▲ **Tech up**
- Resistant to dirt
- Corrosion-resistant
- Lightweight

▼ **Cost down**
- Maintenance-free
- Lubrication-free

■ **Proof**
- Tested in the laboratory

● **Sustainability**
- Energy-saving manufacturing process
- 100 % recyclable
- Local supply chains

Freewheel made of solid plastic

Lubrication-free for zero maintenance

This freewheel is an innovation: extremely stable and fully manoeuvrable at the same time. As we also rely on integrated solid lubricants for the freewheel, the maintenance effort is greatly reduced compared to a conventional bike.

▲ **Tech up**
- Dirt resistant
- Corrosion-resistant
- Lightweight
- Special, high-quality freewheeling sound

▼ **Cost down**
- Maintenance-free
- Lubrication-free

■ **Proof**
- Tested in the laboratory

● **Sustainability**
- Energy-saving manufacturing process
- 100 % recyclable
- Local supply chains

Plastic bicycle pedal crank

Heavy-duty, maintenance-free

The bicycle crank is subjected to extreme loads as it absorbs the entire drive force of the riders through the pedal that is connected to it. Despite its lightweight construction, the crank is therefore very strong and corrosion-free. Available in various designs and colours.

▲ **Tech up**
- Insensitive to dirt
- Corrosion-resistant
- Lightweight

▼ **Cost down**
- Maintenance-free
- Lubrication-free

■ **Proof**
- Tested in the laboratory

● **Sustainability**
- Energy-saving manufacturing process
- 100 % recyclable
- Local supply chains

Gearbox made of high-performance plastics

Lubrication-free, lightweight and impact-resistant

The solid-plastic planetary gearbox has a very high efficiency. The design of this component is minimised, making it virtually maintenance-free and durable. It is also lightweight, quiet and, thanks to the integrated solid lubricants, always ready when the user is.

▲ **Tech up**
- Insensitive to dirt
- Corrosion-resistant
- Lightweight

▼ **Cost down**
- Maintenance-free
- Lubrication-free

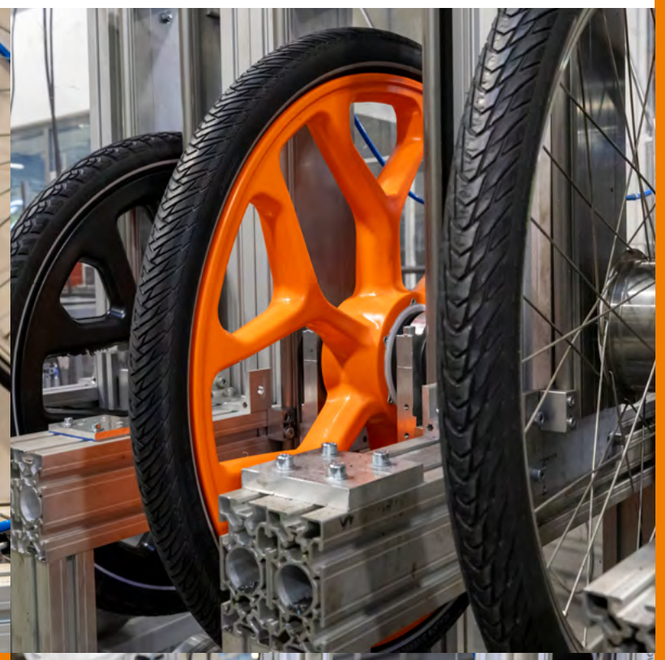
■ **Proof**
- Tested in the laboratory

● **Sustainability**
- Energy-saving manufacturing process
- 100 % recyclable
- Local supply chains

Bicycle expertise

Our expertise - from the idea to the product and beyond.

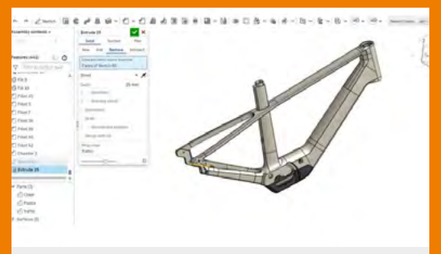
igus® offers everything from one source, from design, development and simulation to series production - everything in-house in Cologne. As a plastics manufacturer with 60 years of experience, we naturally also develop the material for our components ourselves - high-performance plastics ensure a long service life. However, our responsibility does not end when the product is handed over to the customer. We have our own sustainability program: we take back and recycle old products.



Tests and safety on 4,000m²

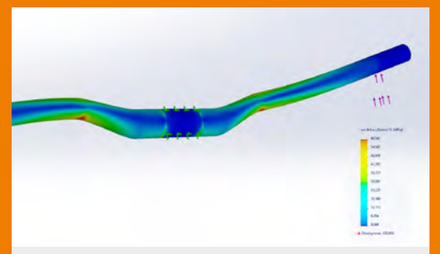
Design

The developers at igus® combine design and function - for products that not only function perfectly, but also look good.



CAD development

Product development is the driving force behind igus® - up to 150 new product launches per year from in-house development demonstrate the innovative capacity of igus®.



Simulation

Various simulation options for perfect products.

Prototypes

Rapid prototyping - initial samples can be produced within a few days using 3D printing, SLS printing, turned from bar stock or from a fast-line mould.

In-house compounding

Material development for high-performance plastics.

In-house toolmaking

The award-winning in-house toolmaking department allows for rapid development of customised injection moulds.

High volume production

With over 800 injection-moulding and rotomoulding machines in Germany and additional production facilities at the igus® locations around the world, we guarantee short distances and fast delivery times.

Recycling/sustainability

With chainge®, igus® is committed to their own sustainability program, ensuring the recycling of their own products.

Bicycle expertise

	Components	Type	Suitable for E Bike	Technology	Manufacturing method	Highlights
Frame		One-piece	Yes	Fibre-reinforced	Injection moulding	100 % recyclable Gent & Wave
		One-piece OEM frame for city and trekking bikes	Yes	Flex shapes	Rotomoulding	100 % recyclable
		Modular OEM frame for city and trekking bikes	Yes	Modular frame technology, fibre-reinforced	Injection moulding/ bonding	100 % recyclable, four frame sizes
		Modular OEM performance frame for gravel, MTB and road bikes	Yes	Modular frame technology, continuous fibre, hybrid technology	Injection moulding/ bonding	100 % recyclable, various frame sizes, lightweight construction
Handlebars		One-piece OEM frame for city and trekking bikes	Yes	Fibre-reinforced, ribbed	Injection moulding	100 % recyclable
		igucore handlebar for city and trekking bikes	Yes	Fibre-reinforced	Injection moulding	Recycled materials
		igucore performance handlebars for MTB	In development	Continuous fibre, hybrid technology	Injection moulding	Recycled materials
		Integrated performance handlebars	In development	integrated electrics	Injection moulding	Recycled materials
		Handlebar-stem combination performance	In development	Continuous fibre, hybrid technology	Injection moulding	Lightweight construction System integration
Wheels		City and trekking bikes	In development	Continuous fibre, hybrid technology	Injection moulding	Lightweight construction
		one-piece for bike sharing/rental/cargo/heavy duty	Yes	Flex shapes	Rotomoulding	100 % recyclable
Pedal cranks		City and trekking bikes	—	Fibre-reinforced	Injection moulding	100% recyclable Corrosion-resistant

Technologies

- Prototyp casting technology (PCT)
- Fibre-reinforced (FRP, CRP)
- Long-glass fibre thermoplastics (LFT)
- igucore
- In-house customised material compounding (CMC)
- Continuous fibre-hybrid technology (CFHT)
- Stiffness-to-weight optimisation (SWO)
- Modular frame technology (MFT)
- One-piece frame technology (OPFT)
- Corrosion-resistant
- Electronic component integration (ECI)
- Maintenance-free bearings (MFB)

Only igus® offers this

- Made in Germany/USA/Asia, guaranteeing short delivery times and supply chains
- igus® as a manufacturer with over 30 years of experience in the bicycle industry
- Clear development processes
- Green Tech up with recyclable and sustainable materials
- Flexible and innovative igucore technology with a wide range of design options
- Economic advice
- Cost down through just-in-time production and economical payment terms
- Tested in the proven igus® in-house laboratory
- Risk management and risk consulting
- Energy-saving injection moulding processes and short transport paths for a reduced CO_2 footprint
- Catalogue parts enable just-in-time production
- Inhouse-Prozesse: ID Design, CAD, Simulation, Werkzeugbau

Manufacturing method

Our production expertise

For maximum performance of plastic bicycle components, the right manufacturing process must be selected. This is where our decades of expertise come into play. We know our way around plastic! We have the necessary expertise to manufacture frames, wheels, handlebars, cranks and more to meet your exact requirements. We master the best manufacturing techniques, from injection moulding and rotomoulding to extrusion and 3D printing.Whether prototypes or high-volume production - we offer everything from one source.

Injection moulding

Molten plastic is injected under high pressure into a mould, where it cools and solidifies to produce precisely shaped parts in large quantities. You can choose between short, long and continuous fibres.

Rotomoulding

Plastic powder is filled into a heated hollow mould and rotated around two axes. The material melts and adheres evenly to the inner walls of the mould.

3D printing

Material is applied layer by layer to create three-dimensional objects from digital models.

Extrusion

Plastic is pressed through a nozzle to produce continuous profiles with a constant cross section.

Prototyping

Physical or digital models of a design are created to test concepts, check functions and gather feedback before mass production.

Multidirectional

To increase strength and rigidity, multidirectional fibre reinforcement is used in composite materials. Fibres are arranged in several directions.

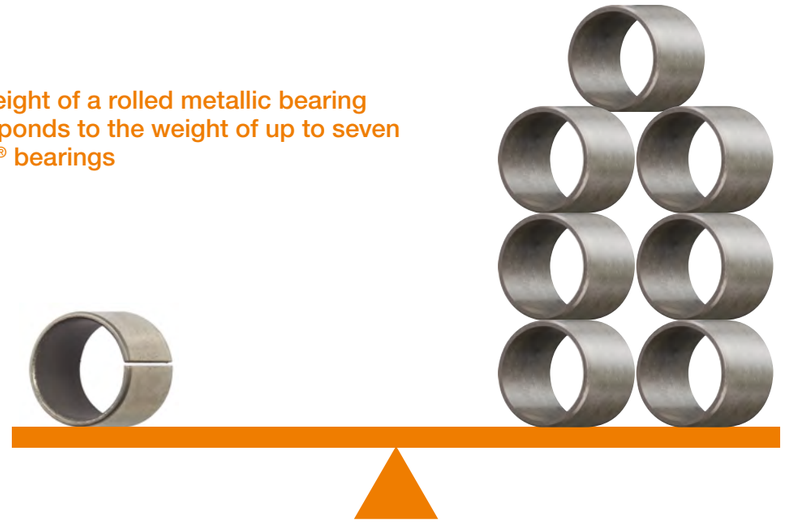
igus® plain bearings in bicycles

Less weight, no corrosion, no maintenance.
Lightweight plastic components reduce the strain on the frame and can make the bicycle easier to manoeuvre. And the lighter the bike, the easier it is to travel uphill. Our plain bearings are around 80 % lighter than metal bearings.

Dirt and moisture are no problem for iglidur® plain bearings thanks to their dry operation. If the bicycle frame is covered with dust or mud after a ride, it can be washed without worries. Even cleaning with a high-pressure cleaner will not affect the bearings. You can stop stressing about corrosion due to water ingress and dispense with regular relubrication.

igus.eu/bike

The weight of a rolled metallic bearing corresponds to the weight of up to seven iglidur® bearings



Application areas	Images	iglidur® material	Weight advantage	Price advantage
Lowerable seat post		iglidur® J	Six times lighter than steel backing bearings	No minimum order quantity; price break upon request
Rear wheel swing arm		iglidur® Z		
Plain bearing in battery lid		iglidur® GLW		
Brake lever bearing		iglidur® P		
Suspension fork bearing		iglidur® E		
Shock absorber eye bearing		iglidur® J, J3, J3B, W300, W360B		
Plain bearing in freewheel		iglidur® W300 and iglidur® Z in the BMX area		
Bearings in the derailleur		iglidur® GLW		
Pedal bearing		iglidur® J, J3, J3B, W300		
Gears in planetary gearboxes		iglidur® S200		
Suspension seat post		iglidur® P		
Bearings in cantilever brakes		iglidur® J		
Bearing in the main stand		iglidur® R		
Bearing in box flap		iglidur® GLW		
Linear guide in sliding doors		drylin® N linear guides		
Belt tensioner ball bearing		xiros® A180		
Rod end in handlebars		igubal® 2.0		

Application areas	Suitable for E Bike	Corrosion-free	Lubrication-free	Maintenance-free	Low moisture absorption	Press fit in the housing as an option
Lowerable seat post	x	x	x	x	x	x
Rear wheel swing arm	x	x	x	x	x	x
Plain bearing in battery lid	x	x	x	x	x	x
Brake lever bearing	x	x	x	x	x	x
Suspension fork bearing	x	x	x	x	x	x
Shock absorber eye bearing	x	x	x	x	x	x
Plain bearing in freewheel	x	x	x	x	x	x
Bearings in the derailleur	x	x	x	x	x	x
Pedal bearing	x	x	x	x	x	x
Gears in planetary gearboxes	x	x	x	x	x	x
Suspension seat post	x	x	x	x	x	x
Bearings in cantilever brakes	x	x	x	x	x	x
Bearing in the main stand	x	x	x	x	x	x
Bearing in box flap	x	x	x	x	x	x
Linear guide in sliding doors	x	x	x	x	x	x
Belt tensioner ball bearing	x	x	x	x	x	x
Rod end in handlebars	x	x	x	x	x	x

igus® USA employee Garrison Rios receives four titles in a row

2015 **CA State CX Champion**
2015 **2nd** Overall Kenda Cup Series
2016 **2nd** National Championships Cat 1
2016 **3rd** Overall Kenda Cup Series

“Racing is full of challenges, having to worry less about maintenance and reliability is key to remaining focused on all the aspects of racing. Seeking out products which use igus® bearing technology gives me peace of mind knowing my equipment is going to last and work every time I need it to and everywhere in between. Saving weight is an added plus, whether it's my dropper post, pedals or suspension pivots I find comfort in the lightweight reliable option of igus® bearings."

As a professional cross-country racer, Garrison has ridden different bikes with a wide variety of components over the years. Many of them had iglidur® plastic plain bearings, including shock absorbers from DVO, Fox, and Cane Creek; seat posts and pedals from crankbrothers; frames from Ibis; and rear dérailleurs from SRAM.

www.igus.eu/bike

motion plastics®

Tech up & cost down

Fast and continuous shock and impact loads, dirt and dust, moisture, and thermal stress – the many challenges of riding fast over rough terrain, through mud, and over rocks require top performance from components built into mountain bikes. In addition to our all-rounder materials, we also offer a wide range of specialised plain bearings for any requirement. All are lightweight and require absolutely no lubrication or maintenance.

1. igus.eu/P
2. igus.eu/guide-rings
3. igus.eu/GLW
4. igus.eu/J3
5. igus.eu/W300
6. igus.eu/G
7. igus.eu/gears
8. igus.eu/TX2-seal
9. igus.eu/H

in mountain bikes

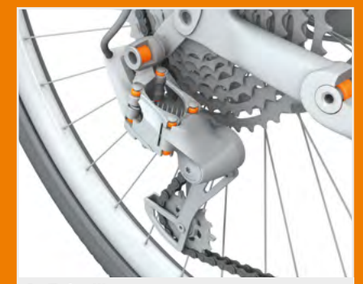
1. Brake lever
iglidur® P plain bearings: Insensitive to dirt, shocks, and impacts. No squeaking or creaking when they get wet.

2. Telescopic seat post
iglidur® J guide rings: For linear movements, insensitive to edge loads.

3. Battery cover
iglidur® GLW plain bearings: Affordable and resistant to corrosion and dirt.

4. Shocks
iglidur® J3B plain bearings: Maximum service life, more pressure-resistant than PTFE-coated alternatives.

5. Freewheel
iglidur® W300 plain bearings: Especially for high speeds and temperatures. Dirt cannot stick.



6. Dérailleur
iglidur® G plain bearings: Insensitive to dirt, no relubrication necessary after cleaning.

7. Drive/motor
iglidur® gears: Maintenance-free, vibration-damping characteristics, and long service life.

8. Pedals
iglidur® TX2 plain bearings: With felt seal for extremely high resistance to dirt.

9. Brake calipers
iglidur® H plain bearings: Can be used at high temperatures. Reduces costs in the long term with durability and freedom from maintenance.

Wear-resistant bearings reduce weight and increase rigidity in the rear frame

Ibis Bicycles, California

Installed for the first time in the Ripley trail bike in 2013 and now in all fully-balanced bikes: Ibis uses iglidur® plain bearings on the lower rocker of the DW-link rear frame. They are perfect for small rotations with high forces. The sealed deep groove ball bearings originally used felt worn after just a short time. This is not the case with the plastic bushings, which ensure high rigidity in the rear frame. It also reduces weight by 80g, greatly extends service life, and eliminates maintenance costs.

"In more than two years, our Enduro team has not broken a single igus® bearing. They definitely hold up better than I originally thought. They are also lighter and much easier to maintain than the bearings I used before."

Robin Wallner,
Ibis Bicycles Enduro Race Team

www.igus.de/bike

Constant performance on the trail, resistant to shocks, mud and dust

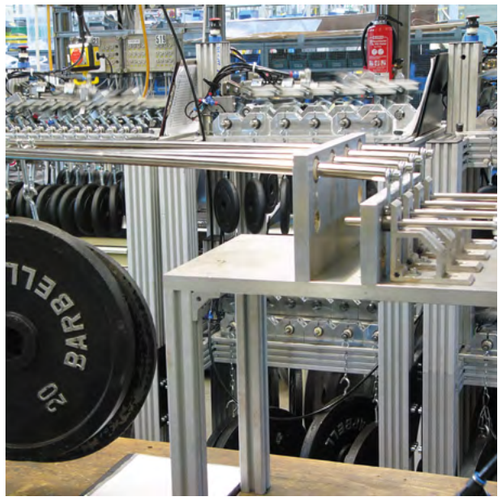
Crankbrothers, California

Crankbrothers, an MTB component manufacturer, is a household name for every mountain bike fan because of its pedals. iglidur® JB plain bearings are used in its click models and in the flats. They feature low weight, smooth operation even with high levels of dirt, and a long service life under heavy shock loads. In our laboratory, we tested various bearings for crankbrothers. iglidur® JB plain bearings achieved a service life eight times that of those originally intended by Crankbrothers metallic solutions.

www.igus.eu/bike

Research and Development

More than 15,000 tests annually – in the igus® test laboratory



Proven, predictable, tested – Research area of 4,000m²
Push and pull forces, coefficient of friction, wear, and abrasion and drive forces. In order to ensure the quality of our materials and develop new products, we push them to their limits in our in-house test laboratory. With 135 trillion test cycles and over 15,000 tests a year, we determine the behaviour of our plain bearings, spherical bearings, and many other products. The data obtained in this way can be used to make precise statements about material service life under different environmental conditions.

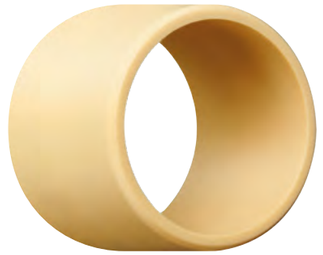
Have a virtual tour through the laboratory
Would you like to take a look around our laboratory? No problem: you can visit all areas easily from your home or office in a virtual tour. Just go to the our test laboratory page, start the 360° tour, select the lab area you want, and follow the arrows to the next stop.

igus.eu/testlab

Pivoting wear test rig

Extensive test database

Tested ...



- Test for rotating coefficient of friction
- Load per bearing point: 10N to 1,000N
- Surface speed: 200 to 2,000rpm

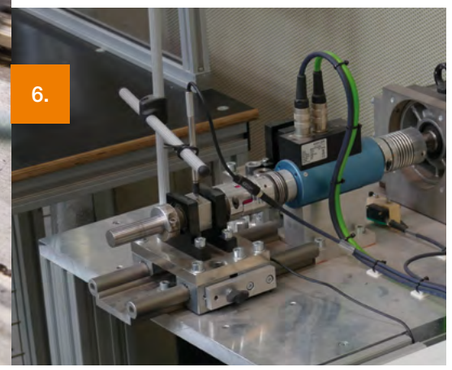
Coefficient of friction test rig

Linear wear test rig (short stroke)

Over 15,000 tests per year have resulted in what is probably the world's largest test database. This database enables us to always select the right product for customised, specific applications. Customised tests are also possible for specific industries.

igus.eu/test

www.igus.eu/bike



1. Continuous load
How does friction change under constant load, and how much does the material wear? This endurance test determines bearing reliability.

2. Seat post test rig
This test rig was specially developed to determine the performance of our plain bearings in seat posts. The plain bearings and guide rings are subjected to continuous loading and to impacts and shocks.

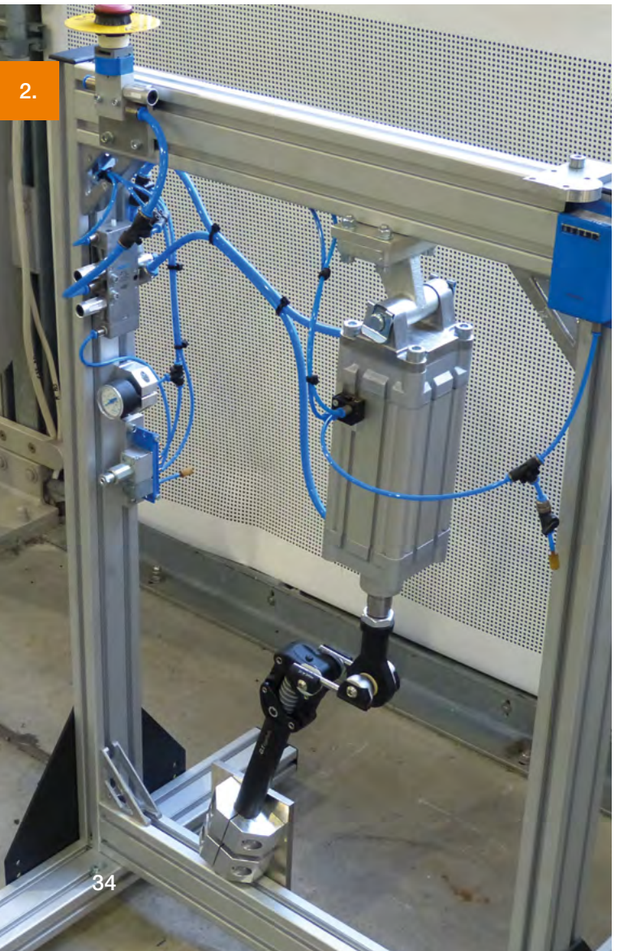
3. Edge pressure
If leverage forces subject the outer edges of a plain bearing to higher loads, edge loads result. This test measures bearing behaviour in the shock absorber, in the frame or seat post.

4. Linear wear, short stroke
Short linear travels occur in such applications as the suspension. This test station determines the effects of a repetitive stroke on the material.

5. Pivoting wear
With pivoting angles of 60° and loads of 25 to 200N, this test rig simulates wear in such applications as dérailleurs, pedals, and shock absorbers.

6. Coefficient of friction
Up to 1,300 rpm,, various outdoor temperatures, and wet environments. The rotation test rig simulates bearing environments such as those that occur in freewheeling and measures the coefficient of friction.

7. Wear from sand
Dirt, dust, and sand play a role in bearing points built into mountain bikes. This test rig determines the extent to which grains of sand affect the service life of our bearings and the shaft.

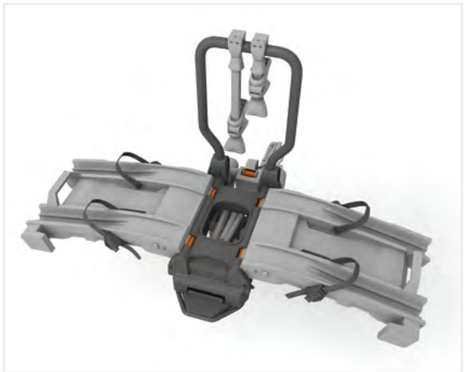


motion plastics®

Folding mechanism for folding bicycle
iglidur® J3 plain bearings: Low moisture absorption, resistant to thermal expansion and edge loads.

Steering head bearing and bottom bracket bearing in a children's bicycle
iglidur® J3 plain bearings: Lightweight, cost-effective, resistant to impacts.

Bicycle assembly stand
Lifting mechanism with a quiet, dry-operating drylin® W linear guide and a lightweight, compact energy supply system.



Bicycle rack
iglidur® J plain bearings and thrust washers in folding mechanisms: Wear-resistant and weatherproof.

igus.eu/J3 | igus.eu/G | igus.eu/J | igus.eu/drylin-w | igus.eu/e-chain

other application areas

E-scooter head tube
iglidur® G plain bearings in the suspension fork: Wear-resistant, vibration-dampening, zero slip-stick effect iglidur® Q plain bearings in the head tube: dirt-resistant, rustproof, and maintenance-free.

Pram bearing
iglidur® G plain bearings in folding and swivel joints: Cost-effective, corrosion-resistant, and maintenance-free.

Trike front suspension
iglidur® G plain bearings: Small, lightweight, and resistant to dirt, water, and shocks.

Cantilever brakes
iglidur® J plain bearings: Vibration-dampening, weather-resistant, lightweight.

25 bearing points with dry-tech® high-performance polymers - lower weight, longer service life

Please note: this bike is a one-off and is not distributed by igus®!

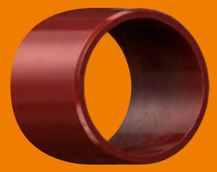
www.igus.eu/bike

Materials for the bicycle industry

An overview of the most important iglidur® materials for bicycle applications
To make your selection easier, we have divided the most important materials for the bicycle industry into groups. More than 7,000 standard sizes, Ø from 2mm to 150mm, are available from stock. We have short delivery times, even for special dimensions. And, in general, we do not require a minimum quantity.

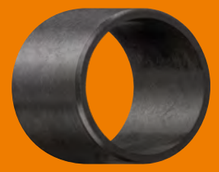
igus.eu/material-selection

Economy



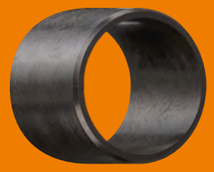
iglidur® R
- Resistant to edge pressure
- Resistant to dirt and dust
- Insensitive to shocks and impacts
- In such applications as bicycle stands

igus.eu/R



iglidur® HLW
- High temperature resistance
- Very good for use in high-humidity environments and under water
- Resistant to high loads (>60N/mm²)
- In such applications as disc or rim brakes

igus.eu/HLW



iglidur® GLW
- Resistant to shocks and impacts
- Insensitive to dirt and dust
- Resistant to high loads (>60 N/mm²)
- In such applications as disc or rim brakes or the battery cover

igus.eu/GLW

Specialists

iglidur® H
- Suitable for especially high temperatures
- Low moisture absorption
- Good wear resistance under water
- In such applications as disc brakes

igus.eu/H

iglidur® Q
- Designed for especially high loads
- Resistant to shocks and impacts
- Very good coefficient of friction
- In such applications as the steering kit

igus.eu/Q

iglidur® M210
- Thick-walled, especially strong bearing
- Very good wear resistance
- Resistant to edge pressure, shocks, and impacts
- In such applications as the rear wheel swing arm

igus.eu/M210

iglidur® P
- For high edge loads
- Low moisture absorption
- Dirt-resistant and corrosion-free
- In such applications as the brake lever

igus.eu/P

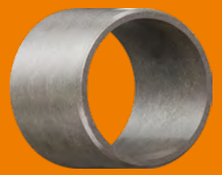
iglidur® W300
- For high speeds
- Excellent coefficient of friction
- Low moisture absorption and high media resistance
- In such applications as freewheeling and brake systems

igus.eu/W300

iglidur® Z
- Wear-resistant, especially at high loads and speeds
- High thermal resistance (up to +250°C)
- Impact-resistant and insensitive to edge pressure
- In such applications as the freewheel

igus.eu/Z

Basic



iglidur® G
- Very good coefficient of friction
- Resistant to edge pressure
- Insensitive to shocks and impacts
- In such applications as dérailleurs

igus.eu/G

iglidur® J
- Good wear resistance at medium temperatures
- Excellent coefficient of friction
- Zero stick-slip effect
- In such applications as the telescopic seat post

igus.eu/J

iglidur® J3
- For high edge loads
- Excellent coefficient of friction
- Very good wear resistance
- In such applications as bicycle shock absorbers

igus.eu/J3

Eco

iglidur® ECO
- Reused raw materials
- Different ECO series for different requirements
- For applications in high temperatures or corrosive environments or for especially affordable applications, for example

igus.eu/ECO-plain-bearings

Customized

Customer solutions:
Individually adapted materials with special properties. We develop the right plastic for your application and find the ideal solution.

igus.eu/special-design

When everything revolves around the wheel - igus® catalogue parts, special parts, bar stock and 3D-printed solutions

We can also go your way: customised solutions and designs, and special materials - virtually everything is possible.
The standard is not the right solution for everyone. That is why igus® also manufactures a number of customised special geometries. Customised design and material solutions, such as plain bearings for multi-edge shafts, low-clearance bearings, bearings with the anti-rotation feature, special support blocks and glide pads, etc. are adapted specifically to our customers' requirements. We make almost anything possible, starting at just medium quantities.

igus.eu/speedigus

3D printing service - for customised parts made from high-performance plastics.
In two simple steps a 3D-printed component - with instant pricing. We print customised components from lubrication-free and abrasion-resistant iglidur® high-performance plastics. Simply upload the drawing in STEP (STP) format, check the 360° view and select a special filament. We deliver customised products - depending on complexity - from 24 hours.

igus.eu/3D-printservice

www.igus.eu/bike

The vision

Yesterday's waste for tomorrow's mobility

With this vision, the idea for the igus:bike project was born, which has now been renamed RCYL. The project aims to use plastic waste dumps worldwide as resources for a recycled bicycle. On the newly created igus:bike platform, we want to work with other bicycle and component manufacturers to create a sustainable, rust-free, maintenance-free alternative for urban mobility. To start with, we are developing a bicycle with mtrl that consists of more than 90 % plastic, most of which is recycled.

igus.bike

SUSTAINABLE

The plastic in rubbish dumps around the world is becoming a valuable resource: most of the material used will come from recycled plastics.

LOW MAINTENANCE

A bike made almost entirely of plastic. Nothing needs to be lubricated or greased here.

LONG SERVICE LIFE

The bike consists of motion plastics®, which have been extensively tested in the test laboratory for wear and safety.

ZERO CORROSION

Resistant to weather, water and UV light. Garage or covered parking spaces are no longer required.

Sample box

Our products for bicycles in a box

Order the free sample box with products and further information about our motion plastics® for the bicycle industry.

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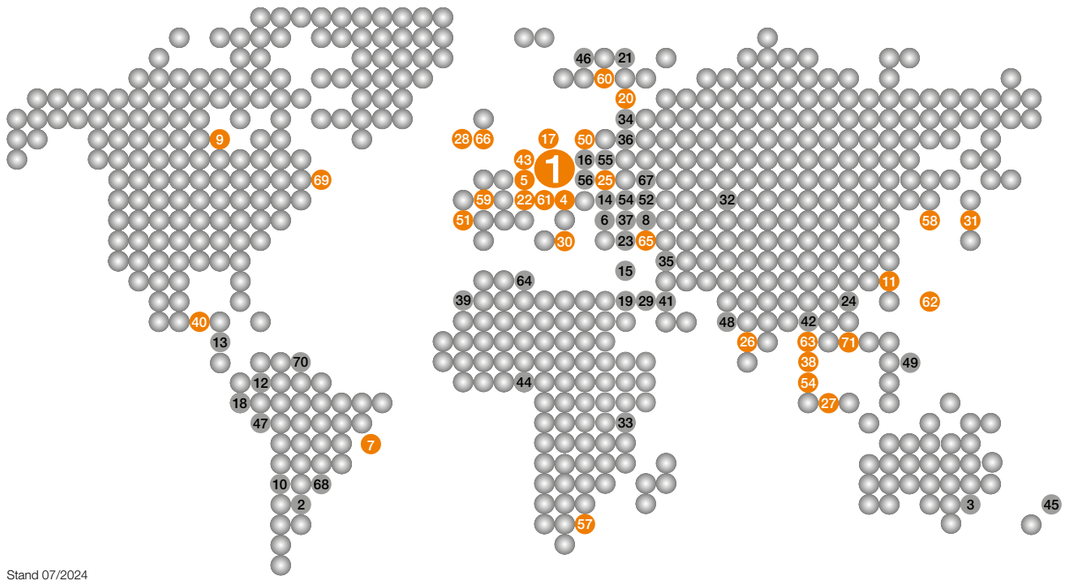
Have your questions answered locally. There are igus® offices and distributors in 71 countries.

igus.eu/contact



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