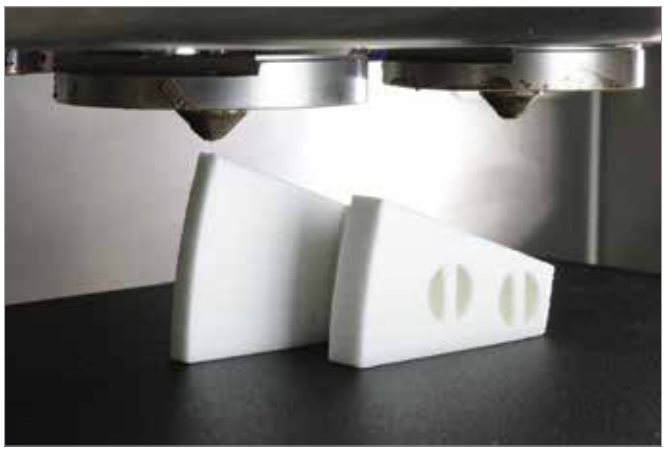
# iglide®...

## Tribo 3D printing


# ...plastics

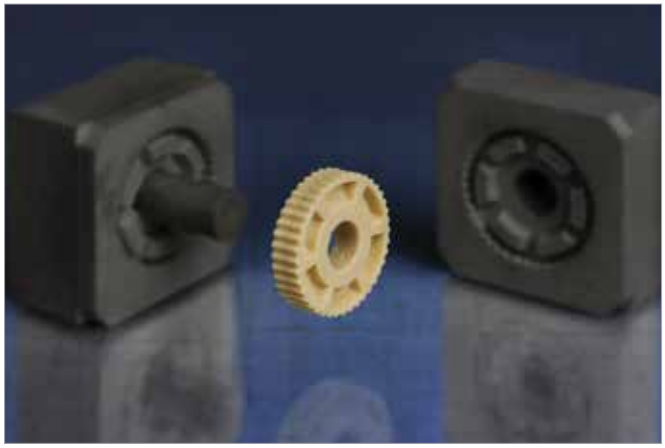


### 3D printing / SLS

**For prototypes or small quantities made from tribofilaments with the laser sintering method**

Wear-resistant materials for 3D printing and the laser sintering method – print parts yourself or have igus® print them for you.

- Up to 50 times more abrasion-resistant than conventional 3D print materials
- Various iglide® materials available for FDM/FFF (filament) and SLS (powder)
- No tool costs; cost-effective, no minimum order quantity



### Printed tools

**For small quantities made from iglide® granules**

3D-printed injection molds. Wear-resistant parts with a simple geometry can be made from most iglide® materials.

- Customized parts delivered within 3-4 weeks
- Up to 80 % more cost-effective than conventional injection mold tools
- For prototypes and small volumes

## Self-lubricating printing

Extremely abrasion and wear-resistant tribo-plastics for additive manufacturing via selective laser sintering (SLS) or with filament (FDM/FFF) allow you to use the printed component or to test the function of the part reliably and completely from the prototype or production stage on.

- Very high abrasion resistance
- Self-lubricating and maintenance-free
- No tool costs
- Design freedom
- 3D printing of parts on site
- Can be processed by commercially available 3D printers
- Predictable service life

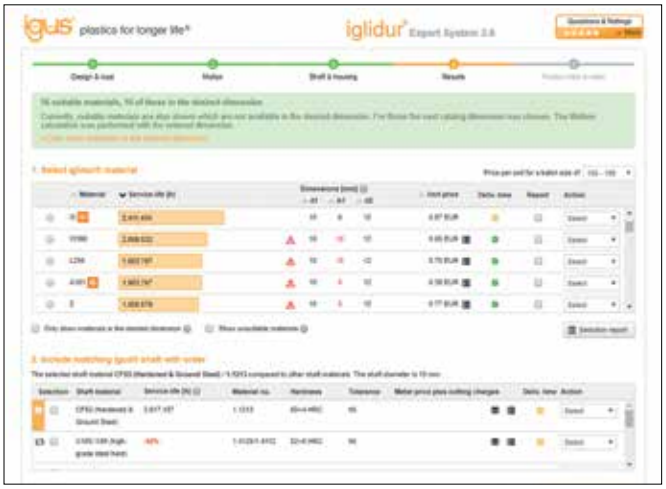
**Typical application areas**

- Special wear-resistant parts
- Jig construction
- Single pieces and small volumes

**Available from stock**
Detailed information about delivery time online.

**More information about 3D printing**
**▶ www.igus.com/tribo-printing**

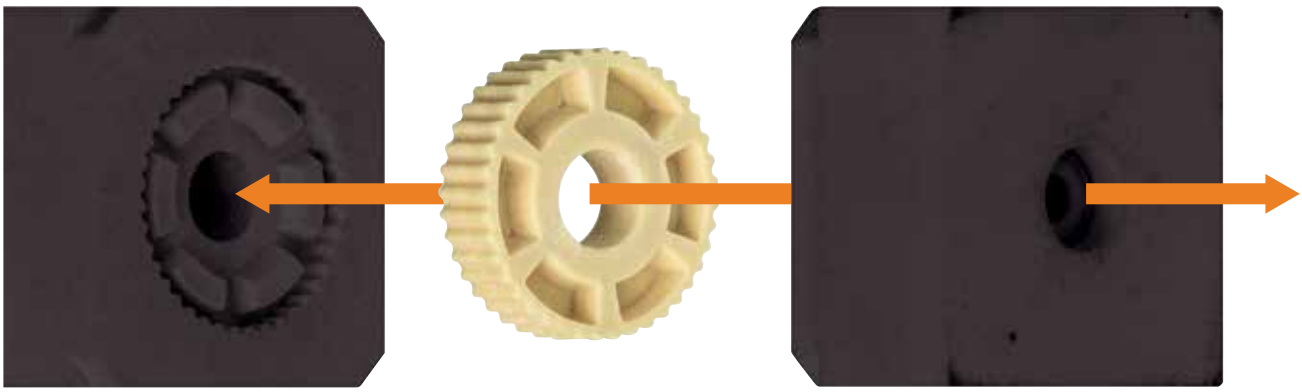
**Calculate service life online and order directly.**
**▶ www.igus.com/iglide-expert**



**Calculation of the anticipated service life, now also for the 3D printing materials**

# iglide® tribo 3D printing | Injection molding tools

## Making tools quickly and at low cost



**Tools for injection molding from the 3D printers**

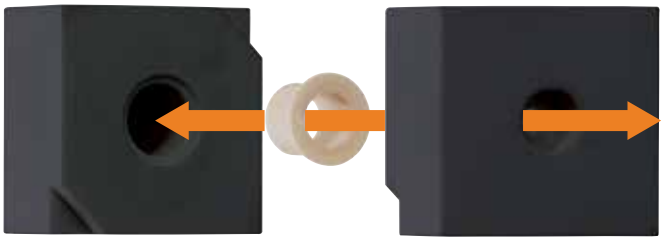
Due to 3D printing, igus® is able to make customized injection molds with a reduced lead-time and up to 80 % lower costs. Maintenance-free plastic plain bearings in the required shape can be made quickly and cost-effectively.

- High variety of materials: all iglide® plain bearing materials can be requested
- Cost-efficient with quick delivery
- No minimum order quantity
- For simple geometries

**igus® continually tests the available iglide® materials – talk to us to obtain further information.**

The production of maintenance-free plastic plain bearings from 3D printed injection molds is worthwhile compared to direct 3D printing of the iglide® materials especially if:

- Special material characteristics are needed, such as conductivity, high temperature, underwater use, KTW compliance
- Small volumes in the same iglide® material are to be sampled as is a later high volume from a classic injection molding tool



**Configure your custom iglide® plain bearing**

- Configure your required iglide® plain bearing and thrust washer
- Any dimension, 1–170mm
- Minimum wall thickness: 0.7mm
- Use plain bearings immediately without any rework
- Clearance after press-fit: 0.03–0.23mm

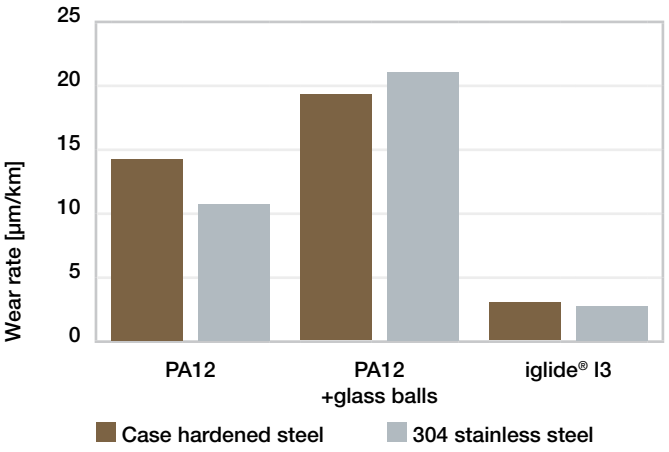
▶ **www.igus.com/info/customized-bearings**

**Delivery time from 3-4 weeks**

**www.igus.com/info/3d-printed-molds**

# iglide® SLS | Laser sintering

## iglide® I3 for 3D printing via SLS




Rotating wear: p = 145 psi; v = 0.3m/s

**At least 3 times more wear-resistant:**
**iglide® I3 for 3D printing via SLS**

The material iglide® I3, specially developed for laser sintering, proved to have an abrasion resistance at least 3 times higher than conventional materials for laser sintering during tribological tests in the igus® test laboratory. This expands the design freedom for wear resistant parts.

- Self-lubricating and maintenance-free
- Wear-resistant
- Good mechanical properties
- Detail accuracy with exact surfaces
- Can be processed using the standard parameter set
- Refresh rate: 75 %
- Compliant according to FMV SS 302

## Material properties

| General properties | Unit | iglide® I3 | Testing method |
|---|---|---|---|
| Density | g/cm³ | 1.05 | |
| Color | | yellow | |
| Max. moisture absorption at +73 °F/50 % r. h. | % weight | 0.8 | DIN 53495 |
| Max. total moisture absorption | % weight | 1.9 | |
| **Mechanical properties** | | | |
| Flexural modulus | psi | 203,053 | DIN 53457 |
| Flexural strength at +154 °F | psi | 9,863/8,847[130)] | DIN 53452 |
| Shore D hardness | | 70 | DIN 53505 |
| **Physical and thermal properties** | | | |
| Max. continuous application temperature | °F | +176 | |
| Max. short-term application temperature | °F | +284 | |
| Min. continuous application temperature | °F | –40 | |
| **Electrical properties** | | | |
| Specific contact resistance | Ωcm | > $10^{12}$ | DIN IEC 93 |
| Surface resistance | Ω | > $10^{11}$ | DIN 53482 |

[130)] **Printed flat/upright**

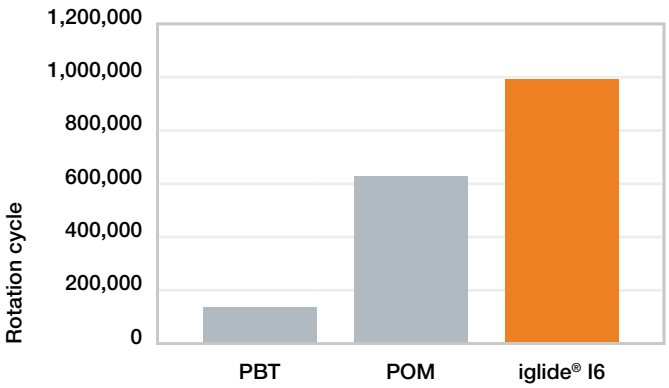
▶ Chemical table, **page 1762**

**Part No. raw material (10 kg)**
I3-PL-10000

**Ships within 2-3 business days**

# iglide® SLS | Laser sintering

## iglide® I6 for 3D printing via SLS




**Service life test worm wheel. 12 rpm; 4.9 Nm**

**Durable gears made of FDA-compliant iglide® I6 via laser sintering**

The material iglide® I6 was specifically developed for laser sintering for use as a gear. The tests in the igus® test laboratory showed a longer service life than conventional - e.g. machined POM gears. This greatly increases the flexibility in the design of gears, since no tools are necessary due to the laser sintering process and gears can be produced efficiently without minimum order quantity.

- Abrasion-resistant
- FDA-compliant
- Extremely long operating times
- Self-lubricating and maintenance-free
- Cost-efficient from batch size 1
- No tool costs
- Delivery time 24 hrs to 3 days
- Detail accuracy with exact surfaces
- Also suitable for medium-sized series, e.g. 5,000 pieces

▶ **www.igus.com/gear**

## Material properties

| General properties | Unit | iglide® I6 | Testing method |
|---|---|---|---|
| Density | g/cm³ | 1.06 | |
| Color | | white | |
| Max. moisture absorption at +73 °F/50 % r. h. | % weight | 0.8 | DIN 53495 |
| Max. total moisture absorption | % weight | 1.9 | |
| **Mechanical properties** | | | |
| Flexural modulus | psi | 159,542 | DIN 53457 |
| Flexural strength at +154 °F | psi | 7,107/5,511 [130)] | DIN 53452 |
| Shore D hardness | | 67 | DIN 53505 |
| **Physical and thermal properties** | | | |
| Max. continuous application temperature | °F | +176 | |
| Max. short-term application temperature | °F | +284 | |
| Min. continuous application temperature | °F | –40 | |
| **Electrical properties** | | | |
| Specific contact resistance | Ωcm | > $10^{12}$ | DIN IEC 93 |
| Surface resistance | Ω | > $10^{11}$ | DIN 53482 |

[130)] **Printed flat/upright**

▶ Chemical table, **page 1762**

**Ships within 2-3 business days**

# iglide® SLS | Laser sintering

## iglide® I8 for 3D printing via SLS

**Electrostatically dissipative:**
**iglide® I8-ESD for 3D printing via SLS**
The material iglide® I8, has high abrasion resistance and is electrostatically dissipative (ESD). ESD specifications are essential, particularly in the electronics industry, for avoiding damage to electronic components. For any application where it is important to avoid electrostatic charges

- Self-lubricating and maintenance-free
- Abrasion resistance
- Increased rigidity
- Suitable for all standard laser sintering systems

## Material properties

| General properties | Unit | iglide® I8 | Testing method |
|---|---|---|---|
| Density | g/cm³ | 1.03 | |
| Color | | black | |
| Max. moisture absorption at +73 °F/50 % r. h. | % weight | 0.8 | DIN 53495 |
| Max. total moisture absorption | % weight | 1.9 | |
| **Mechanical properties** | | | |
| Flexural modulus | psi | 326,335 / 298,778[130)] | DIN 53457 |
| Flexural strength at +154 °F | psi | 9,137 / 6,092[130)] | DIN 53452 |
| Shore D hardness | | 72 | DIN 53505 |
| **Physical and thermal properties** | | | |
| Max. continuous application temperature | °F | +176 | |
| Max. short-term application temperature | °F | +284 | |
| Min. continuous application temperature | °F | –40 | |
| **Electrical properties** | | | |
| Specific contact resistance [1) 2) 3)] | Ωxcm | 2.8 x10⁷ / 3.4 x10⁶ | DIN IEC 93 |
| Surface resistance | Ω | 3.6 x10⁷ / 3.4 x10⁷ | DIN 53482 |

[1)] The good conductivity of this product might lead to the corrosion of metallic counterparts under certain conditions.
[2)] Flat/upright sintered
[3)] Depending on part geometry
[130)] **Printed flat/upright**
▶ Chemical table, **page 1762**

# Notes

# iglide® tribo 3D printing | 3D printing service

## Individual wear-resistant parts within 3 business days – order online

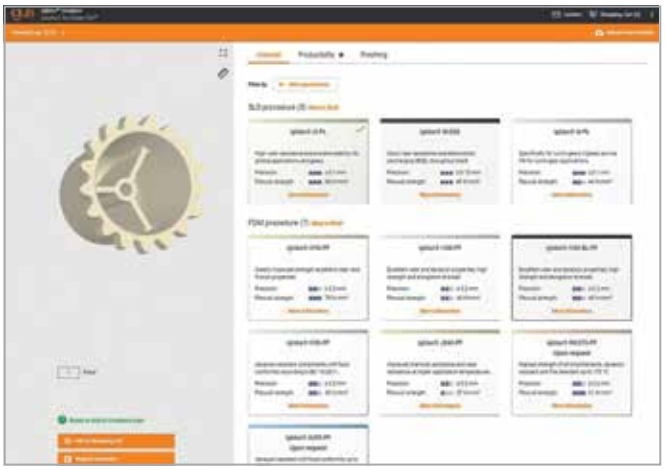
**Wear-resistant parts from the 3D printing service: Online and extremely fast**

Printed parts extremely wear-resistant – as prototype or in small series. Simply upload your required part, determine the price and order online (or ask for a quotation). Thanks to the iglide® 3D printing service, 2 quick and easy steps will complete your customized component made of self-lubricating and abrasion-resistant iglide® plastics.
The service life of the 3D printed components is comparable to igus® injection molded parts. In the online 3D printing calculation, you can not only receive 3D printing, but also analyze feasibility and prices of injection-molded parts made with 3D-printed molds (print2mold).

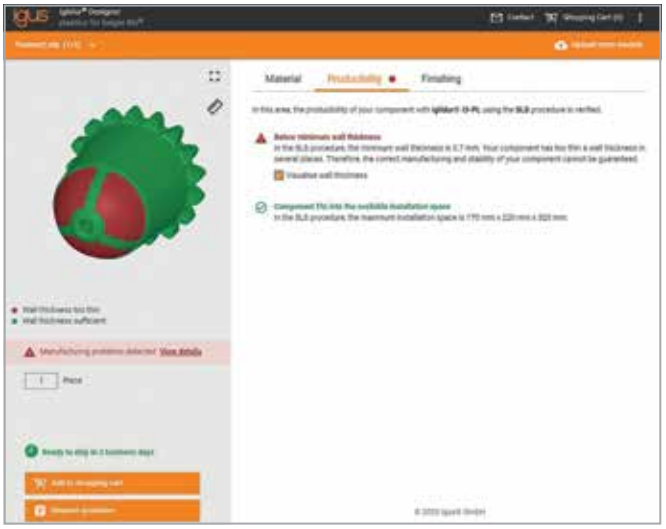
1. Go to **www.igus.com/3dprintservice** and upload the 3D model in the STEP format
2. Select material and quantity and order the component or ask for a quotation

**Your individual wear-resistant part will be shipped within 3 business days**

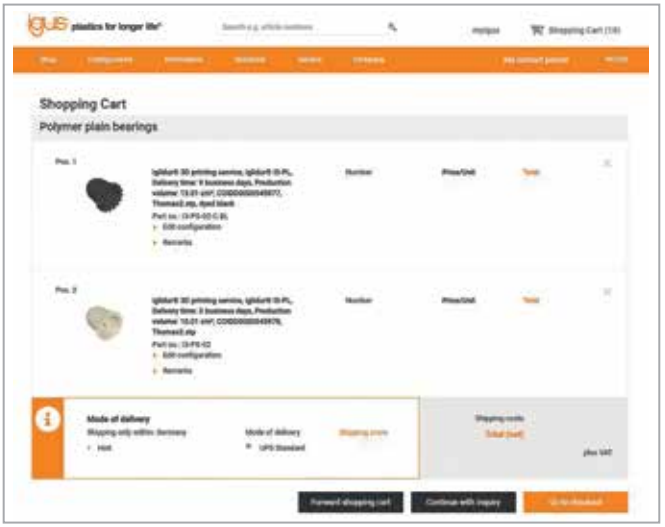
**Try it out now: www.igus.com/3dprintservice**



Material selection



Wall thickness analyses




Shopping cart

# iglide® tribo 3D printing | 3D printing service

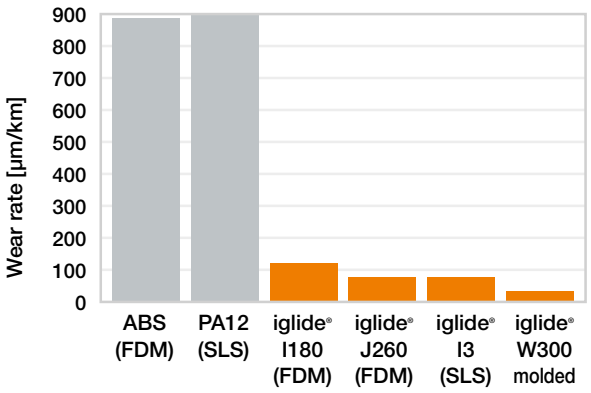
**SLS can also be used to make wear-resistant parts**
The 3D printing service is being extended with the materials iglide® I3 and iglide® I6. Laser sintering (SLS) is used to make parts of these materials. With this method even more plain bearing applications are possible with 3D-printed parts, strength and precision are considerably greater and the price per component is lower.

**New: additional laser sintering services**
In the 3D printing service, more services for laser sintering materials can now be selected and their prices easily defined.
- Black coloring for visible parts
- Polish surfaces using vibratory finishing or chemical polishing

**Two-component 3D printing (FDM/FFF)**
Two-component parts made of proven tribofilaments and fiber-reinforced plastics for stability and rigidity, can be ordered upon request.

**Dimensional stability and size of installation space**
The precision of the printed parts in the case of the iglide® tribofilaments is ±0.2mm (up to an edge length of 50mm, above this ±0.4 %). In the case of parts made using the laser sintering process the precision is ±0.1mm (up to an edge length of 50mm, above this ±0.2 %).
The space used for processing the iglide® tribofilaments measures 135x145x200mm. In the case of laser sintering the space used measures 170x220x300mm. The following applies to both processes: larger parts may have to be made of several pieces.

In order to ensure that the 3D-printed components function correctly, the following should be included in the 3D model:
- The 3D model should be at the center of tolerance; e.g. for a tolerance of 16 –0.2mm, the 3D model should correspond to 15.9mm
- In the case of clearance fits, a clearance of approximately 0.1mm should be planned
- Minimum wall thickness: SLS 0.7mm, FDM, FFF 1mm



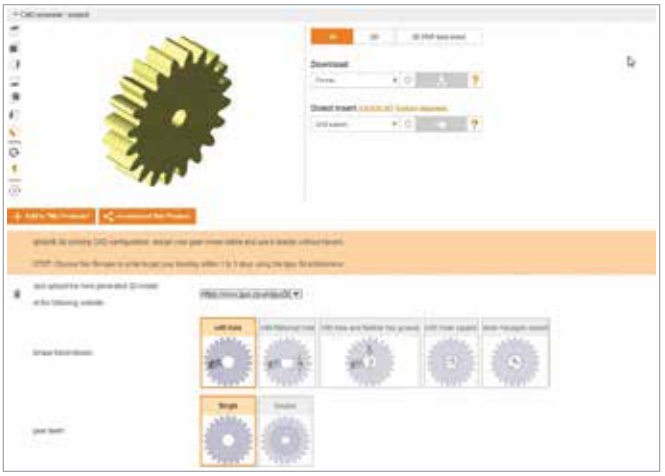

**Wear, rotating p = 2,901 psi; v = 1.97 fpm, 304 stainless steel**

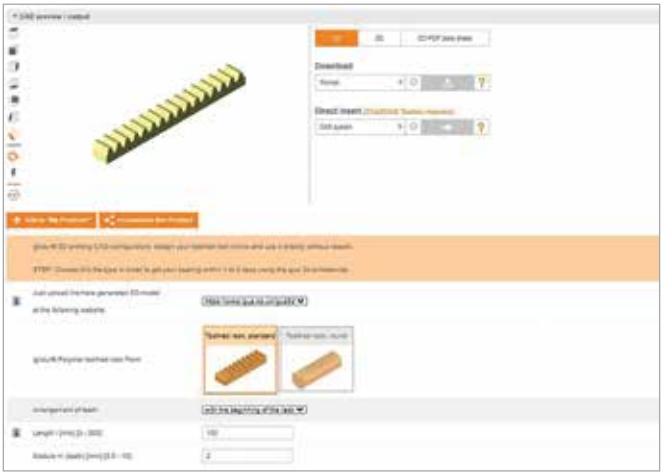
# iglide® tribo 3D printing | Gear configurator

## Individual wear-resistant parts in 3 days – order online

**Configure your individual gears and racks in 60 seconds and they will be ready for shipment within 3 days**

In order to facilitate the work of designers, igus® has now developed simple and practical configurators for gears and racks. This allows each customer to configure his/her own component even in special dimensions. In a few steps, the user only needs to enter the specifications of the required gear; such as the tooth module, number of teeth, width and inner diameter, or select a suitable rack style. This automatically displays a 3D model that can be exported as a STEP file. If the file is uploaded in the framework of the igus® 3D printing service ▶ **www.igus.com/3dprintservice**, the configured gear made of the new durable SLS material iglide® I3 for gears can be ordered immediately from igus®. With one click, the user can order his/her wear-resistant gear with no minimum order quantity or request a quotation. Within three days the custom-made gear made is ready for shipment. iglide® I3 is well suited for straight and helical spur gears, racks, and bevel gears.





**Gear service life calculator**
▶ **www.igus.com/gear-expert**

**iglide® I6 for worm gears: Double the service life**

In the test, iglide® I6 showed itself to be considerably better than machined gears. Gears made of POM had total wear after 621,000 cycles, whereas gears made of iglide® I6 continued to be functional after more than 1 million cycles.

**POM**
**321,000 cycles**
**High wear**

**POM**
**621,000 cycles**
**Failed**

**iglidur® I6**
**1 million cycles**
**Low wear**

**Ships within 2-3 business days**

**Online CAD configurator for gears:**
▶ **www.igus.com/gear**

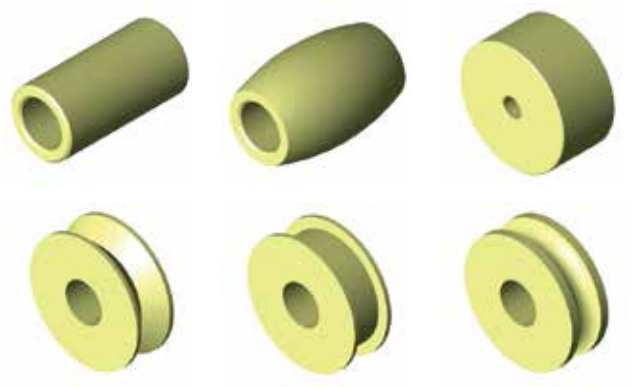

**Online CAD configurator for plain bearings:**
▶ **www.igus.com/info/3d-printed-molds**

# iglide® tribo 3D printing | Configurators

## Wear-resistant gears in 60 seconds using the new igus® gear configurator

**Configure rollers in the required shape online.
Ships within 2-3 business days**

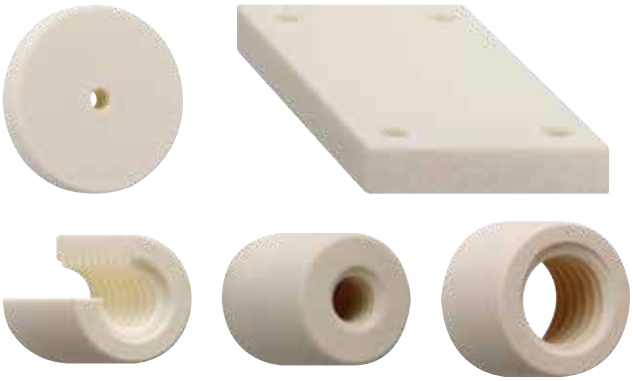
Create and download your individual 3D model with the roller configurator. Then order it from the 3D printing service (shipped in one to three days). Rollers with different shapes and with any dimensions between 1 and 170mm are possible. The rollers can be used immediately without any further machining.



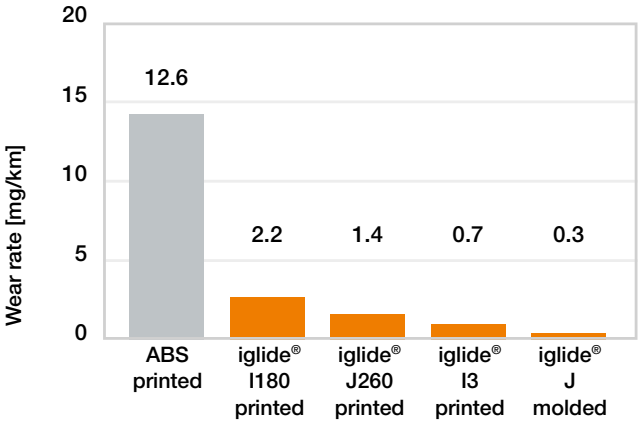
**Configure rollers**
**▶ www.igus.com/roller-configurator**

**Configure custom lead screw nuts, plain bearings and sliding plates in 60 seconds and they will be ready for shipment within 3 days**

In addition to individually configurable sliding plates and plain bearings, lead screw nuts with trapezoidal threads can be manufactured from a 3D model. Eliminates costly, time-consuming design and rework. Lead screw nuts, plain bearing, and sliding plates are manufactured from iglide® I3 (laser sintering).



**Lead screw nut wear test**



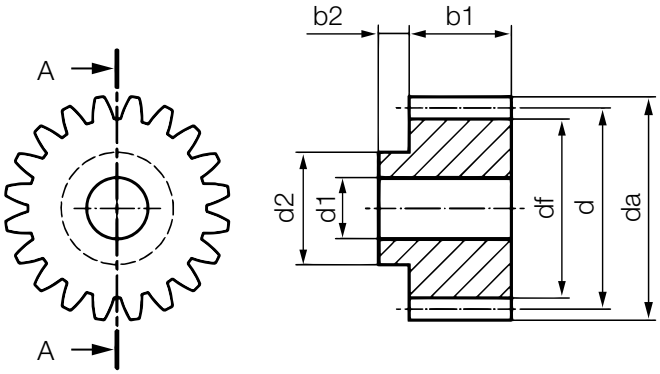

**F = 129N; l = 370mm; n = 290rpm**

**Ships within 2-3 business days**

**All configurators**
**▶ www.igus.com/cad**

# iglide® tribo 3D printing |

Image exemplary




## Configuration key

| Part type | Options | | | | | | |
|---|---|---|---|---|---|---|---|
| OC-GEAR - | 01 - | 1.00 - | 18 - | 10.0 - | 6.1 - | 20.0 - | 6.0 |
| Configurator | Gear type | Tooth module | Number of teeth | Width b1 | Inner diameter d1 | Diameter outlet b2 | Width outlet b2 |

Configuration limits:

**Gear type 01:** gear with hole, keyway optional
**Tooth module:** 0.50 to 10.0mm
**Number of teeth:** 17 to 100
**Width:** 1.0 to 200mm

**Dimensions [mm] – example gear configuration with and without keyway**

| Part No. | Configuration number | Tooth module | Number of teeth | Width b1 | Inner Ø d1 | Keyway Ø b2 | Width outlet b2 |
|---|---|---|---|---|---|---|---|
| I3-PS-02 | OC-GEAR-01-1.00-☐-10-6-15 | 1.00 | 17–100 | 10 | 6 | 15 | 8 |
| I3-PS-02 | OC-GEAR-01-1.50-☐-10-10-25 | 1.50 | 17–100 | 10 | 10 | 25 | 10 |
| I3-PS-02 | OC-GEAR-01-2.00-☐-12-10 | 2.00 | 17–100 | 12 | 10 | – | – |
| I3-PS-02 | OC-GEAR-01-2.50-☐-14-12 | 2.50 | 17–100 | 14 | 12 | – | – |

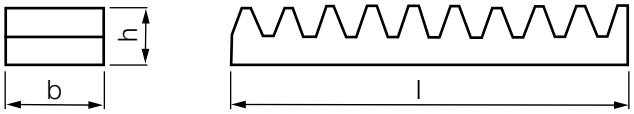
**Many other gear types, including double gears, can be configured online: download the STEP model and determine the price online ▶ www.igus.com/cad**

**Delivery time from 2-3 business days**

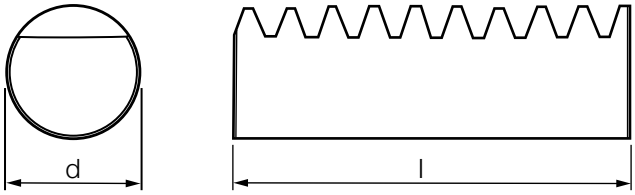
# iglide® tribo 3D printing

## Rack, flat

Image exemplary




## Rack, round




## Configuration key
rack, flat

| Part type | | | | | | | Options |
|---|---|---|---|---|---|---|---|
| OC-GEAR-RACK - | 01 - | 1.00 - | 10.0 - | 4.5 - | 60.0 - | S |
| Configurator | Rack type | Tooth module | Width b | Height h | Length l | Arrangement |

Configuration limits:

| | |
|---|---|
| **Rack type 01:** | flat rack |
| **Tooth module:** | 0.50 to 10.0mm |
| **Width:** | 1.0 to 100mm |
| **Height:** | up to 100mm |
| **Length:** | 3 to 300mm[173)] |
| **Arrangement S:** | Symmetrical end separation |

## Configuration key
rack, round

| Part type | | | | | Options |
|---|---|---|---|---|---|
| OC-GEAR-RACK - | 01 - | 1.00 - | 10.0 - | 60.0 - | S |
| Configurator | Rack type | Tooth module | Diameter d | Length l | Arrangement |

Configuration limits:

| | |
|---|---|
| **Rack type 02:** | round rack |
| **Tooth module:** | 0.50 to 10.0mm |
| **Diameters:** | 3.0mm up to 100mm |
| **Length:** | 3 to 300mm[173)] |
| **Arrangement S:** | Symmetrical end separation |

### Dimensions [mm] – example configuration of flat rack

| Part No. | Configuration number | Tooth module | Width b | Height h | Length l | Arrangement |
|---|---|---|---|---|---|---|
| I3-PS-02 | OC-GEAR-RACK-01-1.00-10.0-10.0-☐-S | 1.00 | 10.0 | 10.0 | 3–300 | S |
| I3-PS-02 | OC-GEAR-RACK-01-1.50-15.0-15.0-☐-S | 1.50 | 15.0 | 15.0 | 3–300 | S |
| I3-PS-02 | OC-GEAR-RACK-01-2.00-20.0-20.0-☐-S | 2.00 | 20.0 | 20.0 | 3–300 | S |
| I3-PS-02 | OC-GEAR-RACK-01-2.50-20.0-20.0-☐-S | 2.50 | 20.0 | 20.0 | 3–300 | S |

[173)] Also has multiple parts

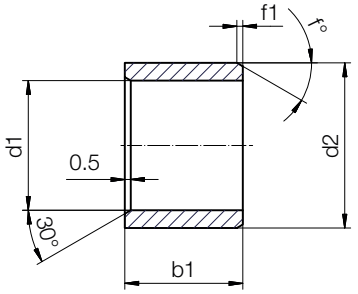
Configure an individual rack, download the STEP model, and determine the price online
▶ www.igus.com/rack-configurator

Ships within 2-3 business days

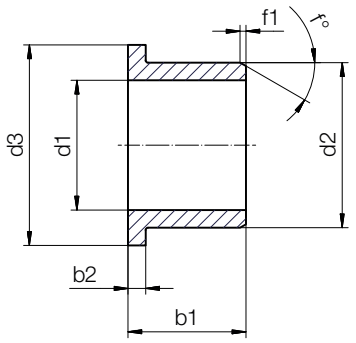
3D-CAD files, prices and delivery time ▶ www.igus.com/tribo-printing

# iglide® tribo 3D printing |

## Sleeve bearing




## Flanged bearings




## Configuration key
### Sleeve bearing

| Part type | Options | | | | |
|---|---|---|---|---|---|
| OC-BRG | - S | - 10.0 | - 12.0 | - 10.0 | |
| Configurator | Plain bearing type | Inner Ø d1 | Outer Ø d2 | Total length b1 | |

Configuration limits:

| | |
|---|---|
| Plain bearing type S: | sleeve bearing |
| Inner diameter: | up to 195mm |
| Outer diameter: | up to 200mm |
| Bearing length: | up to 300mm |

## Configuration key
### Flanged bearings

| Part type | Options | | | | | |
|---|---|---|---|---|---|---|
| OC-BRG | - F | - 10.0 | - 12.0 | - 10.0 | - 16.0 | - 1.0 |
| Configurator | Plain bearing type | Inner Ø d1 | Outer Ø d2 | Total length b1 | Flange Ø | Flange thickness |

Configuration limits:

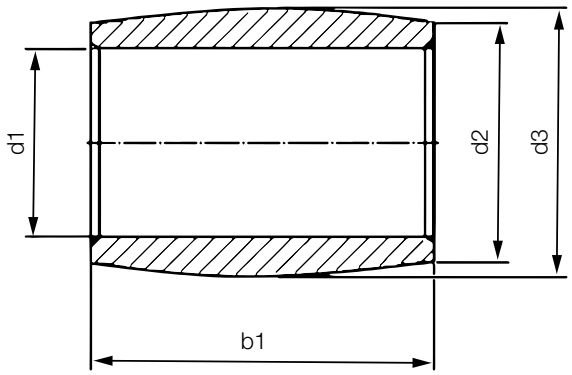
| | |
|---|---|
| Plain bearing type F: | flanged bearing |
| Inner diameter: | up to 195mm |
| Outer diameter: | up to 200mm |
| Bearing length: | up to 300mm |
| Flange diameter: | up to 200mm |
| Flange thickness: | up to 20mm |

**Dimensions [mm] – example plain bearing configuration with and without flange**

| Part No. | Configuration number | Inner Ø | Outer Ø | Total length | Flange Ø | Flange thickness |
|---|---|---|---|---|---|---|
| | | d1 | d2 | b1 | d3 | b2 |
| I3-PS-02 | OC-BRG-S-50.0-60.0-30.0 | 50.0 | 60.0 | 30.0 | – | – |
| I3-PS-02 | OC-BRG-S-18.0-20.0-16.0 | 18.0 | 20.0 | 16.0 | – | – |
| I3-PS-02 | OC-BRG-F-18.0-22.0-18.0-30.0-1.0 | 18.0 | 22.0 | 18.0 | 30.0 | 1.0 |
| I3-PS-02 | OC-BRG-F-50.0-60.0-31.0-66.0-1.0 | 50.0 | 60.0 | 31.0 | 66.0 | 1.0 |

Configure an individual plain bearing, download the STEP model, and determine the price online, including special shapes with slot
▶ www.igus.com/3d-model

Ships within 2-3 business days




## Configuration key

| Part type | | Options | | | |
|---|---|---|---|---|---|
| OC-ROLLER | - 02 | - 10.0 | - 15.0 | - 30.0 | - 20.0 |
| Configurator | Roller type | Inner Ø d1 | Outer Ø d2 | Spherical outer Ø d3 | Roller length |

Configuration limits:

| | |
|---|---|
| Roller type 02: | convex roller |
| Inner diameter: | 1 up to 190mm |
| Outer diameter: | up to 195mm |
| Roller length: | up to 300mm |

### Dimensions [mm] – example configuration of convex rollers

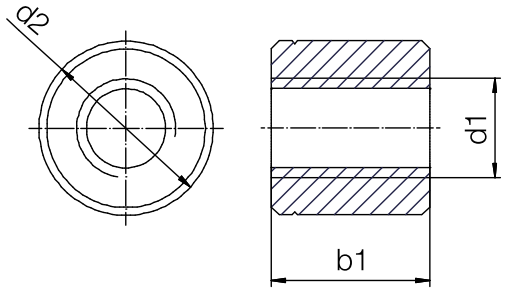
| Part No. | Configuration number | Inner Ø d1 | Outer Ø d2 | Spherical Outer Ø d3 | Max. Roller length b1 |
|---|---|---|---|---|---|
| I3-PS-02 | OC-ROLLER-02-4.0-8.0-8.2-☐ | 4.0 | 8.0 | 8.2 | 300 |
| I3-PS-02 | OC-ROLLER-02-10.0-15.0-20-☐ | 10.0 | 15.0 | 20 | 300 |
| I3-PS-02 | OC-ROLLER-02-10.0-50.0-55.0-☐ | 10.0 | 50.0 | 55.0 | 300 |
| I3-PS-02 | OC-ROLLER-02-14.0-60.0-61.0-☐ | 14.0 | 60.0 | 61.0 | 300 |
| I3-PS-02 | OC-ROLLER-02-20.0-100.0-120.0-☐ | 20.0 | 100.0 | 120.0 | 300 |

Many other roller types can be configured online: download the STEP model and determine the price online
▶ www.igus.com/roller-configurator

Ships within 2-3 business days

# iglide® tribo 3D printing |

Image exemplary




## Configuration key

| Part type | Options | | | | |
|---|---|---|---|---|---|
| OC-NUT - | S - | 18.0 - | 12.0 - | TR10x2 - | R |
| Configurator | Lead screw nut type | Outer Ø d2 | Width b1 | Thread | Thread direction |

Configuration limits:

| | |
|---|---|
| Lead screw nut type S: | cylindrical |
| Outer diameter: | up to 150mm |
| Width: | 3 to 200mm |
| Thread: | 32 types to select from |
| Thread direction: | R = Right hand<br>L = Left |

### Dimensions [mm] – example configuration of cylindrical lead screw nut

| Part No. | Configuration number | Outer Ø | Width | Thread | Thread direction | |
|---|---|---|---|---|---|---|
| | | d2 | b1 | | right | left |
| I3-PS-02 | OC-NUT-S-15.0-☐-TR8X1.5-R | 15.0 | 3–200 | TR8X1.5 | ● | – |
| I3-PS-02 | OC-NUT-S-16.0-☐-TR10X2-L | 16.0 | 3–200 | TR10X2 | – | ● |
| I3-PS-02 | OC-NUT-S-18.0-☐-TR11X5-R | 18.0 | 3–200 | TR11X5 | ● | – |
| I3-PS-02 | OC-NUT-S-22.0-☐-TR16X2-R | 22.0 | 3–200 | TR16X2 | ● | – |
| I3-PS-02 | OC-NUT-S-26.0-☐-TR20X2-L | 26.0 | 3–200 | TR20X2 | – | ● |
| I3-PS-02 | OC-NUT-S-50,0-☐-TR30X3-R | 50.0 | 3–200 | TR30X3 | ● | – |

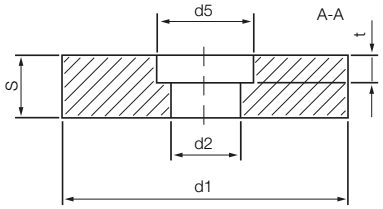
**Configure individual trapezoidal lead screw nuts, download the STEP model and determine the price online**
**▶ www.igus.com/lead-screw-nut-configurator**

**Ships within 2-3 business days**

# iglide® tribo 3D printing

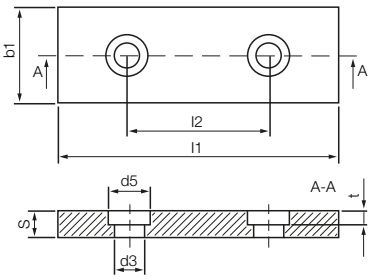
## Round sliding element with central hole

Image exemplary




## Rectangular sliding element with 2 holes

Image exemplary




## Configuration key

**Round sliding element with central hole**

| Part type | Options |
|---|---|
| OC-SLIDER-01 | -6.4-30.0-10.0-13.0-5.0 |

| Configurator | Glider type | Inner Ø d1 | Outer Ø d2 | Thickness s | Flat sink d5 | Flat sink depth t |
|---|---|---|---|---|---|---|

Configuration limits:

| | |
|---|---|
| **Glider Type 01:** | Round with central hole |
| **Inner diameter:** | up to 195mm |
| **Outer diameter:** | up to 200mm |
| **Height 2:** | up to 100mm |
| **Flat sink:** | optional |

## Configuration key

**Rectangular sliding element with 2 holes**

| Part type | Options |
|---|---|
| OC-SLIDER - 02 | 20.0-40.0-20.0-10.0-6.4-13.0-5.0 |

| Configurator | Glider type | Width b1 | Length l1 | Pitch l2 | Thickness s | Hole d3 | Flat sink d5 | Flat sink depth t |
|---|---|---|---|---|---|---|---|---|

Configuration limits:

| | |
|---|---|
| **Glider Type 04:** | Rectangle with two holes |
| **Width:** | 10 to 200mm |
| **Length:** | 10 to 200mm |
| **Flat sink:** | optional |

Glider type:

**01** Round with central hole
**02** Round with 4 holes
**03** Round with 5 holes
**04** Rectangle with 2 holes
**05** Rectangle with 4 holes

### Dimensions [mm] – example plain bearing configuration with and without flange

| Part No. | Configuration number | Width b1 | Length l1 | Pitch l2 | Height s | Hole d3 | Flat sink d5 | Flat sink depth t |
|---|---|---|---|---|---|---|---|---|
| I3-PS-02 | OC-SLIDER-04-20.0-40.0-20.0-10.0-6.4-13.0-5.0 | 20.0 | 40.0 | 20.0 | 10.0 | 6.4 | 13.0 | 5.0 |
| I3-PS-02 | OC-SLIDER-04-30.0-60.0-40.0-8.0-4.3-9.0-4.4 | 30.0 | 60.0 | 40.0 | 8.0 | 4.3 | 9.0 | 4.4 |
| I3-PS-02 | OC-SLIDER-04-50.0-100.0-60.0-11.0-8.2 | 50.0 | 100.0 | 60.0 | 11.0 | 8.2 | – | – |

Many other glider types can be configured online: download the STEP model and determine the price online ▶ www.igus.com/glider-configurator

Ships within 2-3 business days

# iglide® tribofilament | Advantages

## 3D printing with tribofilaments

**50 times more abrasion-resistant than standard materials for maximum service life**

Components made of igus® tribofilament are up to 50 times more wear-resistant than standard materials for 3D printing and therefore have an extremely long service life. Due to their excellent tribological properties, they are suited for 3D printing of replacement parts and wear-resistant parts such as plain bearings, drive nuts, gears.

The igus® tribofilaments can be processed on 3D printers that are based on the fused-deposition-modeling method (FDM/FFF) and that allow the nozzle temperature to be set as required.

**Find and order the appropriate tribofilament online**
**▶ www.igus.com/tribofilament**

**Spool**

250g of iglide® tribofilaments are wound onto a spool with an outer diameter of 205mm, a width of 55mm. It has an inner diameter of 55mm. Test kits with 25g filament are also available; this is not wound onto a spool.

**Filament diameter**

The iglide® tribofilaments are available with 1.75mm and 3mm diameter. The 3mm filaments can be used without problems in 3D printers that need a 2.85mm filament.

**3x more material**

With the bigger spool size, each spool contains 750g filament (300m filament in 1.75mm diameter or 90m filament in 3mm diameter).

### "How do I assess myself and my 3D printer?"

| Ambient temperature of application | Beginner<br>Easy to process | Advanced<br>Experienced users | Expert<br>Expert level processing |
|---|---|---|---|
| **–22 °F to +149 °F** | iglide® I150 | iglide® I150<br>iglide® I180 | iglide® I180<br>iglide® J260 |
| **–40 °F to +176 °F** | iglide® I180<br>iglide® I190 | iglide® I180<br>iglide® I190 | iglide® I180 / iglide® J260<br>iglide® I190 |
| **–22 °F to +212 °F** | | | iglide® J260<br>iglide® C210 |
| **–148 °F to +248 °F** | | | iglide® J260 |
| **–148 °F to +356 °F** | | | iglide® A350 / iglide® J350 |
| **–58 °F to +338 °F** | | | iglide® RW370 |

# iglide® tribofilament | Product overview

**Material: iglide® I150**

**Wear-resistant parts printed the easy way**
- High abrasion resistance at low speeds
- Good mechanical properties
- The easiest to process tribofilament (even without a heated print bed)
- Nozzle temperature: +464 °F to +482 °F

▶ **Page 820**

**Material: iglide® I180**

**Best combination of ability to be processed and service life**
- Abrasion-resistant
- Good mechanical properties
- Nozzle temperature: +482 °F to +500 °F
- Also in black (iglide® I180-BL)

▶ **Page 821**

**Material: iglide® J350**

**For high temperature applications**
- Excellent coefficient of friction against steel
- Application temperature from –148°F to +356°F
- High temperature necessary of at least +320°F installation space temperature
- Nozzle temperature: +680°F up to +698°F

▶ **Page 823**

**Material: iglide® RW370**

**Ideal for rail technology**
- Flame-retardant and high strength
- Application temperature from –58°F to +338°F
- High temperature printer necessary
- Nozzle temperature: +662°F up to +680°F

▶ **Page 824**

**Material: iglide® P150**

**Fiber reinforced**
- Highest flexural strength and stiffness due to fiber reinforcement
- Flexural strength 12,618psi, modulus of elasticity 5GPa
- Suitable for structural components and multi-material parts
- Ideal for lightweight construction
- Developed as a material partner for iglide I150-PF

▶ **Page 826**

**Material: iglide® I190**

**High flexural strength**
- Flexural strength 11,603psi, best iglide filament
- Easily processed on commercially available 3D printers
- Excellent service life - 50 times higher abrasion resistance than ABS
- Self-lubricating and maintenance-free
- Application temperature: 194°F (after component tempering)

▶ **Page 821**

**Material: iglide® J260**

**Extremely long service life and excellent coefficient of friction**
- Outstanding abrasion resistance of tribofilaments
- Application temperature from –148 °F to +248 °F
- High-quality processing
- Nozzle temperature: +500 °F to 518 °F

▶ **Page 822**

**Material: iglide® C210**

**Resistant to chemicals and highly abrasion-resistant during printing**
- High chemical resistance
- Abrasion-resistant
- High-quality processing
- Nozzle temperature: +500 °F to +518 °F

▶ **Page 823**

**Material: iglide® A350**

**For the food industry**
- Compliant with Regulation (EU) No. 10/2011 and FDA guidelines
- Application temperature from –140°F to +356°F
- High temperature printer necessary
- Nozzle temperature: +680°F up to +698°F

▶ **Page 825**

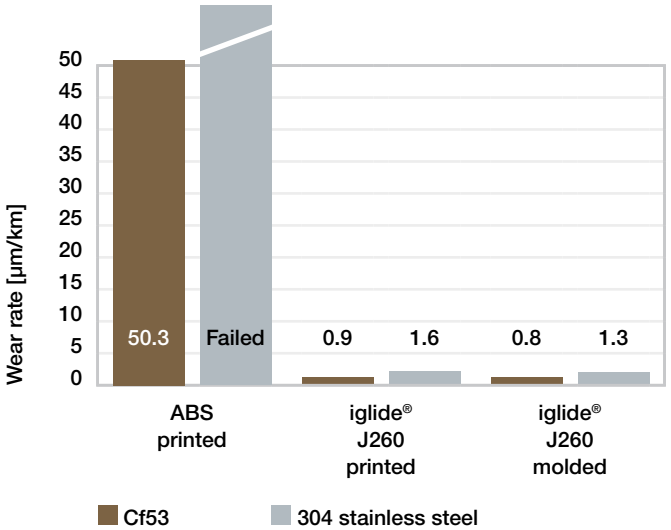
# iglide® tribofilament | Tested

## Printed as good as injection-molded

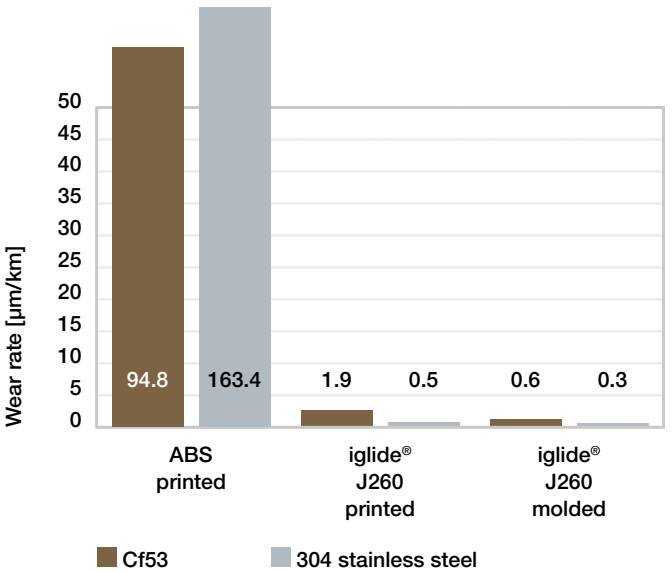

### 3D print filament impresses during tests with injection molding quality

Our iglide® J260 tribofilament is more wear-resistant than standard print material. A series of tests show: 3D printed plain bearings made from the filament iglide® J260 are equally as wear-resistant as our injection-molded parts from the same material. The tests have also proven that iglide® 3D print filaments and SLS materials have a considerably lower coefficient of friction and are up to 50 times more abrasion-resistant than conventional 3D printing materials. This makes iglide® tribofilaments and SLS materials the only 3D printing materials to also offer impressive performance in moving applications. You can therefore directly install printed parts such as plain bearings, drive nuts or worm gears and use them as wear-resistant parts – from the prototype phase to series production.

- Outstanding abrasion resistance of tribofilaments
- Application temperature from –148 °F to +248 °F
- High-quality processing
- Available as filament, bar stock or injection-molded part – **from prototype to series production**



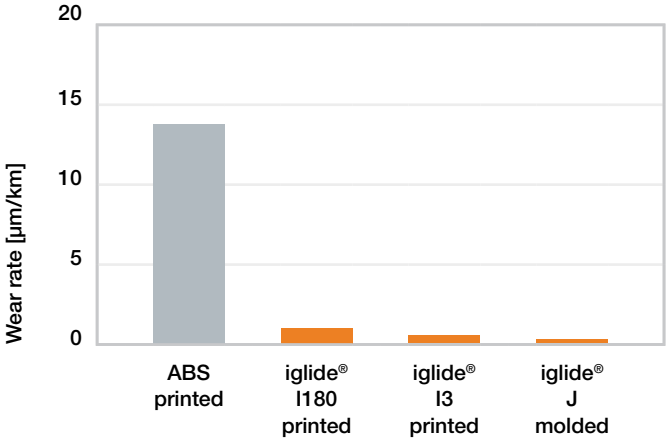

Rotating wear: p = 145 psi; v = 59fpm



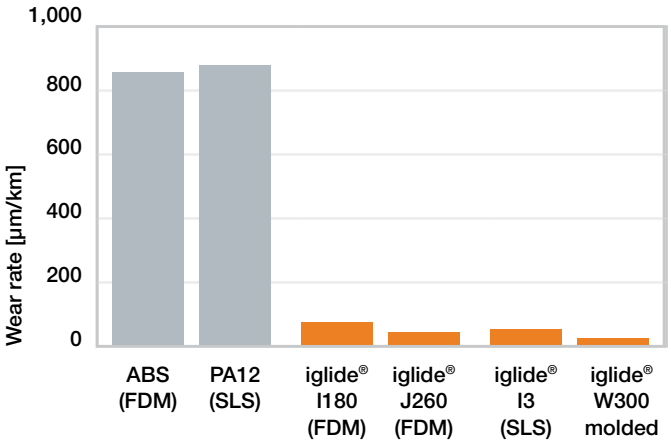

Linear wear: p = 145 psi; v = 59fpm; l = 5mm

# iglide® tribofilament | Test results

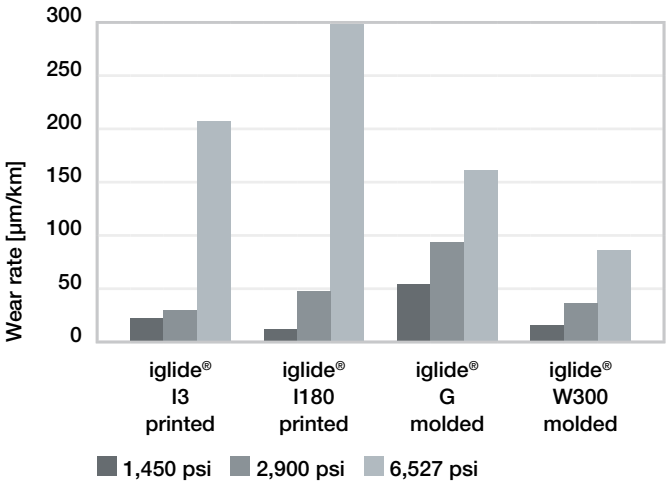
Wear-resistant parts made of iglide® tribofilament with the 3D printing method or parts made of iglide® I3 with the SLS method are much more wear-resistant than standard 3D printing materials.




Linear wear: p = 15.95 psi; v = 66.93 fpm; l = 370mm

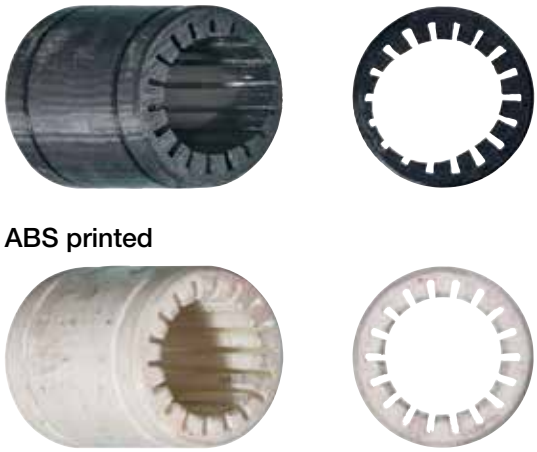



Wear, rotating p = 2,900 psi; v = 1.97 fpm, 304 stainless steel




Wear, pivoting shaft: 304 stainless steel, v = 1.97 fpm; ß = 60°

The following tests also show "printed as good as injection-molded": the 3D-printed iglide® plain bearings are comparable to conventionally made plain bearings with respect to wear resistance.



ABS printed

iglide® I180 printed

ABS

PA12

iglide® I3

iglide® I180

ABS printed

iglide® I180

iglide® I180 printed

iglide® L280

# iglide® tribofilament | Product range

iglide® I150

## Order key

| tribofilament | Diameter | Weight |
|---|---|---|
| I150-PF- | 0175 | -0250 |
| iglide® material | tribofilament | Ø [mm · 100] | Spool weight [g] |

## iglide® I150 – makes printing even easier

- High abrasion resistance at low speeds
- Good mechanical properties
- The tribofilament that is easiest to process
- Recommended printing surface: igus® adhesive film or glue-stick on glass
- Also to be processed without a heated print bed (prerequisite: igus® adhesive film ▶ **Page 827**

### Dimensions [mm]

| Part No. | Filament diameter | Outer Ø spool | Inner Ø spool | Spool width | Weight [g] |
|---|---|---|---|---|---|
| **I150-PF-0175-0250** | 1.75 | 205 | 55 | 55 | 250 |
| **I150-PF-0175-0750** | 1.75 | 205 | 55 | 67 | 750 |
| **I150-PF-0300-0250** | 3.00 | 205 | 55 | 55 | 250 |
| **I150-PF-0300-0750** | 3.00 | 205 | 55 | 67 | 750 |

## Material properties

| General properties | Unit | iglide® I150 | iglide® I190 | iglide® I180 / I180-BL |
|---|---|---|---|---|
| Density | g/cm³ | 1.30 | 1.37 | 1.21 |
| Color | | white | beige | white |
| Max. moisture absorption at +73 °F/50 % r. h. | % weight | 0.3 | 1.4 | 0.3 |
| Max. total moisture absorption | % weight | 0.7 | 6.0 | 0.9 |
| **Mechanical properties** | | | | |
| Flexural modulus | psi | 246,564 | 348,091 | 246,564 |
| Flexural strength at +68°F | psi | 7,832/5,366[130)] | 10,878 | 6,672/4,786[130)] |
| Shore D hardness | | 62 | 71 | 66 |
| **Physical and thermal properties** | | | | |
| Max. continuous application temperature | °F | +149 | +194 | +176 |
| Max. short-term application temperature | °F | +167 | +230 | +194 |
| Min. continuous application temperature | °F | –22 | -40 | –40 |
| **Electrical properties** | | | | |
| Specific contact resistance | Ωcm | > $10^{13}$ | n.d. | > $10^{12}$ |
| Surface resistance | Ω | > $10^{12}$ | > $10^{12}$ | > $10^{11}$ |

**Table 01: Material properties table**

[130)] **Printed flat/upright**

# iglide® tribofilament | Product range

iglide® I190

## Order key

| tribofilament | Diameter | Weight |
|---|---|---|
| I190 - PF - | 0175 | - 0750 |
| iglide® material | tribofilament | Ø [mm · 100] | Spool weight [g] |

## iglide® I190 – highest strength for regular 3D printers

- Application temperature: +194 °F
- Recommended printing surface: igus® adhesive film ▶ **Page 827**

### Dimensions [mm]

| Part No. | Filament diameter | Outer Ø spool | Inner Ø spool | Spool width | Weight [g] |
|---|---|---|---|---|---|
| I190-PF-0175-0750 | 1.75 | 205 | 55 | 55 | 750 |
| I190-PF-0300-0750 | 3.00 | 205 | 55 | 67 | 750 |

iglide® I180

iglide® I180-BL

## Order key

| tribofilament | Diameter | Weight |
|---|---|---|
| I180 - PF - | 0175 | - 0250 |
| iglide® material | tribofilament | Ø [mm · 100] | Spool weight [g] |

## iglide® I180 – flexible (white) / iglide® I180-BL (black)

- High degree of abrasion resistance, even in the case of dynamic applications
- Good mechanical properties
- Max. application temperature: +176 °F
- Recommended printing surface: igus® adhesive film ▶ **Page 827**
- Available in black for visible parts (I180-BL)

### Dimensions [mm]

| Part No. White | Part No. Black | Filament diameter | Outer Ø spool | Inner Ø spool | Spool width | Weight [g] |
|---|---|---|---|---|---|---|
| I180-PF-0175-0250 | I180-BL-PF-0175-0250 | 1.75 | 205 | 55 | 55 | 250 |
| I180-PF-0175-0750 | I180-BL-PF-0175-0750 | 1.75 | 205 | 55 | 67 | 750 |
| I180-PF-0300-0250 | I180-BL-PF-0300-0250 | 3.00 | 205 | 55 | 55 | 250 |
| I180-PF-0300-0750 | I180-BL-PF-0300-0750 | 3.00 | 205 | 55 | 67 | 750 |

Complete processing instructions online
(in the download area of the respective material)
▶ www.igus.com/tribofilament

Part No. adhesive film for print bed
PF-01-0203-0203 (203 x 203mm)
PF-01-0254-0228 (254 x 228mm)

# iglide® tribofilament | Product range

iglide® J260

## Order key

| tribofilament | Diameter | Weight |
|---|---|---|
| J260 - PF - | 0175 | - 0250 |
| iglide® material | tribofilament | Ø [mm · 100] | Spool weight [g] |

## iglide® J260 – extremely long service life

- Outstanding abrasion resistance of tribofilaments
- Application temperature from –148 °F to +248 °F
- For experts: high-quality processing
- Recommended printing surface: igus® adhesive film ▶ Page 827

### Dimensions [mm]

| Part No. | Filament diameter | Outer Ø spool | Inner Ø spool | Spool width | Weight [g] |
|---|---|---|---|---|---|
| **J260-PF-0175-0250** | 1.75 | 205 | 55 | 55 | 250 |
| **J260-PF-0175-0750** | 1.75 | 205 | 55 | 67 | 750 |
| **J260-PF-0300-0250** | 3.00 | 205 | 55 | 55 | 250 |
| **J260-PF-0300-0750** | 3.00 | 205 | 55 | 67 | 750 |

### Material properties

| General properties | Unit | iglide® J260 | iglide® J350 | iglide® C210 |
|---|---|---|---|---|
| Density | g/cm³ | 1.35 | 1.44 | 1.40 |
| Color | | yellow | Yellow | white |
| Max. moisture absorption at +73 °FC/50 % r. h. | % weight | 0.2 | 0.3 | 0.3 |
| Max. total moisture absorption | % weight | 0.4 | 1.6 | 0.7 |
| **Mechanical properties** | | | | |
| Flexural modulus | psi | 145,038 | 203,053 | 232,060 |
| Flexural strength at +68 °F | psi | 5,,947 / 1,885[130)] | 6,527 / – | 5,511 / 4,351[130)] |
| Shore D hardness | | 66 | 80 | 70 |
| **Physical and thermal properties** | | | | |
| Max. continuous application temperature | °F | +248 | +356 | +212 |
| Max. short-term application temperature | °F | +284 | +428 | +356 |
| Min. continuous application temperature | °F | –148 | –148 | -22 |
| **Electrical properties** | | | | |
| Specific contact resistance | Ωcm | > $10^{12}$ | > $10^{13}$ | > $10^{13}$ |
| Surface resistance | Ω | > $10^{10}$ | > $10^{10}$ | > $10^{12}$ |

Table 01: Material properties table

[130)] Printed flat/upright

# iglide® tribofilament | Product range

iglide® J350

## Order key

| tribofilament | Diameter | Weight |
|---|---|---|
| J350 - PF - | 0175 | - 0250 |
| iglide® material | tribofilament | Ø [mm · 100] | Spool weight [g] |

## iglide® J350 – for high temperature applications

- Max application temperature: +356°F
- Can be processed with high-temperature 3D printer
- Nozzle temperature: +680°F up to +698°F
- Installation area temperature: from +320°F to +392°F
- Recommended printing surface: PET film

### Dimensions [mm]

| Part No. | Filament diameter | Outer Ø spool | Inner Ø spool | Spool width | Weight [g] |
|---|---|---|---|---|---|
| J350-PF-0175-0250 | 1.75 | 205 | 55 | 55 | 250 |

iglide® C210

## Order key

| tribofilament | Diameter | Weight |
|---|---|---|
| C210 - PF - | 0175 | - 0250 |
| iglide® material | tribofilament | Ø [mm · 100] | Spool weight [g] |

## iglide® C210 – chemicals and high abrasions resistance

- Resistance to many acids, solvents and hydrogen
- Abrasion-resistant
- Max application temperature: +212 °F
- For experts: high-quality processing
- Recommended printing surface: igus® adhesive film ▶ Page 827

### Dimensions [mm]

| Part No. | Filament diameter | Outer Ø spool | Inner Ø spool | Spool width | Weight [g] |
|---|---|---|---|---|---|
| C210-PF-0175-0250 | 1.75 | 205 | 55 | 55 | 250 |
| C210-PF-0300-0250 | 3.00 | 205 | 55 | 55 | 250 |

Complete processing instructions online
(in the download area of the respective material)
▶ www.igus.com/tribofilament

Part No. adhesive film for print bed
PF-01-0203-0203 (203 x 203mm)
PF-01-0254-0228 (254 x 228mm)

# iglide® tribofilament | Product range

iglide® RW370

## Order key

| tribofilament | Diameter | Weight |
|---|---|---|
| RW370 - PF - | 0175 | - 0750 |
| iglidur® material | tribofilament | Ø [mm · 100] | Spool weight [g] |

## iglide® RW370 – ideal for the rail industry

- Flame-retardant, according to UL94-V0 and DIN EN 45545
- Flexural strength 13,198 psi
- High wear resistance
- Can be processed with high-temperature 3D printer
- Max application temperature: +338°F
- Available for 3D printing (Ø 1.75mm), as bar stock and as injection-molding material
- Self-lubricating and maintenance-free
- Recommended printing surface: PET film

### Dimensions [mm]

| Part No. | Filament diameter | Outer Ø spool | Inner Ø spool | Spool width | Weight [g] |
|---|---|---|---|---|---|
| C210-PF-0175-0250 | 1.75 | 205 | 55 | 55 | 250 |
| C210-PF-0300-0250 | 3.00 | 205 | 55 | 55 | 250 |

### Material properties

| General properties | Unit | iglide® RW370 | iglide® A350 |
|---|---|---|---|
| Density | g/cm³ | 1.34 | 1.42 |
| Color | | beige | blue |
| Max. moisture absorption at +73 °F/50 % r. h. | % weight | 0.25 | 0.6 |
| Max. total moisture absorption | % weight | 1.2 | 1.9 |
| **Mechanical properties** | | | |
| Flexural modulus | psi | 304,579 | 181,297 / 201,602[130)] |
| Flexural strength at +68°F | psi | 13,198 / 4,351[130)] | 7,252 / 6,672[130)] |
| Shore D hardness | | 80 | 76 |
| **Physical and thermal properties** | | | |
| Max. continuous application temperature | °F | +338 | +356 |
| Max. short-term application temperature | °F | +374 | +410 |
| Min. continuous application temperature | °F | –58 | –148 |
| **Electrical properties** | | | |
| Specific contact resistance | Ωcm | > $10^{12}$ | > $10^{11}$ |
| Surface resistance | Ω | > $10^{12}$ | > $10^{11}$ |

Table 01: Material properties table

[130)] Printed flat/upright

# iglide® tribofilament | Product range

iglide® A350

## Order key

| tribofilament | Diameter | Weight |
|---|---|---|
| A350 - PF - | 0175 | - 0750 |
| iglide® material | tribofilament | Ø [mm · 100] | Spool weight [g] |

## iglide® A350 – for the food industry

- Compliant with Regulation (EU) No. 10/2011 and FDA guidelines
- Available as 3D printing filament, bar stock and for injection molding
- In industry standard blue
- Max. application temperature: +356°F
- Complies with the fire prevention requirements of the Federal Aviation Administration of the USA (FAA) for aircraft interiors
- Suitable for autoclave
- Recommended bonding surface: PET film

### Dimensions [mm]

| Part No. | Filament diameter | Outer Ø spool | Inner Ø spool | Spool width | Weight [g] |
|---|---|---|---|---|---|
| A350-PF-0175-0750 | 1.75 | 215 | 38 | 82 | 1,055 |

Complete processing instructions online
(in the download area of the respective material)
▶ www.igus.com/tribofilament

Part No. adhesive film for print bed
PF-01-0203-0203 (203 x 203mm)
PF-01-0254-0228 (254 x 228mm)

# iglide® tribofilament | Processing and accessories

iglide® P150

## Order key

| tribofilament | Diameter | Weight |
|---|---|---|
| P150-PF- | 0175 | - 0750 |
| iglide® material | tribofilament | Ø [mm · 100] | Spool weight [g] |

## iglide® P150 –

- Highest strength and stiffness due to fiber reinforcement
- Suitable for structural components and multi-material parts
- Flexural strength 87MPa, flexural modulus of elasticity 5GPa
- Ideal for lightweight construction
- Lower material requirements due to high strength and high stiffness

### Dimensions [mm]

| Part No. | Filament diameter | Outer Ø spool | Inner Ø spool | Spool width | Weight [g] |
|---|---|---|---|---|---|
| **P150-PF-0175-0750** | 1.75 | 205 | 55 | 67 | 750 |
| **P150-PF-0300-0750** | 2.85-3.00 | 205 | 55 | 67 | 750 |

### Material properties

| General properties | Unit | iglide® P150 |
|---|---|---|
| Density | g/cm³ | 1.4 |
| Color | | black |
| Max. moisture absorption at +73 °F/50 % r. h. | % weight | n.d. |
| Max. total moisture absorption | % weight | 0.3 |
| **Mechanical properties** | | |
| Flexural modulus | psi | 681,677[130)] |
| Flexural strength at +68°F | psi | 12,618[130)] |
| Shore D hardness | | n.d. |
| **Physical and thermal properties** | | |
| Max. continuous application temperature | °F | +212 |
| Max. short-term application temperature | °F | +257 |
| Min. continuous application temperature | °F | –22 |
| **Electrical properties** | | |
| Specific contact resistance | Ωcm | > $10^{12}$ |
| Surface resistance | Ω | > $10^{12}$ |

**Table 01: Material properties table**

[130)] **Printed flat**

# iglide® tribofilament | Processing and accessories

**Processing tips**

iglide® tribofilaments can be processed on any 3D printer that is equipped with a heated print bed on which temperatures are adjustable. The igus® adhesive film allows a good adhesion between the iglide® tribofilament and the print bed.

- Good ventilation should be provided during processing
- When heated above +572 °F, hazardous fumes are produced

**Complete processing instructions online ▶ www.igus.com/tribofilament**

**Part No. adhesive film for print bed**
PF-01-0203-0203 (203 x 203mm)
PF-01-0254-0228 (254 x 228mm)


**igus® print bed film for your print bed**

Thanks to the film available from igus® for the print bed, there is very good adhesion between the iglide® tribofilament and the print bed.

- For use up to approximately 20 times
- "Set" the degree of adhesion by means of print bed temperature
- 3D printer without heating bed? The combination of iglide® I150 with this print bed film also makes it possible to make wear-resistant parts oneself with such 3D printers

**Part No. Bonding agent for tribofilaments**
PF-ADHESIVE-01

**igus® Bonding agent for tribofilaments**

- Ideal for tribofilaments iglide® I150, iglide® I80 and iglide® I80BL
- Good adhesion of the parts on the print bed
- Easy detachment

**Example: Part No. test kits**
I150-PF-0175-0025
for 25g of filament, loose with 1.75mm diameter made of the iglide® material I150