



"Food" bearing with media resistance up to +90°C

Compliant with Regulation (EU) No. 10/2011 and FDA guidelines

iglidur® A160



When to use it?

- When a plain bearing with maximum media resistance is required
- When a cost-effective plain bearing with high media resistance is required
- When a material compliant in accordance with Regulation (EU) No. 10/2011 is required



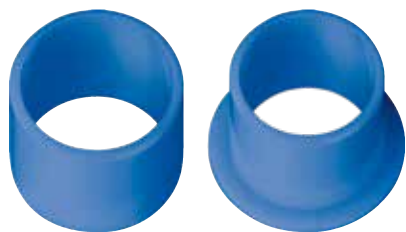
When not to use?

- When a universal material for the food industry is required
iglidur® A180, iglidur® A181
- When a media-resistant plain bearing is required for applications at more than +90°C
iglidur® A500, iglidur® X
- When a low-cost material with high wear resistance is required for dry operation
iglidur® R

Bearing technology | Plain bearing | iglidur® A160



Ø
6.0 – 20.0mm



Also available
as:



Bar stock,
round bar
Page 682



Bar stock,
plate
Page 685



tribo-tape liner
Page 696



Piston rings
Page 581



Two hole
flange
bearings
Page 603



Moulded
special parts
Page 624



igubal®
spherical balls
Page 841

"Food" bearing with media resistance up to +90°C

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and FDA guidelines

iglidur® A160 offers maximum media resistance in the medium temperature range and is therefore a true low-cost iglidur®. The profile of properties is completed by the suitability for applications in the food industry.

- Compliant with Regulation (EU) No. 10/2011
- FDA-compliant
- High media resistance
- Cost-effective
- Lubrication-free
- Maintenance-free

Typical application areas

- Food industry
- Beverage technology
- Medical technology

Descriptive technical specifications

Wear resistance at +23°C	-	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	+
Wear resistance at +90°C	-	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	+
Wear resistance at +150°C	-	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	+
Low coefficient of friction	-	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	+
Low moisture absorption	-	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	+
Wear resistance under water	-	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	+
High media resistance	-	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	+
Resistant to edge pressures	-	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	+
Suitable for shock and impact loads	-	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	+
Resistant to dirt	-	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	+

Online product finder
www.igus.eu/igidur-finder

Online service life calculation
www.igus.eu/igidur-expert

420 3D CAD, finder and service life calculation ... www.igus.eu/A160



Technical data

General properties		Testing method	
Density	g/cm³	1.00	
Colour		blue	
Max. moisture absorption at +23°C and 50% r.h.	% weight	0.1	DIN 53495
Max. moisture absorption	% weight	0.1	
Coefficient of friction, dynamic, against steel	μ	0.09 – 0.19	
pv value, max. (dry)	MPa · m/s	0.25	
Mechanical properties			
Flexural modulus	MPa	1,151	DIN 53457
Flexural strength at +20°C	MPa	19	DIN 53452
Compressive strength	MPa	37	
Max. recommended surface pressure (+20°C)	MPa	15	
Shore D hardness		60	DIN 53505
Physical and thermal properties			
Max. application temperature long-term	°C	+90	
Max. application temperature short-term	°C	+100	
Min. application temperature	°C	-50	
Thermal conductivity	W/m · K	0.30	ASTM C 177
Coefficient of thermal expansion (at +23°C)	K⁻¹ · 10⁻⁵	11	DIN 53752
Electrical properties			
Specific contact resistance	Ωcm	> 10¹²	DIN IEC 93
Surface resistance	Ω	> 10¹²	DIN 53482

Table 01: Material properties

iglidur® A160 plain bearings are characterised by extreme media resistance at a low cost. Tribologically optimised, the material can be used in temperatures up to +90°C and also conforms to demands of the food processing sector. The profile of properties is completed by the "optical detectability", i.e. the blue colour, often required in the industry.

Moisture absorption

Under standard climatic conditions, the moisture absorption of iglidur® A160 plain bearings is approximately 0.1% weight. The saturation limit submerged in water is also approximately 0.1% weight.

Vacuum

In vacuum, any present moisture is released as vapour. Use in vacuum is only possible with dehumidified iglidur® A160 bearings.

Radiation resistance

Plain bearings made from iglidur® A160 are resistant up to a radiation intensity of 1 · 10⁶Gy.

Resistance to weathering

iglidur® A160 plain bearings are continuously resistant to weathering. The material properties are only slightly affected. Possible discolorations are only superficial.

Mechanical properties

With increasing temperatures, the compressive strength of iglidur® A160 plain bearings decreases. Diagram 02 shows this inverse relationship. The maximum recommended surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

Diagram 03 shows the elastic deformation of iglidur® A160 at radial loads. Plastic deformation is minimal up to a radial load of 15MPa. However, it is also dependent on the service time.

Surface pressure, page 41



-50°C up to
+90°C



15MPa



Permissible surface speeds

igidur® A160 was developed for low surface speeds. Maximum speeds of up to 0.5m/s (rotating) and 2.0m/s (linear), respectively, are permissible during continuous dry operation. The given values in table 03 indicate the limits at which an increase up to the continuous permissible temperature occurs. This increase is a result of friction. In practice, though, this level is rarely reached, due to varying application conditions.

Surface speed, page 44

Temperature

The temperatures prevailing in the bearing system also have an influence on the wear. For temperatures over +60°C an additional securing is required.

Application temperatures, page 49

Additional securing, page 49

Friction and wear

Coefficient of friction and wear resistance are dependent on the application parameters (diagrams 04 and 05). For iglidur® A160 plain bearings, altering the coefficient of friction μ as a function of surface speed has less effect. The coefficient of friction decreases with increasing load. Surface finishes (Ra) of the shaft between 0.6 – 0.7 μ m are ideal.

Coefficient of friction and surfaces, page 47

Wear resistance, page 50

Shaft materials

Diagram 06 shows results of testing different shaft materials with plain bearings made from iglidur® A160. For rotational applications with low loads, the most interesting, media and corrosion-resistant shaft materials 304 stainless steel, high grade steel and hard-chromed steel reveal themselves as particularly good counter partners. On high grade steel shafts, however, the wear increases the fastest with the load (diagram 06). With Cf53 shafts, the wear in pivoting applications is exemplary compared to rotating applications. In rotation the wear, as with many other iglidur® materials, is higher than when pivoting (diagram 07).

Shaft materials, page 52

Installation tolerances

igidur® A160 plain bearings are standard bearings for shafts with h tolerance (recommended minimum h9). The bearings are designed for press-fit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances.

Testing methods, page 57

Chemicals	Resistance
Alcohols	+
Diluted acids	+
Diluted alkalines	+
Fuels	+ up to 0
Greases, oils without additives	+
Hydrocarbons	+
Strong acids	+
Strong alkalines	+

All information given at room temperature [+20°C]

Table 02: Chemical resistance

Chemical table, page 1636

	Rotating	Oscillating	linear
long-term m/s	0.5	0.4	2.0
short-term m/s	0.7	0.6	3.0

Table 03: Maximum surface speeds

	Dry	Greases	Oil	Water
Coefficient of friction μ	0.09 – 0.19	0.08	0.03	0.04

Table 04: Coefficient of friction against steel (Ra = 1 μ m, 50HRC)

	Housing	Plain bearing	Shaft
Ø d1 [mm]	H7 [mm]	E10 [mm]	h9 [mm]
0 – 3	+0.000 +0.010	+0.014 +0.054	–0.025 +0.000
> 3 – 6	+0.000 +0.012	+0.020 +0.068	–0.030 +0.000
> 6 – 10	+0.000 +0.015	+0.025 +0.083	–0.036 +0.000
> 10 – 18	+0.000 +0.018	+0.032 +0.102	–0.043 +0.000
> 18 – 30	+0.000 +0.021	+0.040 +0.124	–0.052 +0.000
> 30 – 50	+0.000 +0.025	+0.050 +0.150	–0.062 +0.000
> 50 – 80	+0.000 +0.030	+0.060 +0.180	–0.074 +0.000
> 80 – 120	+0.000 +0.035	+0.072 +0.212	–0.087 +0.000
> 120 – 180	+0.000 +0.040	+0.085 +0.245	–0.100 +0.000

Table 05: Important tolerances for plain bearings according to ISO 3547-1 after press-fit

Technical data

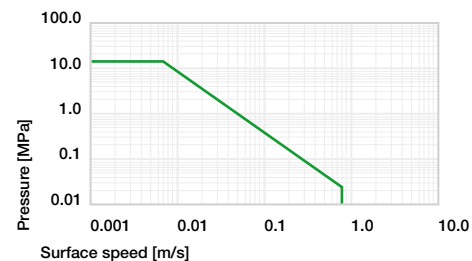


Diagram 01: Permissible pv values for iglidur® A160 plain bearings with a wall thickness of 1mm, dry operation against a steel shaft, at +20°C, mounted in a steel housing

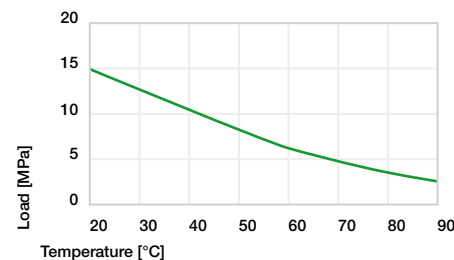


Diagram 02: Maximum recommended surface pressure as a function of temperature (15MPa at +20°C)

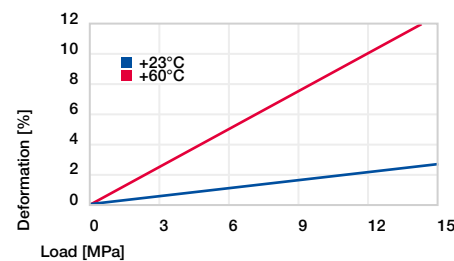


Diagram 03: Deformation under pressure and temperature

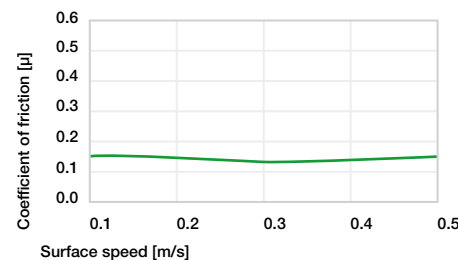


Diagram 04: Coefficient of friction as a function of the surface speed, p = 1MPa

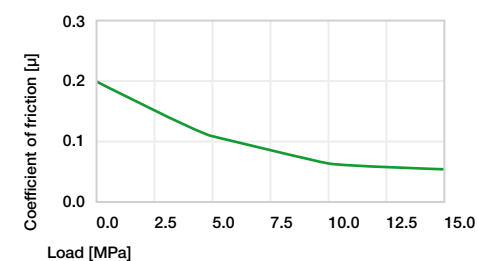


Diagram 05: Coefficient of friction as a function of the load, v = 0.01m/s

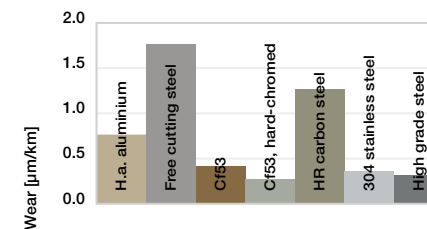


Diagram 06: Wear, rotating with different shaft materials, pressure, p = 1MPa, v = 0.3m/s

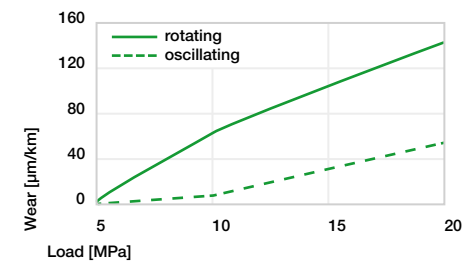
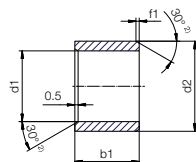


Diagram 07: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the load

Bearing technology | Plain bearing | iglidur® A160

Sleeve bearing (form S)



^{a)} Thickness < 0.6mm: Chamfer = 20°

Chamfer in relation to d1

d1 [mm]	Ø 6–12	Ø 12–30
f1 [mm]	0.5	0.8

i Dimensions according to ISO 3547-1 and special dimensions

Key Order example: **A160SM-0608-06** – no minimum order quantity.
A160 iglidur® material **S** Sleeve bearing **M** Metric **06** Inner Ø d1 **08** Outer Ø d2 **06** Total length b1

d1 [mm]	d1 Tolerance ^{a)}	d2 [mm]	b1 h13 [mm]	Part No.
6.0	+0.020 +0.068	8.0	6.0	A160SM-0608-06
8.0	+0.025 +0.083	10.0	10.0	A160SM-0810-10
10.0		12.0	10.0	A160SM-1012-10
12.0	+0.032 +0.102	14.0	12.0	A160SM-1214-12
16.0		18.0	15.0	A160SM-1618-15
20.0	+0.040 +0.124	23.0	20.0	A160SM-2023-20

^{a)} After press-fit. *Testing methods, page 57*

Available from stock
Detailed information about delivery time online.
www.igus.eu/24

Online ordering
Including delivery times, prices, online tools
www.igus.eu/A160

Ordering note
Our prices are scaled according to order quantities, current prices can be found online.

Discount scaling		
1 – 9	50 – 99	500 – 999
10 – 24	100 – 199	1,000 – 2,499
25 – 49	200 – 499	2,500 – 4,999

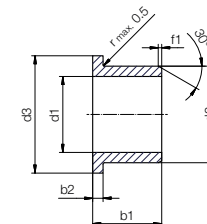
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No low-quantity surcharges.
Free shipping within Germany for orders above €150.

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Bearing technology | Plain bearing | iglidur® A160

Flange bearing (form F)



^{a)} Thickness < 0.6mm: Chamfer = 20°

Chamfer in relation to d1

d1 [mm]	Ø 6–12	Ø 12–30
f1 [mm]	0.5	0.8

i Dimensions according to ISO 3547-1 and special dimensions

Key Order example: **A160FM-0608-06** – no minimum order quantity.
A160 iglidur® material **F** Flange bearing **M** Metric **06** Inner Ø d1 **08** Outer Ø d2 **06** Total length b1

d1 [mm]	d1 Tolerance ^{a)}	d2 [mm]	d3 d13 ^{a)} [mm]	b1 h13 [mm]	b2 h13 [mm]	Part No.
6.0	+0.020 +0.068	8.0	12.0	6.0	1.00	A160FM-0608-06
8.0	+0.025 +0.083	10.0	15.0	10.0	1.00	A160FM-0810-10
10.0		12.0	18.0	10.0	1.00	A160FM-1012-10
12.0	+0.032 +0.102	14.0	20.0	12.0	1.00	A160FM-1214-12
16.0		18.0	24.0	17.0	1.00	A160FM-1618-17
20.0	+0.040 +0.124	23.0	30.0	21.5	1.50	A160FM-2023-21

^{a)} After press-fit. *Testing methods, page 57*

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Detailed information about delivery time online.
www.igus.eu/24

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