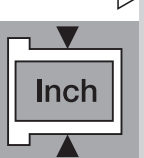
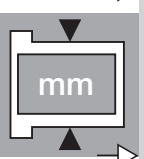
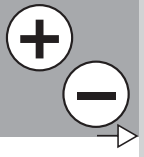


iglidur® A180

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# iglidur® A180 – Very Appetising



The iglidur® A180 material complies with  
**FOOD AND DRUG ADMINISTRATION (FDA)**  
 regulations

For direct contact with food or pharmaceuticals

For wet environments

The iglidur® A180 material complies with FOOD AND DRUG ADMINISTRATION (FDA) regulations for use in direct contact with food and pharmaceuticals. The iglidur® A180 bearings are an ideal solution for bearing applications on machines that manufacture consumables, pharmaceuticals, medical devices, small household appliances, etc.

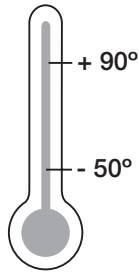


iglidur® A180

2 styles  
> 15 Dimensions  
Ø 6–30 mm



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Price index



## Very Appetising



When to use iglidur® A180 plain bearings:

- If the bearings have direct contact with food
- If FDA-compliance is required
- If quiet operation is important
- If low water absorption is needed



When not to use iglidur® A180 plain bearings:

- When the maximum abrasion resistance is necessary  
▶ iglidur® J (chapter 3)
- When temperatures are continuously greater than 80°C  
▶ A500 (chapter 10)
- When a cost-effective universal bearing is desired  
▶ iglidur® G (chapter 2)



products of iglidur® A180 comply with the requirements of the FDA for repeated contact with food

Internet [www.igus.de](http://www.igus.de)  
E-mail [info@igus.de](mailto:info@igus.de)

### Material Table

General Properties	Unit	iglidur® A180	Testing Method
Density	g/cm <sup>3</sup>	1,46	
Colour		White	
Max. moisture absorption at 23°C / 50% r.F.	% weight	0,2	DIN 53495
Max. moisture absorption	% weight	1,3	
Coefficient of sliding friction, dynamic against steel	μ	0,05 - 0,23	
p x v value, max. (dry)	MPa x m/s	0,31	

#### Mechanical Properties

Modulus of elasticity	MPa	2.500	DIN 53457
Tensile strength 20°C	MPa	88	DIN 53452
Compressive strength	MPa	78	
Max. recommended surface pressure (20°C)	MPa	20	
Shore D hardness		76	DIN 53505

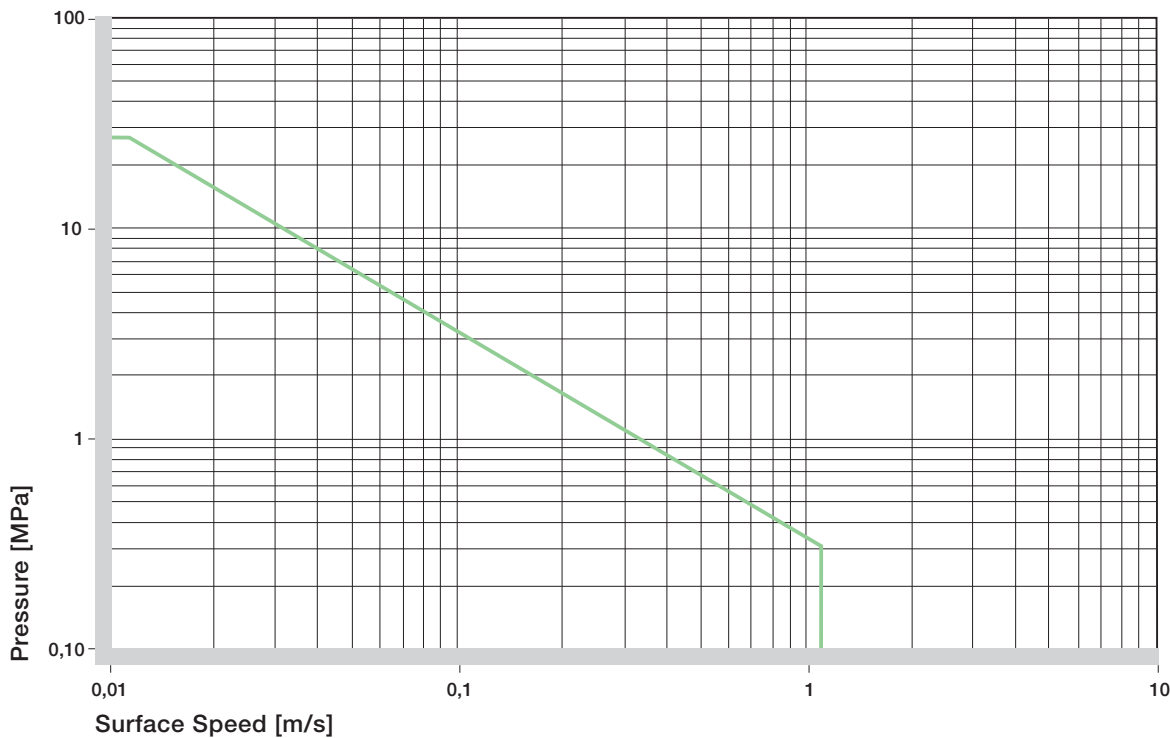
#### Physical and Thermal Properties

Max. long term application temperature	°C	90	
Max. short term application temperature	°C	110	
Min. application temperature	°C	-50	
Thermal conductivity	W/m x K	0,25	ASTM C 177
Coefficient of thermal expansion (at 23°C)	K <sup>-1</sup> x 10 <sup>-5</sup>	11	DIN 53752

#### Electrical Properties

Specific volume resistance	Ωcm	> 10 <sup>12</sup>	DIN IEC 93
Surface resistance	Ω	> 10 <sup>11</sup>	DIN 53482

Table 7.1: Material Data

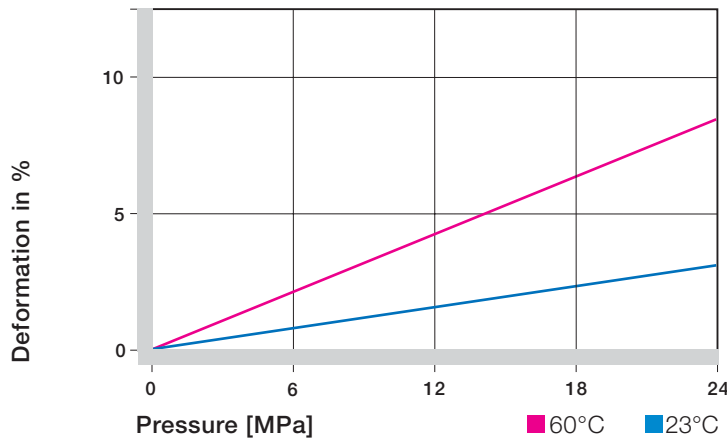


Graph 7.1: Permissible p x v values for iglidur® A180 running dry against a steel shaft, at 20°C

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Navigation icons: Home (+), Information (i), and unit selection (mm, Inch).



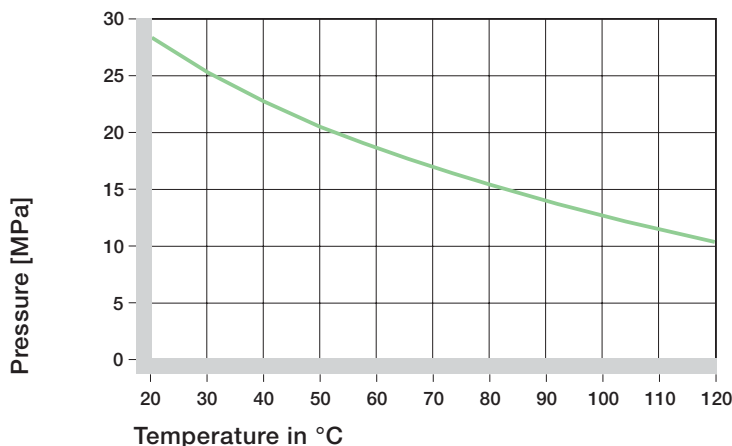
Graph 7.2: Deformation under pressure and temperature

m/s	Rotating	Oscillating	Linear
Continuous	0,8	0,6	3,5
Short term	1,2	1	5

Table 7.2: Maximum surface speeds

iglidur® A180	Application Temperature
Minimum	- 50 °C
Max. long term	+ 90 °C
Max. short term	+ 110 °C

Table 7.3: Temperature iglidur® A180



Graph 7.3: Recommended maximum surface pressure of iglidur® A180 as a function of temperature

The material of iglidur® A180 is FDA approved for use in direct contact with food. The iglidur® A180 bearings are an ideal solution for bearing applications on machines that manufacture consumables, medical devices, small household appliances, etc. In order to achieve the benefit of food compatibility, mixing with solid lubricants must be avoided. The thermoplastic alloy of iglidur® A180 is used for abrasion resistance. Furthermore, iglidur® A180 is characterised by its capacity for embedding dirt and by its quiet running behaviour.

## Compressive Strength

The high abrasion resistance, the resistance to dirt, and the ability to run dry make it possible to eliminate the standard, expensive protective seals of lubricated bearings. Graph 7.2 shows the elastic deformation of iglidur® A180 for radial loads. At the maximum permissible static surface pressure of 20 MPa the deformation is less than 2,5%. Plastic deformation is minimal up to this radial load. However, it is also a result of the service time.

Graph 7.2

Compressive Strength, page 1.18

## Permissible Surface Speeds

iglidur® A180 was developed for low surface speeds. With regard to running dry in continuous use, a maximum of 0.8 m/s (rotating) or 3.5 m/s (linear) is possible. These given values indicate the limits at which an increase up to the continuous permissible temperature occurs. This increase is a result of friction. In practice, these limit values are not often reached, due to varying application conditions.

Surface Speed, page 1.20

p x v value, page 1.22

## Temperatures

The maximum permissible short term temperature is 110°C. With increasing temperatures, the compressive strength of iglidur® A180 plain bearings decreases. Graph 7.3 shows this relationship. The ambient temperatures prevalent in the bearing system also have an effect on the bearing wear.

- ☑ Graph 7.3
- ▶ Application Temperatures, page 1.23

## Friction and Wear

Just as the wear resistance, the coefficient of friction also changes with the load. For iglidur® A180 plain bearings, the coefficient of friction  $\mu$  decreases slightly with increasing load. To a large extent, friction and wear are also dependent on the shaft material. Shafts that are too smooth not only increase the coefficient of friction, they can also increase the wear of the bearing. Ground surfaces with an average roughness greater than  $Ra = 0.4$  to  $0.6 \mu\text{m}$  are recommended.

- ☑ Graphs 7.4 to 7.6
- ▶ Coefficients of Friction and Surfaces, page 1.25
- ▶ Wear Resistance, page 1.26

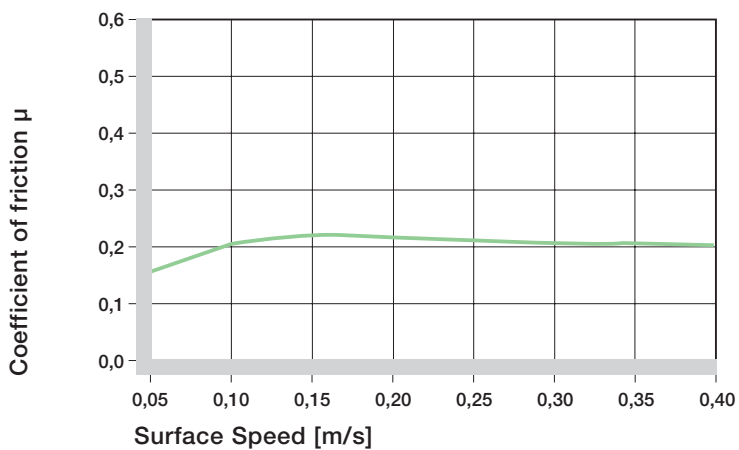
## Shaft Materials

Graphs 7.7 and 7.9 show results of testing different shaft materials with plain bearings made of iglidur® A180.

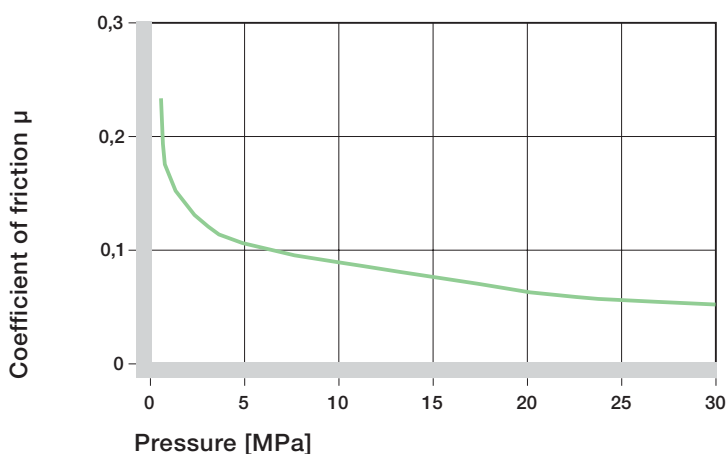
- ☑ Graphs 7.7 to 7.9
- ▶ Shaft Materials, pages 1.28

iglidur®A180	Dry	Grease	Oil	Water
C.o.f. [ $\mu$ ]	0,05 - 0,23	0,09	0,04	0,04

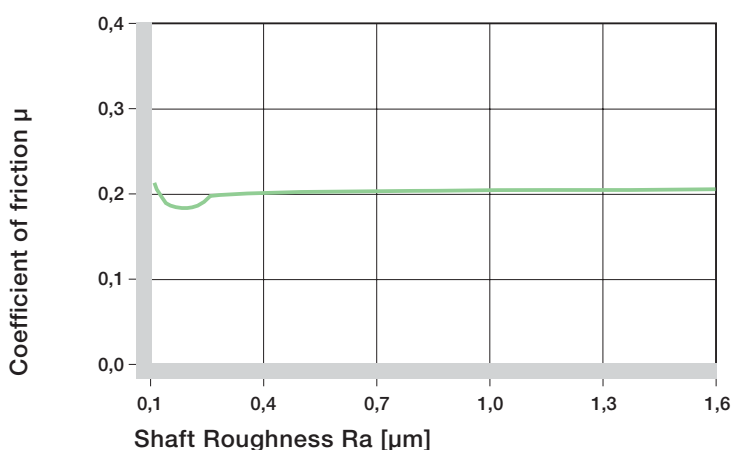
**Table 7.4: Coefficient of friction of iglidur® A180 against steel ( $Ra = 1 \mu\text{m}$ , 50 HRC)**



**Graph 7.4: Coefficients of friction of iglidur® A180 as a function of the running speed;  $p = 0.75 \text{ MPa}$**



**Graph 7.5: Coefficients of friction of iglidur® A180 as a function of the pressure,  $v = 0.01 \text{ m/s}$**



**Graph 7.6: Coefficients of friction of iglidur® A180 as a function of the shaft surface (Cf53 hardened and ground steel)**

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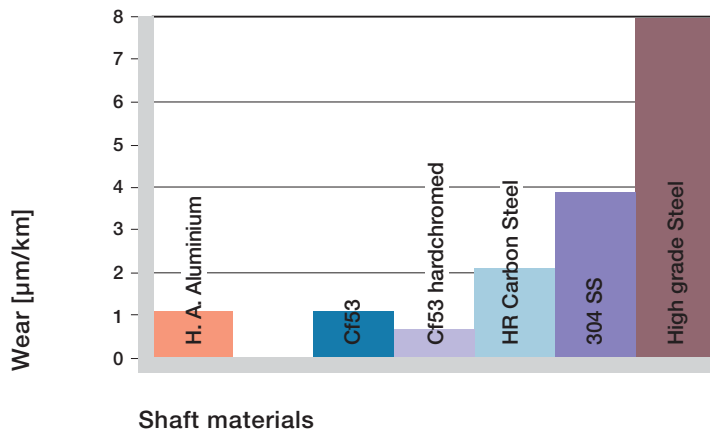
+

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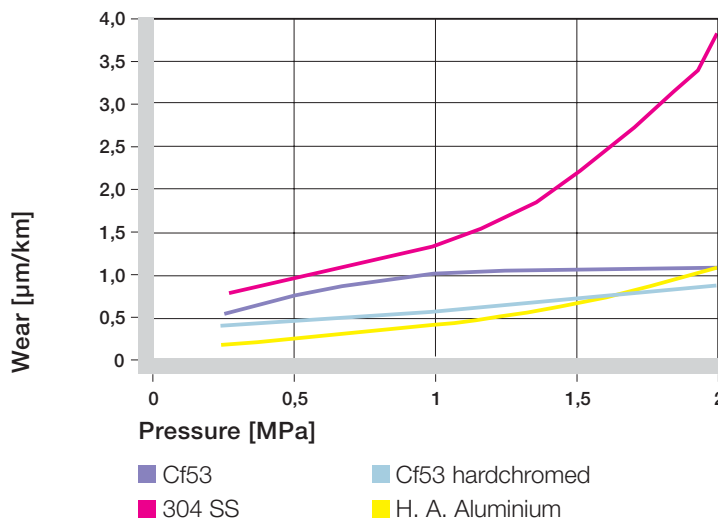
i

mm

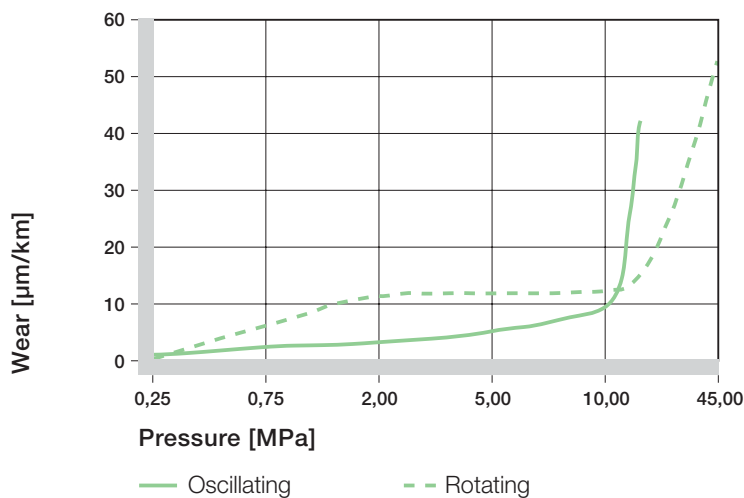
Inch



Graph 7.7: Wear of iglidur® A180, rotating applications with different shaft materials,  $p = 2 \text{ MPa}$ ,  $v = 0.3 \text{ m/s}$



Graph 7.8: Wear of iglidur® A180 with different shaft materials in rotational applications



Graph 7.9: Wear with different shaft materials, oscillating and rotating movement,  $p = 2 \text{ MPa}$

## Installation Tolerances

iglidur® A180 plain bearings are meant to be oversized before pressfit. The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter is adjusted to meet our specified tolerances. Please adhere to the catalog specifications for housing bore and recommended shaft sizes. This will help to ensure an optimal performance of iglidur® A180 plain bearings.

► Testing Methods, page 1.32/1.33

## Chemical Resistance

iglidur® A180 plain bearings have strong resistance to chemicals. They are also resistant to most lubricants.

The moisture absorption of iglidur® A180 plain bearings is approximately 0.2% in standard atmosphere. The saturation limit submerged in water is 1.3%. This must be taken into account for these types of applications.

☑ Graph 8.10

► Chemical Table, pages 70.1

# iglidur® A180 | Technical data

## Radiation Resistance

Plain bearings made of iglidur® A180 are resistant to radiation up to an intensity of  $3 \times 10^2$  Gy. Higher radiation levels attack the material and can cause the loss of essential mechanical properties.

## UV Resistance

iglidur® A180 plain bearings are resistant to UV radiation.

## Vacuum

In a vacuum environment, iglidur® A180 plain bearings have restricted use.

## Electrical Properties

iglidur® A180 plain bearings are electrically insulating.

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® A180 E10 [mm]
up to 3	0 - 0,025	+0,014 + 0,054
> 3 to 6	0 - 0,030	+0,020 + 0,068
> 6 to 10	0 - 0,036	+0,025 + 0,083
> 10 to 18	0 - 0,043	+0,032 + 0,102
> 18 to 30	0 - 0,052	+0,040 + 0,124
> 30 to 50	0 - 0,062	+0,050 + 0,150

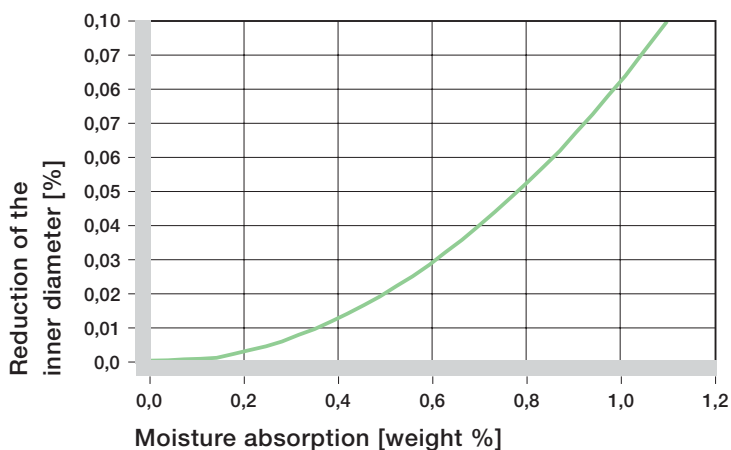
**Table 7.5: Essential tolerances for iglidur® A180 plain bearings according to ISO 3547-1 after pressfit**

Medium	Resistance
Alcohol	+
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	0 to -
Strong acids	-
Diluted alkalines	+
Strong alkalines	+ to 0

**Table 7.6: Chemical resistance of iglidur® A180 – detailed list, page 70.1 ff.**

+ resistant 0 conditionally resistant - not resistant

All data given at room temperature [20°C]



**Graph 7.10: Effect of moisture absorption on iglidur® A180 plain bearings**

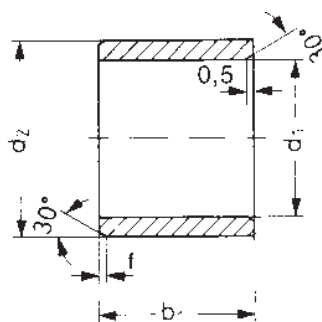
iglidur® A180	
Specific volume resistance	> $10^{13} \Omega\text{cm}$
Surface resistance	> $10^{12} \Omega$

**Table 7.7: Electrical properties of iglidur® A180**

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**A180..M**  
mm  
iglidur® A180 – Type S/F



Data in mm  
Structure – part no.  
**A180 S M-0608-10**

- b1
- d2
- d1
- Metric
- Type
- Material

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0,3	0,5	0,8	1,2

Dimensions according to ISO 3547-1 and special dimensions

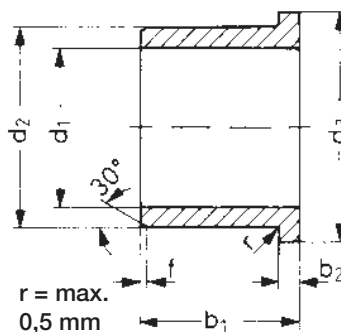
Part Number	d1	d1 Tolerance*	d2	b1 h13
A180SM-0608-10	6	+0,020 +0,068	8	10
A180SM-0810-10	8	+0,025 +0,083	10	10
A180SM-1012-10	10	+0,025 +0,083	12	10
A180SM-1214-15	12	+0,032 +0,102	14	15
A180SM-1618-15	16	+0,032 +0,102	18	15
A180SM-2023-20	20	+0,040 +0,124	23	20
A180SM-2528-30	25	+0,040 +0,124	28	30
A180SM-3034-30	30	+0,040 +0,124	34	20

\*after pressfit. Testing methods ► page 1.32/1.33

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## iglidur® A180 | Flange Bearing | mm



Data in mm  
Structure – part no.  
**A180 F M-0608-06**

- b1
- d2
- d1
- Metric
- Type
- Material

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0,3	0,5	0,8	1,2

Dimensions according to ISO 3547-1 and special dimensions

Part Number	d1	d1 Tolerance*	d2	d3	b1 h13	b2
A180FM-0608-06	6	+0,020 +0,068	8	12	6	1
A180FM-0810-10	8	+0,025 +0,083	10	15	10	1
A180FM-1012-10	10	+0,025 +0,083	12	18	10	1
A180FM-1214-15	12	+0,032 +0,102	14	20	15	1
A180FM-1618-17	16	+0,032 +0,102	18	24	17	1
A180FM-2023-21	20	+0,040 +0,124	23	30	21,5	1,5
A180FM-2528-21	25	+0,040 +0,124	28	35	21,5	1,5
A180FM-3034-26	30	+0,050 +0,150	34	42	26	2

\*after pressfit. Testing methods ► page 1.32/1.33

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