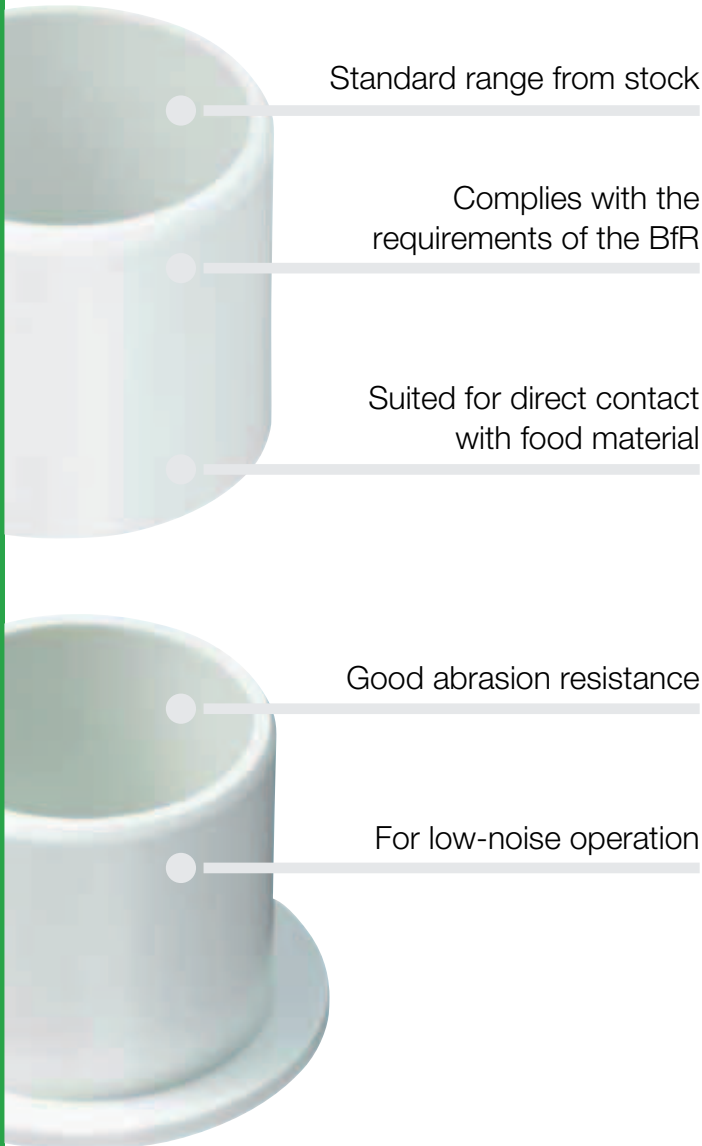


iglidur® A290

The robust general purpose material. The bearings complies with the requirements of the BfR for contact with food. For medium and high loads.



Standard range from stock

Complies with the requirements of the BfR

Suited for direct contact with food material

Good abrasion resistance

For low-noise operation



When to use it?

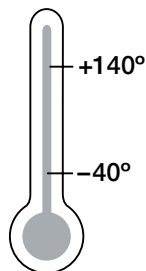
- Suitable for contact with food
- For low speeds
- For low-noise operation
- Physiologically safe
- Very good mechanical properties



When not to use it?

- When the material's FDA compliance is necessary
 - ▶ iglidur® A180, page 371
 - ▶ iglidur® A200, page 381
 - ▶ iglidur® A500, page 407
- When the highest wear resistance is required
 - ▶ iglidur® W300, page 131
- When temperatures are continuously greater than +140 °C
 - ▶ iglidur® A500, page 407
 - ▶ iglidur® H, page 325
 - ▶ iglidur® X, page 153
- When a cost-effective universal bearing is required
 - ▶ iglidur® G, page 61

Temperature



Product range

2 types
 Ø 3–50 mm
 more dimensions
 on request

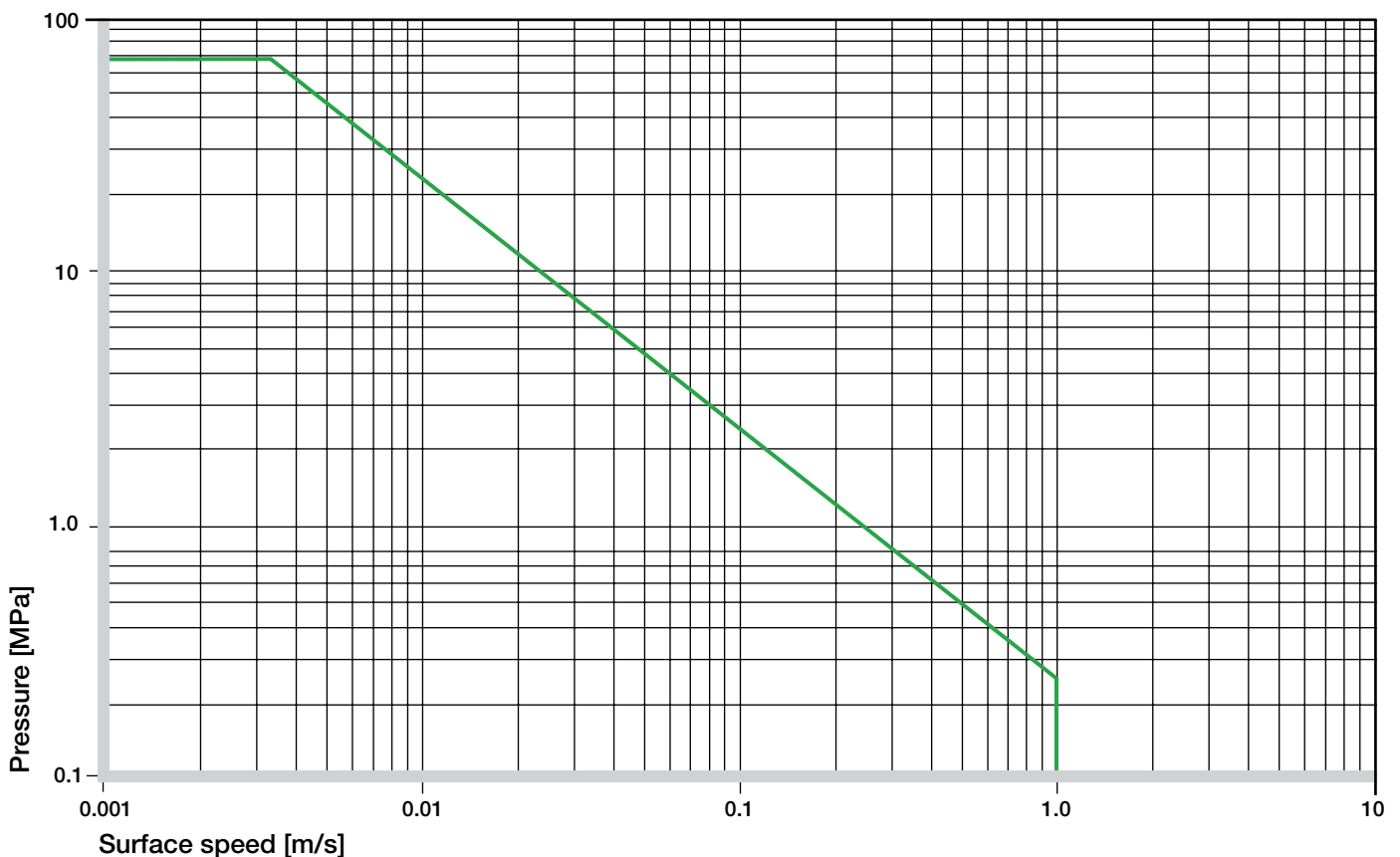


The material iglidur® A290 complies with the requirements of the BfR for contact with food.



Material data			
General properties	Unit	iglidur® A290	Testing method
Density	g/cm ³	1.41	
Colour		white	
Max. moisture absorption at +23 °C/50 % r. h.	% weight	1.7	DIN 53495
Max. moisture absorption	% weight	7.3	
Coefficient of sliding friction, dynamic against steel	μ	0.13–0.40	
pv value, max. (dry)	MPa · m/s	0.23	
Mechanical properties			
Modulus of elasticity	MPa	8,800	DIN 53457
Tensile strength at +20 °C	MPa	250	DIN 53452
Compressive strength	MPa	91	
Max. recommended surface pressure (+20 °C)	MPa	70	
Shore D hardness		88	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+140	
Max. short term application temperature	°C	+180	
Min. application temperature	°C	-40	
Thermal conductivity	W/m · K	0.24	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	7	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ¹¹	DIN IEC 93
Surface resistance	Ω	> 10 ¹¹	DIN 53482

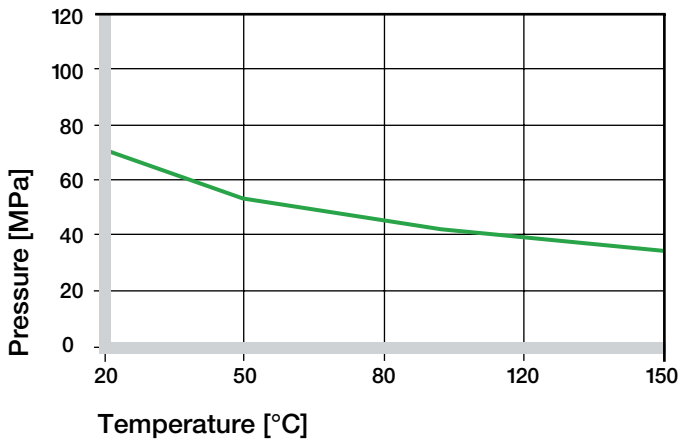
Table 01: Material data



Graph 01: Permissible pv values for iglidur® A290 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

Mechanical Properties

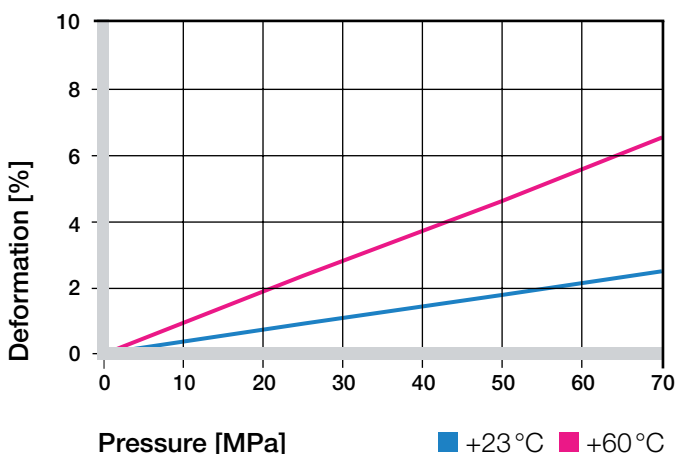
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® A290 plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +140 °C the permissible surface pressure is almost 35 MPa.



Graph 02: Recommended maximum surface pressure as a function of temperature (70 MPa at +20 °C)

iglidur® A290 bearings are an advanced development for the use in food industry. Compared to the bearings made of iglidur® A200, the tribological properties could be significantly improved. Hence the maximum recommended surface pressure for example is 70 MPa. Under this load, the deformation is only about 2.5 % at room temperature. A plastic deformation can be negligible up to this load. It is however also dependent on the period of exposure.

► Surface Pressure, page 43



Permissible Surface Speeds

iglidur® A290 is suitable for low surface speeds. Due to the relatively high friction particularly in the low load range, the bearings made of iglidur® A290 heat more strongly than other bearings. With higher speeds, the friction also increases.

► Surface Speed, page 45

m/s	Rotating	Oscillating	Linear
Continuous	1	0.7	3
Short term	2	1.4	4

Table 02: Maximum running speed

Temperatures

The short-term permitted maximum temperature is +180 °C. With increasing temperatures, the compressive strength of iglidur® A290 bearings decreases. The graph 02 clarifies this connection. The temperatures prevailing in the bearing system also have an influence on the bearing wear. The wear increases with rising temperatures, and the influence is especially marked from +120 °C temperature onwards.

► Application Temperatures, page 46

iglidur® A290	Application temperature
Minimum	-40 °C
Max. long term	+140 °C
Max. short term	+180 °C
Add. securing is required from	+110 °C

Table 03: Temperature limits

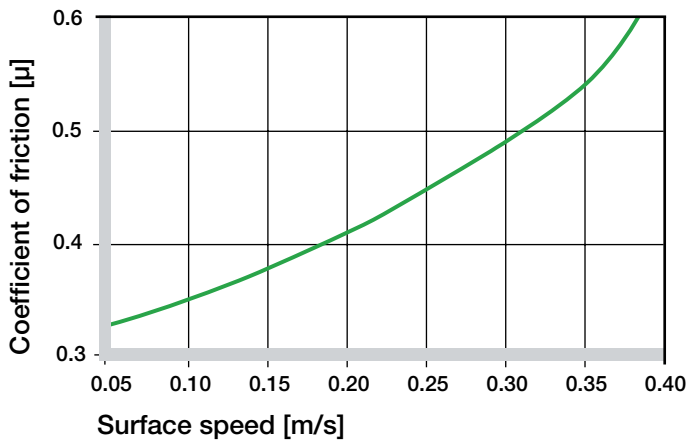
iglidur® A290 | Technical Data

Friction and Wear

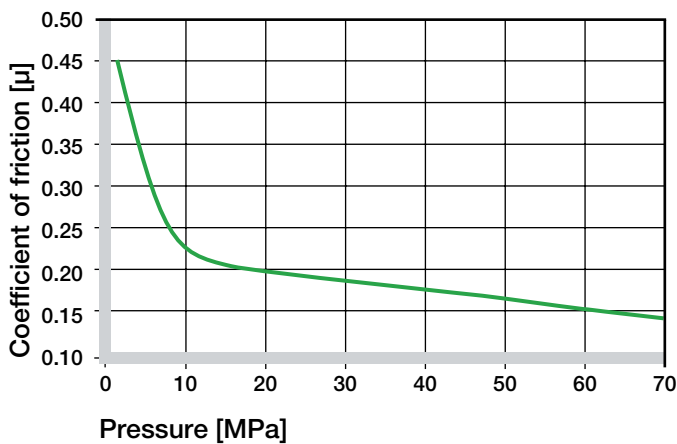
The coefficient of friction alters like the wear resistance with increasing load and surface speed. With increasing speed and constant load, the coefficient of friction steadily rises. In contrast a reverse behavior is noticed at increasing load and constant speed (see graphs 04 and 05). Friction and wear depend to a high degree on the reverse partner. Very smooth shafts increase the coefficient of both friction and wear. iglidur® A290 proves to be relatively insensitive to shaft surfaces and retains a 0.4 friction coefficient μ with average surface finishes of $R_a = 0.4$ to $1.6 \mu\text{m}$.

► Coefficients of Friction and Surfaces, **page 48**

► Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, $p = 0.75 \text{ MPa}$

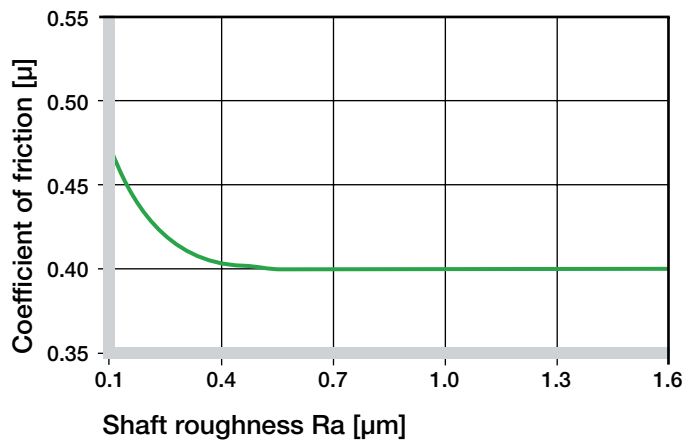


Graph 05: Coefficient of friction as a function of the pressure, $v = 0.01 \text{ m/s}$

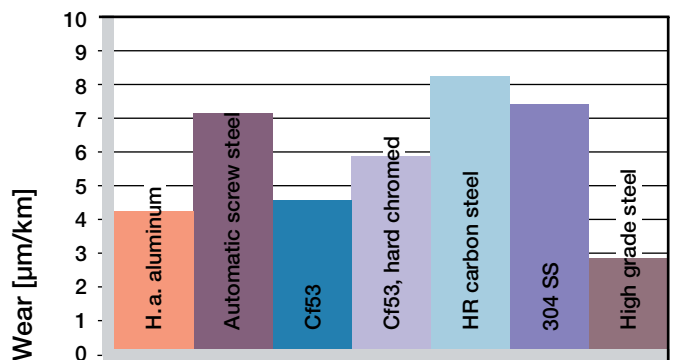
Shaft Materials

Graphs 06 to 09 display a summary of the results of tests with different shaft materials conducted with bearings made of iglidur® A290. Compared to iglidur® A200, the improved tribological properties of iglidur® A290 are also reflected in the coefficients of wear. At low loads, the differences in the wear resistance of the combinations of iglidur® A290 with different shaft materials are very distinct. Graph 08 shows that the advantage of hard-chromed shafts increases with rising load. This counter partner is also well-suited for pivoting applications and are frequently found in packaging machines. Other hardened surfaces such as the Cf53 are also recommended.

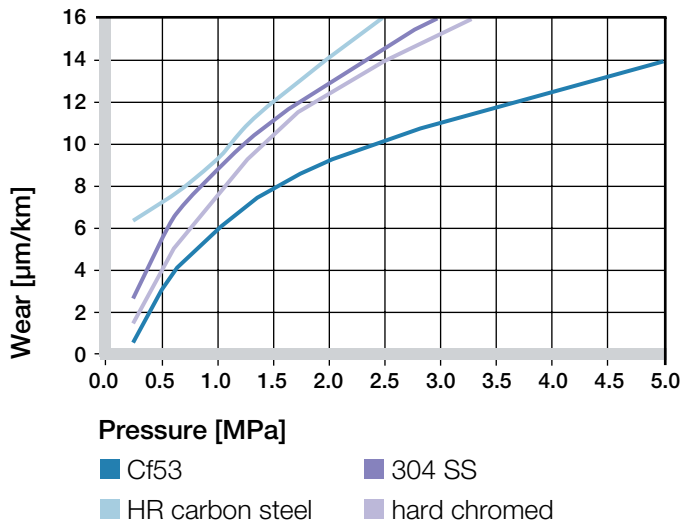
► Shaft Materials, **page 51**



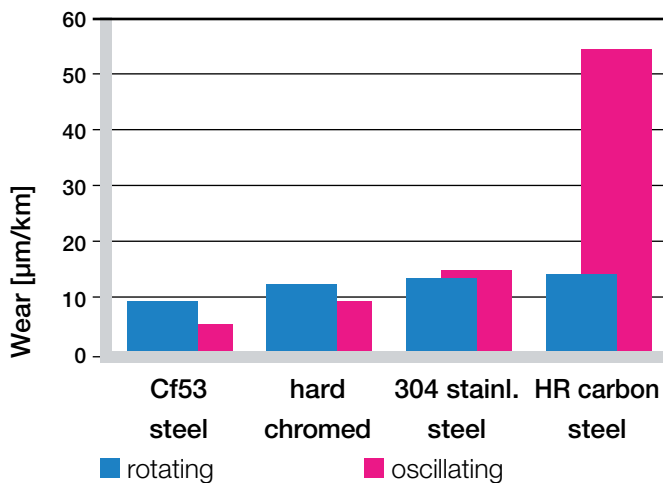
Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)



Graph 07: Wear, rotating with different shaft materials, pressure $p = 0.75 \text{ MPa}$, $v = 0.5 \text{ m/s}$



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa

iglidur® A290	Dry	Greases	Oil	Water
C. o. f. μ	0.13–0.40	0.09	0.04	0.04

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

Additional Properties

Chemical Resistance

iglidur® A290 bearings have a good resistance against chemicals. They are resistant to most lubricants. The iglidur® A290 is not affected by most weak organic and inorganic acids.

► Chemical Table, page 974

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

+ resistant 0 conditionally resistant – not resistant

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

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made from iglidur® A290 are resistant to radiation up to an intensity of $3 \cdot 10^2$ Gy.

UV Resistance

iglidur® A290 is resistant to UV radiation, tribological properties can be affected.

Vacuum

In a vacuum environment iglidur® A290 plain bearings have limited use due to the high moisture absorption.

Electrical Properties

iglidur® A290 plain bearings are electrically insulating.

Volume resistance	$> 10^{11} \Omega\text{cm}$
Surface resistance	$> 10^{11} \Omega$

iglidur® A290 | Technical Data

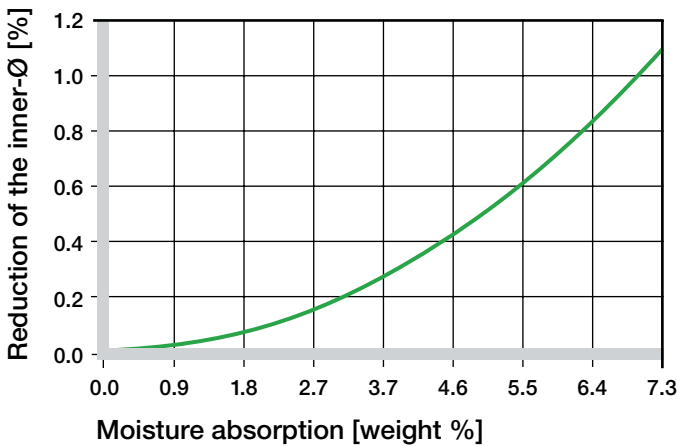
Moisture Absorption

The moisture absorption of iglidur® A290 bearings is approximately 1.7 % in standard atmosphere. The saturation limit in water is 7.3 %, a disadvantage which must be accounted for by all means in applications in humid and wet areas.

Maximum moisture absorption

At +23 °C/50 % r.h.	1.7 % weight
Max. moisture absorption	7.3 % weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

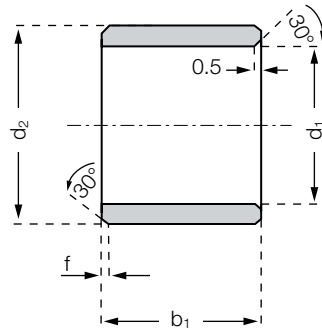
iglidur® A290 bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). After the installation in a housing bore with the tolerance H7, the inner diameter of the bearing automatically adjusts to the D11 tolerance.

► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® A290 D11 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.020 +0.080	0 +0.010
> 3 to 6	0-0.030	+0.030 +0.105	0 +0.012
> 6 to 10	0-0.036	+0.040 +0.130	0 +0.015
> 10 to 18	0-0.043	+0.050 +0.160	0 +0.018
> 18 to 30	0-0.052	+0.065 +0.195	0 +0.021
> 30 to 50	0-0.062	+0.080 +0.240	0 +0.025
> 50 to 80	0-0.074	+0.100 +0.290	0 +0.030

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Order key

A290SM-0304-03



Length b1

Outer diameter d2

Inner diameter d1

Metric

Type (Form S)

Material iglidur® A290

Dimensions according to ISO 3547-1 and special dimensions

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 [mm]

Part number	d1	d1-Tolerance*	d2	b1 h13
A290SM-0304-03	3.0	+0.020 +0.080	4.5	3.0
A290SM-0405-04	4.0	+0.030 +0.105	5.5	4.0
A290SM-0507-05	5.0	+0.030 +0.105	7.0	5.0
A290SM-0608-06	6.0	+0.030 +0.105	8.0	6.0
A290SM-0810-08	8.0	+0.040 +0.130	10.0	8.0
A290SM-1012-10	10.0	+0.040 +0.130	12.0	10.0
A290SM-1214-15	12.0	+0.050 +0.160	14.0	15.0
A290SM-1517-15	15.0	+0.050 +0.160	17.0	15.0
A290SM-1618-15	16.0	+0.050 +0.160	18.0	15.0
A290SM-1820-15	18.0	+0.050 +0.160	20.0	15.0
A290SM-2023-20	20.0	+0.065 +0.195	23.0	20.0
A290SM-2528-20	25.0	+0.065 +0.195	28.0	20.0
A290SM-3034-30	30.0	+0.065 +0.195	34.0	30.0
A290SM-3539-40	35.0	+0.080 +0.240	39.0	40.0
A290SM-4044-50	40.0	+0.080 +0.240	44.0	50.0
A290SM-5055-40	50.0	+0.080 +0.240	55.0	40.0

* after pressfit. Testing methods ► page 55



delivery available
time ex stock

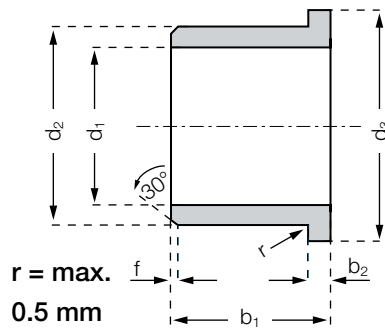


prices price list online
www.igus.eu/eu/a290



order part number
example A290SM-0304-03

Flange bearing



Structure – part no.

A290FM-0405-06



Length b1
Outer diameter d2
Inner diameter d1
Metric
Type (Form F)
Material iglidur® A290

Dimensions according to ISO 3547-1 and special dimensions

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 [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0,14
A290FM-0405-06	4.0	+0.030 +0.105	5.5	9.5	6	0.75
A290FM-0507-05	5.0	+0.030 +0.105	7.0	11.0	5	1.00
A290FM-0608-08	6.0	+0.030 +0.105	8.0	12.0	8	1.00
A290FM-0810-09	8.0	+0.040 +0.130	10.0	15.0	9	1.00
A290FM-1012-09	10.0	+0.040 +0.130	12.0	18.0	9	1.00
A290FM-1214-12	12.0	+0.050 +0.160	14.0	20.0	12	1.00
A290FM-1517-17	15.0	+0.050 +0.160	17.0	23.0	17	1.00
A290FM-1618-17	16.0	+0.050 +0.160	18.0	24.0	17	1.00
A290FM-2023-21	20.0	+0.065 +0.195	23.0	30.0	21	1.50
A290FM-2528-21	25.0	+0.065 +0.195	28.0	35.0	21	1.50
A290FM-3034-26	30.0	+0.065 +0.195	34.0	42.0	26	2.00
A290FM-3539-26	35.0	+0.080 +0.240	39.0	47.0	26	2.00
A290FM-4044-40	40.0	+0.080 +0.240	44.0	52.0	40	2.00
A290FM-5055-40	50.0	+0.080 +0.240	55.0	63.0	40	2.00

* after pressfit. Testing methods ► page 55



delivery available
time ex stock



prices price list online
www.igus.eu/eu/a290



order part number
example A290FM-0405-06

My Sketches

