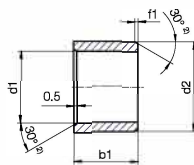


Bearing technology | Plain bearings | iglidur® Q290

Sleeve bearings (form S)



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

Chamfer in relation to d1

d1 [mm]	Ø 12-30	Ø > 30
f1 [mm]	0.8	1.2

i Dimensions according to ISO 3547-1 and special dimensions

Order example: Q290SM-2023-20 – no minimum order quantity.
Q290 iglidur® material S Cylindrical M Metric 20 Inner Ø d1 23 Outer Ø d2 20 Total length b1

d1 [mm]	d1 Tolerance ^{a)}	d2 [mm]	b1 h13 [mm]	Part No.
20.0		23.0	20.0	Q290SM-2023-20
25.0		28.0	30.0	Q290SM-2528-30
30.0	+0.040 +0.124	34.0	30.0	Q290SM-3034-30
30.0		34.0	40.0	Q290SM-3034-40
35.0		39.0	30.0	Q290SM-3539-30
35.0		39.0	40.0	Q290SM-3539-40
35.0	+0.050 +0.150	39.0	50.0	Q290SM-3539-50
40.0		44.0	40.0	Q290SM-4044-40
50.0		55.0	50.0	Q290SM-5055-50
60.0		65.0	60.0	Q290SM-6065-60
65.0		70.0	60.0	Q290SM-6570-60
70.0	+0.060 +0.180	75.0	60.0	Q290SM-7075-60
80.0		85.0	100.0	Q290SM-8085-100

^{a)} After press-fit. Testing methods, page 61

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

Order online
including delivery times, prices, online tools
www.igus.eu/Q290

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

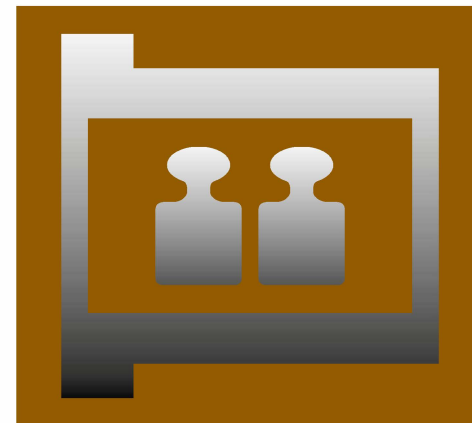
Discount scaling		
1-9	50-99	500-999
10-24	100-199	1,000-2,499
25-49	200-499	2,500-4,999

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

504 3D-CAD, finder and service life calculation ... www.igus.sk/Q290

igus

EN 09/2023



For medium-sized loads

Low coefficient of friction and wear
on almost every shaft

iglidur® M210



When to use it?

- When a universal plain bearing for use in a wet environment is required
- When a wear-resistant plain bearing for pivoting applications at medium loads is required
- When edge loads and shocks occur
- When the surface pressure of iglidur® J is insufficient



When not to use it?

- When a universal plain bearing with the largest possible range of dimensions is required
iglidur® G
- When a plain bearing for highly loaded pivoting applications is required
iglidur® Q, iglidur® Q2
- When temperatures are higher than +100°C
iglidur® G, iglidur® J350

EN 09/2023

Bearing technology | Plain bearings | iglidur® M210



Ø
20.0-60.0mm



Also available
as:



Bar stock,
round bar
Page 743



Bar stock,
plate
Page 773



tribo-tape liner
Page 781



Guide rings
Page 641



Two hole
flange
bearings
Page 667



Moulded
special parts
Page 696



igluba®
spherical balls
Page 993

For medium-sized loads

Low coefficient of friction and wear on almost every shaft

iglidur® M210 was specifically developed for the application for medium pivoting loads. Special attention was paid during development to ensure the material can be used for injection-moulded thick-walled bearings. Therefore iglidur® M210 is well-suited for applications in which thick-walled bearings are used or replaced, which are at the same robust.

- Good wear resistance at room temperature
- Excellent friction coefficients
- Low moisture absorption
- Extremely resistant to edge pressure
- Resistant to shocks and impact
- Resistant to dirt and dust
- Fogging behaviour according to DIN 75201-B

Typical application areas

- Agricultural engineering
- Mechanical engineering
- Furniture / Industrial design
- Textile industry

Descriptive technical specifications

Wear resistance at +23°C	-		+
Wear resistance at +90°C	-		+
Wear resistance at +150°C	-		+
Slide property	-		+
Wear resistance under water	-		+
Media resistance	-		+
Resistant to edge pressures	-		+
Resistant to shock and impact loads	-		+
Dirt resistance	-		+

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

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

506 3D-CAD, finder and service life calculation ... www.igus.sk/M210



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Technical data

General properties		Testing method	
Density	g/cm³	1.40	
Colour		black	
Max. moisture absorption at +23°C/50% r.h.	% weight	0.3	DIN 53495
Max. moisture absorption	% weight	0.5	
Coefficient of friction, dynamic, against steel	μ	0.08-0.20	
pv value, max. (dry)	MPa · m/s	0.5	
Mechanical properties			
Flexural modulus	MPa	2,200	DIN 53457
Flexural strength at +20°C	MPa	65	DIN 53452
Compressive strength	MPa	50	
Max. permissible surface pressure (+20°C)	MPa	50	
Shore D hardness		75	DIN 53505
Physical and thermal properties			
Max. application temperature long-term	°C	+100	
Max. application temperature short-term	°C	+160	
Min. application temperature	°C	up to -40	
Thermal conductivity	W/m · K	0.25	ASTM C 177
Coefficient of thermal expansion (at +23°C)	K⁻¹ · 10⁻⁵	8	DIN 53752
Electrical properties			
Specific transitional resistance	Ωcm	n.s.	
Surface resistance	Ω	> 10¹¹	DIN 53482

Table 01: Material properties

iglidur® M210 plain bearings provide the user with versatile all-round bearings, which have proven to have above average service life, primarily in pivoting applications at medium loads of up to 20MPa.

Moisture absorption

The humidity absorption of iglidur® M210 bearings amounts to about 0.3 % weight in standard climatic conditions. The saturation limit submerged in water is 0.5% weight. This low moisture absorption is well below the values of iglidur® G.

Vacuum

In vacuum, any present moisture is released as vapour. The use in vacuum is only possible to a limited extent.

Radiation resistance

Plain bearings made from iglidur® M210 have limited use under radioactive radiation. They are resistant up to a radiation intensity of 3 - 10² Gy.

Resistance to weathering

iglidur® M210 plain bearings are continuously resistant to weathering. The material properties are only slightly affected. Possible discolourations are only superficial.

Mechanical properties

With increasing temperatures, the compressive strength of iglidur® M210 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® M210 as a function of radial pressure. At the recommended maximum surface pressure of 50MPa the deformation is less than 3% at room temperature.

Surface pressure, page 45



-40°C up to
+100°C



50MPa



HB



ISO 2795



ISO 2795



ISO 2795



ISO 2795

Permissible surface speeds

Plain bearings made from iglidur® M210 are maintenance-free, they are developed for low to medium surface speeds. The maximum values given in table 03 can only be achieved at a very low surface pressure. The maximum speed given is the speed at which an increase up to the continuous use temperature occurs due to friction.

Surface speed, page 48

Temperature

Also thanks to its maximum long-term application temperature of +100°C, iglidur® M210 is suitable for a wide range of applications. If even higher temperatures are required, iglidur® G is also available with a max. long-term application temperature of +130°C. The temperatures prevailing in the bearing system also have an influence on the wear. The wear rises with increasing temperatures. For temperatures over +50°C an additional securing is required.

Application temperatures, page 53

Additional securing, page 53

Friction and wear

Similar to wear resistance, the coefficient of friction μ also changes with the surface speed and load (diagrams 04 and 05).

Coefficient of friction and surfaces, page 51

Wear resistance, page 54

Shaft materials

Diagram 06 shows results of testing different shaft materials with plain bearings made from iglidur® M210. For rotational movements at radial loads below 1MPa, iglidur® M210 has generally very low wear. Wear is only significantly higher in combination with HR carbon steel shafts. Generally, rotational wear will be higher than for a pivoting application of equal load. This is only reversed at loads above 25MPa (diagram 07).

Shaft materials, page 56

Installation tolerances

iglidur® M210 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, the inner diameter automatically adjusts to the D11 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

Testing methods, page 61

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

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

Table 02: Chemical resistance

Chemical table, page 1170

		Rotating	Oscillating	linear
Long-term	m/s	1.5	0.7	8.0
Short-term	m/s	2.0	1.4	4.0

Table 03: Maximum surface speeds

	Dry	Greases	Oil	Water
Coefficient of friction μ	0.08-0.20	0.09	0.04	0.04

Table 04: Coefficient of friction against steel ($R_a = 1\mu\text{m}$, 50HRC)

	Housing	Plain bearings	Shaft
$\varnothing d1$ [mm]	H7 [mm]	D11 [mm]	h9 [mm]
0-3	+0.000 +0.010 +0.020 +0.080 -0.025 +0.000		
> 3-6	+0.000 +0.012 +0.030 +0.105 -0.030 +0.000		
> 6-10	+0.000 +0.015 +0.040 +0.130 -0.036 +0.000		
> 10-18	+0.000 +0.018 +0.050 +0.160 -0.043 +0.000		
> 18-30	+0.000 +0.021 +0.065 +0.195 -0.052 +0.000		
> 30-50	+0.000 +0.025 +0.080 +0.240 -0.062 +0.000		
> 50-80	+0.000 +0.030 +0.100 +0.290 -0.074 +0.000		
> 80-120	+0.000 +0.035 +0.120 +0.340 -0.087 +0.000		
> 120-180	+0.000 +0.040 +0.145 +0.395 -0.100 +0.000		

Table 05: Important tolerances for plain bearings according to ISO 2795 after press-fit

Technical data

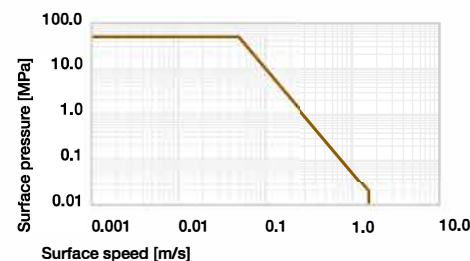


Diagram 01: Permissible pv values for iglidur® M210 with a wall thickness of 1mm dry operation against a steel shaft at +20°C, mounted in a steel housing

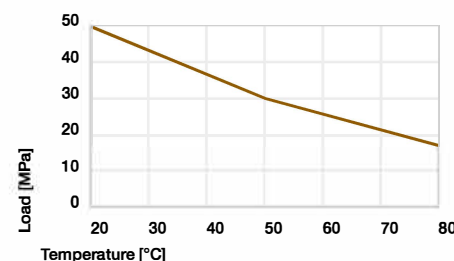


Diagram 02: Maximum recommended surface pressure as a function of temperature (50MPa at +20°C)

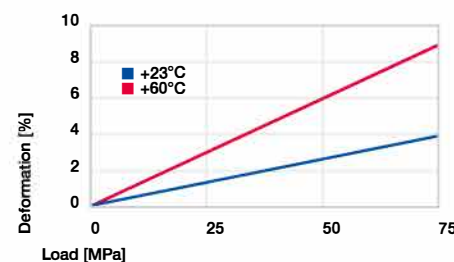


Diagram 03: Deformation under pressure and temperature

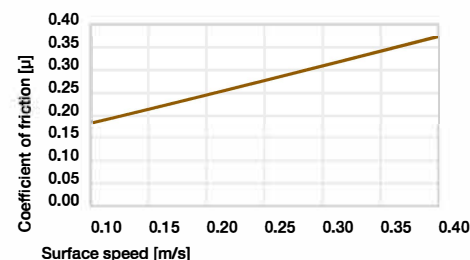


Diagram 04: Coefficient of friction as a function of the surface speed, p = 1MPa

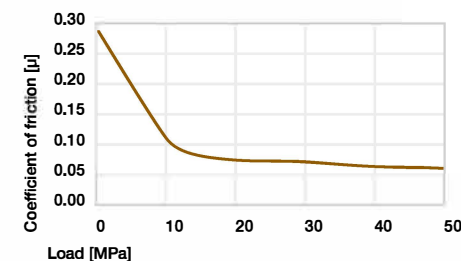


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01m/s

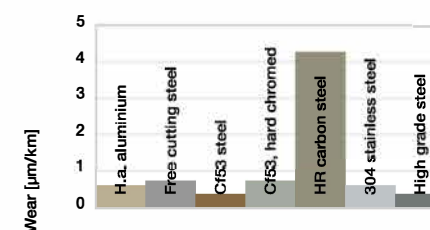


Diagram 06: Wear, rotating with different shaft materials, pressure, p = 1MPa, v = 0.3m/s

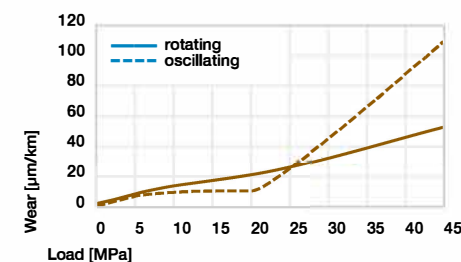


Diagram 07: Wear for oscillating and rotating applications with shaft material Cr53 hardened and ground steel, as a function of the load