

The durable heavy-duty bearing

Combined wear resistance and compressive strength at high loads

iglidur® Q2



When to use it?

- When high dynamic loads occur
- When dirt occurs in addition to high shock and impact loads
- For highly loaded pivoting movements



When not to use?

- When only static loads occur
iglidur® X, iglidur® H2
- When high pv values occur in conjunction with high speeds
iglidur® Z
- When a cost-effective all-round plain bearing is required
iglidur® G
- When soft shafts are in use
iglidur® W300

Bearing technology | Plain bearing | iglidur® Q2



Ø
4,0 –
120,0mm



Also available
as:



Bar stock,
round bar
Page 685

The durable heavy-duty bearing Combined wear resistance and compressive strength at high loads

Where previous iglidur® bearing solutions are limited within the scope of extreme loads and strong impact forces, the iglidur® Q2 starts. Made for heavy-duty pivoting applications under extreme conditions.

- Wear-resistant
- Good price-performance ratio
- Lubrication-free
- Maintenance-free
- High rigidity
- Suitable for high loads



Bar stock,
plate
Page 683

Typical application areas

- Agricultural engineering
- Utility and construction vehicles
- Mechanical engineering



tribo-tape liner
Page 691



Piston rings
Page 584



Two hole
flange
bearings
Page 603



Moulded
special parts
Page 624



igubal®
spherical balls
Page 841

Descriptive technical specifications				
Wear resistance at +23°C	-	■ ■ ■ ■ ■		+
Wear resistance at +90°C	-	■ ■ ■ ■ ■		+
Wear resistance at +150°C	-	■ ■ ■ ■ ■		+
Low coefficient of friction	-	■ ■ ■ ■ ■		+
Low moisture absorption	-	■ ■ ■ ■ ■		+
Wear resistance under water	-	■ ■ ■ ■ ■		+
High media resistance	-	■ ■ ■ ■ ■		+
Resistant to edge pressures	-	■ ■ ■ ■ ■		+
Suitable for shock and impact loads	-	■ ■ ■ ■ ■		+
Resistant to dirt	-	■ ■ ■ ■ ■		+

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

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

Technical data

General properties		Testing method	
Density	g/cm ³	1.46	
Colour		beige-brown	
Max. moisture absorption at +23°C and 50% r.h.	% weight	1.1	DIN 53495
Max. moisture absorption	% weight	4.6	
Coefficient of friction, dynamic, against steel	μ	0.22 – 0.42	
pv value, max. (dry)	MPa · m/s	0.70	
Mechanical properties			
Flexural modulus	MPa	8,370	DIN 53457
Flexural strength at +20°C	MPa	240	DIN 53452
Compressive strength	MPa	130	
Max. recommended surface pressure (+20°C)	MPa	120	
Shore D hardness		80	DIN 53505
Physical and thermal properties			
Max. application temperature long-term	°C	+130	
Max. application temperature short-term	°C	+200	
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	8	DIN 53752
Electrical properties			
Specific contact resistance	Ωcm	> 10 ¹³	DIN IEC 93
Surface resistance	Ω	> 10 ¹¹	DIN 53482

Table 01: Material properties

iglidur® Q2 plain bearings represent high load capacities and good abrasion resistance at high loads. The price-performance ratio is outstanding. Solid lubricants reduce the coefficient of friction and improve the resistance to wear, which was markedly improved as compared to other iglidur® plain bearings, especially for heavily loaded pivoting applications.

Moisture absorption

Under standard climatic conditions, the moisture absorption of iglidur® Q2 plain bearings is approximately 1.1% weight. The saturation limit in water is 4.6% weight. This must be taken into account for these types of applications.

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® Q2 are resistant up to a radiation intensity of $3 \cdot 10^2$ Gy.

Resistance to weathering

iglidur® Q2 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® Q2 plain bearings decreases. Diagram 02 shows this inverse relationship. However, at the long-term maximum temperature of +130°C the permissible surface pressure is around 20MPa. 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® Q2 at radial loads.

Surface pressure, page 41



-40°C up to
+130°C



120MPa



HB



Permissible surface speeds

Typical applications for iglidur® Q2 plain bearings are pivoting movements under high loads at comparatively low speeds. However, relatively high speeds are still attainable. The speeds stated in table 03 are limit values for the lowest bearing loads. With higher loads, the permitted speed drops with the extent of the load due to the limitations by the pv value.

Surface speed, page 44

Temperature

iglidur® Q2 is a very temperature-stable material. The long-term upper temperature limit of +130°C permits the broad use in applications typical for the agricultural, utility vehicle or construction equipment sectors. With increasing temperatures, the compressive strength of iglidur® Q2 plain bearings decreases. For temperatures over +70°C an additional securing is required. When considering temperatures, the additional frictional heat in the bearing system must be taken into account.

Application temperatures, page 49

Additional securing, page 49

Friction and wear

iglidur® Q2 has a low coefficient of friction. Please note that a sliding surface with a rough surface finish will increase the friction. The highest coefficient of friction occur at Ra = 1µm. Surface finishes (Ra) of the shaft between 0.1 – 0.4µm are ideal. Furthermore, the coefficient of friction of iglidur® Q2 plain bearings largely depends on the speed and load. As the surface speed increases, the coefficient of friction will quickly increase as well. However, as the load is reduced, the coefficient of friction initially drops significantly, then moderately.

Coefficient of friction and surfaces, page 47

Wear resistance, page 50

Shaft materials

In high load applications, we generally recommend the use of hardened shafts. Furthermore, even at low to medium loads, iglidur® Q2 will attain increased service life with "hard" shafts as compared to "soft" shafts. But for low load applications, the results are outstanding with free cutting steel as well. For high loads, the wear in pivoting applications is much lower than for rotation. If the shaft material you plan on using is not shown in these test results, please contact us.

Shaft materials, page 52

Installation tolerances

iglidur® Q2 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. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

Testing methods, page 57

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

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

Table 02: Chemical resistance

Chemical table, page 1636

	Rotating	Oscillating	linear
long-term	m/s 1.0	0.7	4.0
short-term	m/s 2.0	1.4	5.0

Table 03: Maximum surface speeds

	Dry	Greases	Oil	Water
Coefficient of friction µ	0.22 – 0.42	0.09	0.04	0.04

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

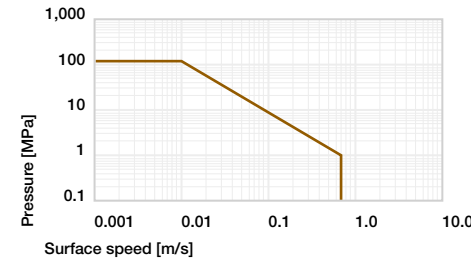


Diagram 01: Permissible pv values for iglidur® Q2 plain bearings with a wall thickness of 1mm, dry operation against a steel shaft, at +20°C, mounted in a steel housing

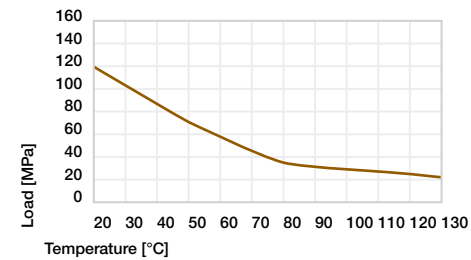


Diagram 02: Maximum recommended surface pressure of as a function of temperature (120MPa at +20°C)

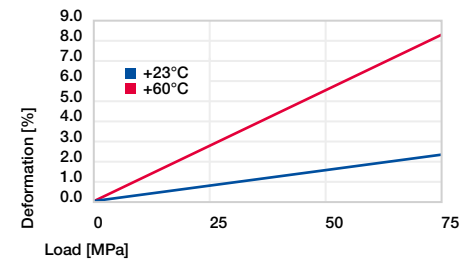


Diagram 03: Deformation under pressure and temperature

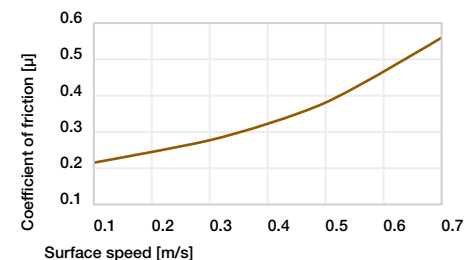


Diagram 04: Coefficient of friction as a function of the surface speed, p = 0.75MPa

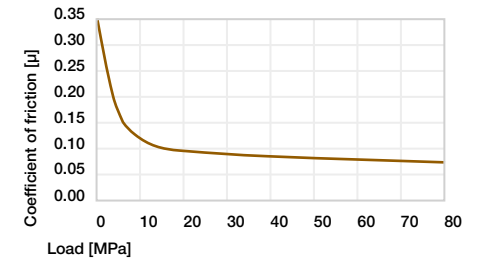


Diagram 05: Coefficient of friction as a function of the load, v = 0.01m/s

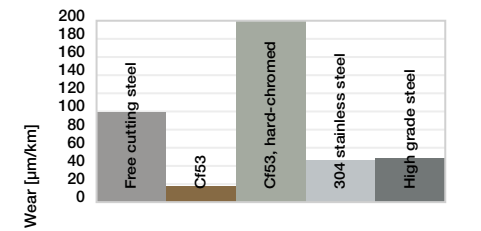


Diagram 06: Wear, pivoting with different shaft materials, pressure p = 45MPa, v = 0.01m/s

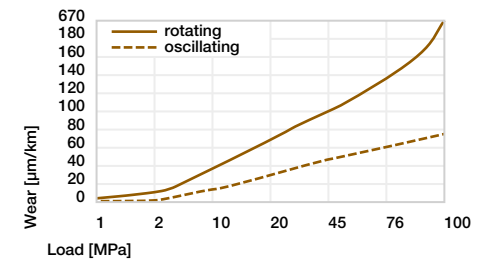
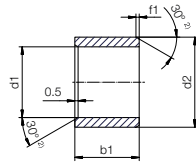


Diagram 07: Wear for oscillating and rotating applications with shaft material Cr53 hardened and ground steel, as a function of the load

Bearing technology | Plain bearing | iglidur® Q2

Sleeve bearing (form S)



²⁾ Thickness < 0.6mm: Chamfer = 20°

Chamfer in relation to d1

d1 [mm]	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f1 [mm]	0.3	0.5	0.8	1.2

i Dimensions according to ISO 3547-1 and special dimensions



Order example: **Q2SM-0405-04** – no minimum order quantity.

Q2 iglidur® material **S** Sleeve bearing **M** Metric **04** Inner Ø d1 **05** Outer Ø d2 **04** Total length b1

d1	d1	d2	b1	Part No.	d1	d1	d2	b1	Part No.
[mm]	Tolerance ³⁾	[mm]	[mm]		[mm]	Tolerance ³⁾	[mm]	[mm]	
4.0		5.5	4.0	Q2SM-0405-04	16.0		18.0	25.0	Q2SM-1618-25
4.0		5.5	6.0	Q2SM-0405-06	18.0	+0.032	20.0	15.0	Q2SM-1820-15
5.0	+0.020	7.0	5.0	Q2SM-0507-05	18.0	+0.102	20.0	20.0	Q2SM-1820-20
5.0	+0.068	7.0	10.0	Q2SM-0507-10	18.0		20.0	25.0	Q2SM-1820-25
6.0		8.0	6.0	Q2SM-0608-06	20.0		23.0	10.0	Q2SM-2023-10
6.0		8.0	8.0	Q2SM-0608-08	20.0		23.0	15.0	Q2SM-2023-15
6.0		8.0	10.0	Q2SM-0608-10	20.0		23.0	20.0	Q2SM-2023-20
8.0		10.0	8.0	Q2SM-0810-08	20.0		23.0	25.0	Q2SM-2023-25
8.0		10.0	10.0	Q2SM-0810-10	20.0		23.0	30.0	Q2SM-2023-30
8.0		10.0	12.0	Q2SM-0810-12	22.0		25.0	15.0	Q2SM-2225-15
10.0	+0.025	12.0	8.0	Q2SM-1012-08	22.0		25.0	20.0	Q2SM-2225-20
10.0	+0.083	12.0	10.0	Q2SM-1012-10	22.0		25.0	25.0	Q2SM-2225-25
10.0		12.0	12.0	Q2SM-1012-12	22.0		25.0	30.0	Q2SM-2225-30
10.0		12.0	15.0	Q2SM-1012-15	24.0		27.0	15.0	Q2SM-2427-15
10.0		12.0	20.0	Q2SM-1012-20	24.0		27.0	20.0	Q2SM-2427-20
12.0		14.0	10.0	Q2SM-1214-10	24.0	+0.040	27.0	25.0	Q2SM-2427-25
12.0		14.0	12.0	Q2SM-1214-12	24.0	+0.124	27.0	30.0	Q2SM-2427-30
12.0		14.0	15.0	Q2SM-1214-15	25.0		28.0	15.0	Q2SM-2528-15
12.0		14.0	20.0	Q2SM-1214-20	25.0		28.0	20.0	Q2SM-2528-20
13.0		15.0	10.0	Q2SM-1315-10	25.0		28.0	25.0	Q2SM-2528-25
13.0		15.0	20.0	Q2SM-1315-20	25.0		28.0	30.0	Q2SM-2528-30
14.0	+0.032	16.0	15.0	Q2SM-1416-15	28.0		32.0	30.0	Q2SM-2832-30
14.0	+0.102	16.0	20.0	Q2SM-1416-20	30.0		34.0	20.0	Q2SM-3034-20
14.0		16.0	25.0	Q2SM-1416-25	30.0		34.0	25.0	Q2SM-3034-25
15.0		17.0	15.0	Q2SM-1517-15	30.0		34.0	30.0	Q2SM-3034-30
15.0		17.0	20.0	Q2SM-1517-20	30.0		34.0	40.0	Q2SM-3034-40
15.0		17.0	25.0	Q2SM-1517-25	30.0		35.0	40.0	Q2SM-3035-40
16.0		18.0	15.0	Q2SM-1618-15	32.0	+0.050	36.0	20.0	Q2SM-3236-20
16.0		18.0	20.0	Q2SM-1618-20	32.0	+0.150	36.0	30.0	Q2SM-3236-30

³⁾ After press-fit. *Testing methods, page 57*

Product range

d1	d1	d2	b1	Part No.	d1	d1	d2	b1	Part No.
[mm]	Tolerance ³⁾	[mm]	[mm]		[mm]	Tolerance ³⁾	[mm]	[mm]	
32.0		36.0	40.0	Q2SM-3236-40	45.0		50.0	40.0	Q2SM-4550-40
32.0		40.0	40.0	Q2SM-3240-40	45.0		50.0	50.0	Q2SM-4550-50
35.0		39.0	20.0	Q2SM-3539-20	50.0		55.0	20.0	Q2SM-5055-20
35.0		39.0	30.0	Q2SM-3539-30	50.0	+0.050	55.0	30.0	Q2SM-5055-30
35.0		39.0	40.0	Q2SM-3539-40	50.0	+0.150	55.0	40.0	Q2SM-5055-40
35.0	+0.050	39.0	50.0	Q2SM-3539-50	50.0		55.0	50.0	Q2SM-5055-50
40.0	+0.150	44.0	20.0	Q2SM-4044-20	50.0		55.0	60.0	Q2SM-5055-60
40.0		44.0	30.0	Q2SM-4044-30	60.0		65.0	60.0	Q2SM-6065-60
40.0		44.0	40.0	Q2SM-4044-40	65.0	+0.060	70.0	60.0	Q2SM-6570-60
40.0		44.0	50.0	Q2SM-4044-50	70.0	+0.180	75.0	60.0	Q2SM-7075-60
45.0		50.0	20.0	Q2SM-4550-20	75.0		80.0	40.0	Q2SM-7580-40
45.0		50.0	30.0	Q2SM-4550-30					

³⁾ 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/Q2



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

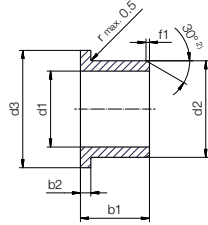
No minimum order value.

No low-quantity surcharges.

Free shipping within Germany for orders above €150.

Bearing technology | Plain bearing | iglidur® Q2

Flange bearing (form F)



²⁾ Thickness < 0.6mm: Chamfer = 20°

Chamfer in relation to d1

d1 [mm]	Ø 1–6	Ø 6–12	Ø 12–30	Ø > 30
f1 [mm]	0.3	0.5	0.8	1.2

i Dimensions according to ISO 3547-1 and special dimensions



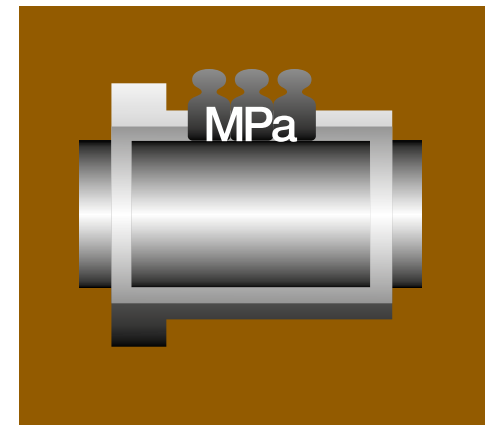
Order example: **Q2FM-0507-05** – no minimum order quantity.

Q2 iglidur® material **F** Flange bearing **M** Metric **05** Inner Ø d1 **07** Outer Ø d2 **05** Total length b1

d1	d1	d2	d3	b1	b2	Part No.
[mm]	Tolerance ³⁾	[mm]	d13 ³⁾	h13	h13	
5.0		7.0	11.0	5.0	1.00	Q2FM-0507-05
6.0	+0.020	8.0	12.0	4.0	1.00	Q2FM-0608-04
6.0	+0.068	8.0	12.0	6.0	1.00	Q2FM-0608-06
6.0		8.0	12.0	8.0	1.00	Q2FM-0608-08
8.0		10.0	15.0	3.0	1.00	Q2FM-0810-03
8.0		10.0	15.0	5.5	1.00	Q2FM-0810-05
8.0		10.0	15.0	7.5	1.00	Q2FM-0810-07
8.0		10.0	15.0	9.5	1.00	Q2FM-0810-09
8.0	+0.025	10.0	15.0	10.0	1.00	Q2FM-0810-10
10.0	+0.083	12.0	18.0	7.0	1.00	Q2FM-1012-07
10.0		12.0	18.0	9.0	1.00	Q2FM-1012-09
10.0		12.0	18.0	10.0	1.00	Q2FM-1012-10
10.0		12.0	18.0	12.0	1.00	Q2FM-1012-12
10.0		12.0	18.0	17.0	1.00	Q2FM-1012-17
12.0		14.0	20.0	7.0	1.00	Q2FM-1214-07
12.0		14.0	20.0	9.0	1.00	Q2FM-1214-09
12.0		14.0	20.0	12.0	1.00	Q2FM-1214-12
12.0		14.0	20.0	17.0	1.00	Q2FM-1214-17
14.0		16.0	22.0	5.0	1.00	Q2FM-1416-05
14.0		16.0	22.0	12.0	1.00	Q2FM-1416-12
14.0	+0.032	16.0	22.0	17.0	1.00	Q2FM-1416-17
15.0	+0.102	17.0	23.0	9.0	1.00	Q2FM-1517-09
15.0		17.0	23.0	12.0	1.00	Q2FM-1517-12
15.0		17.0	23.0	17.0	1.00	Q2FM-1517-17
16.0		18.0	24.0	12.0	1.00	Q2FM-1618-12
16.0		18.0	24.0	17.0	1.00	Q2FM-1618-17
18.0		20.0	26.0	12.0	1.00	Q2FM-1820-12

d1	d1	d2	d3	b1	b2	Part No.
[mm]	Tolerance ³⁾	[mm]	d13 ³⁾	h13	h13	
18.0	+0.032	20.0	26.0	17.0	1.00	Q2FM-1820-17
18.0	+0.102	20.0	26.0	22.0	1.00	Q2FM-1820-22
20.0		23.0	30.0	11.5	1.50	Q2FM-2023-11
20.0		23.0	30.0	12.0	1.50	Q2FM-2023-12
20.0		23.0	30.0	16.5	1.50	Q2FM-2023-16
20.0		23.0	30.0	21.5	1.50	Q2FM-2023-21
25.0		28.0	35.0	11.5	1.50	Q2FM-2528-11
25.0	+0.040	28.0	35.0	16.5	1.50	Q2FM-2528-16
25.0	+0.124	28.0	35.0	21.5	1.50	Q2FM-2528-21
30.0		34.0	42.0	16.0	2.00	Q2FM-3034-16
30.0		34.0	42.0	26.0	2.00	Q2FM-3034-26
30.0		34.0	42.0	37.0	2.00	Q2FM-3034-37
30.0		34.0	42.0	40.0	2.00	Q2FM-3034-40
35.0		39.0	47.0	16.0	2.00	Q2FM-3539-16
35.0		39.0	47.0	26.0	2.00	Q2FM-3539-26
35.0		39.0	47.0	40.0	2.00	Q2FM-3539-40
40.0	+0.050	44.0	52.0	30.0	2.00	Q2FM-4044-30
40.0	+0.150	44.0	52.0	40.0	2.00	Q2FM-4044-40
45.0		50.0	58.0	50.0	2.00	Q2FM-4550-50
50.0		55.0	63.0	10.0	2.00	Q2FM-5055-10
50.0		55.0	63.0	50.0	2.00	Q2FM-5055-50
60.0	+0.060	65.0	73.0	60.0	2.00	Q2FM-6065-60
80.0	+0.180	85.0	93.0	100.0	2.50	Q2FM-8085-100
100.0	+0.072	105.0	125.0	90.0	2.50	Q2FM-100105125-90
100.0	+0.212					
120.0	+0.085	125.0	145.0	90.0	2.50	Q2FM-120125145-90
120.0	+0.245					

³⁾ After press-fit. Testing methods, page 57



Cost-effective heavy-duty bearing Robust and dimensionally stable iglidur® Q2E



When to use it?

- When a wear-resistant plain bearing at loads up to 130MPa is required
- When a robust and dirt-resistant plain bearing is required
- When a plain bearing with dimensional stability is required.



When not to use?

- When a plain bearing with the highest possible media resistance is required
iglidur® X
- With high rotational speeds
iglidur® J, iglidur® L250
- When a universal standard plain bearing for occasional movements is required
iglidur® G