

The chemical and temperature specialist

Up to 150MPa

igidur® X



When to use it?

- For pressure loads up to 150MPa
- For linear movements with stainless steel at high temperatures
- Universal chemical resistance
- For temperature resistance from -100°C to $+250^{\circ}\text{C}$ (short-term up to $+315^{\circ}\text{C}$)
- For very low moisture absorption
- For high wear resistance over the entire temperature range



When not to use?

- For very low wear at high loads
igidur® Q, iglidur® Z
- When a cost-effective plain bearing for underwater use is required
igidur® H, iglidur® H370
- For edge loads
igidur® Z

Permissible surface speeds

iglidur® X is designed for higher speeds than other iglidur® bearings. This is enabled by its high temperature resistance and excellent thermal conductivity. This is also made clear by the max. pv value of 1.32MPa. However, in this case, only the smallest radial loads may act on the bearings. At the given speeds, friction can cause a temperature increase to maximum permissible levels.

Surface speed, page 44

Temperature

In the case of a permissible long-term application temperature of +250°C, iglidur® X will even withstand +315°C for short periods. As in the case of all thermoplastics, the compression strength of iglidur® X decreases when temperatures rise. For temperatures over +135°C an additional securing is required. At temperatures over +170°C the axial security of the bearing in the housing needs to be tested. Please contact us if you have questions on bearing use.

Application temperatures, page 49

Additional securing, page 49

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 47

Wear resistance, page 50

Shaft materials

The friction and wear are also dependent, to a large degree, on the shaft material. Shafts that are too smooth, increase both the coefficient of friction and the wear of the bearing. For iglidur® X a ground surface with an average surface finish $R_a = 0.6 - 0.8\mu\text{m}$ is recommended. Diagrams 06 and 07 show the test results of iglidur® X plain bearings running against various shaft materials. 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® X 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 F10 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	+
Diluted alkalines	+
Fuels	+
Greases, oils without additives	+
Hydrocarbons	+
Strong acids	0 up to -
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	1.5	1.1	5.0
short-term m/s	3.5	2.5	10.0

Table 03: Maximum surface speeds

	Dry	Greases	Oil	Water
Coefficient of friction μ	0.09 - 0.27	0.09	0.04	0.04

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

	Housing	Plain bearing	Shaft			
$\varnothing d1$ [mm]	H7 [mm]	F10 [mm]	h9 [mm]			
0 - 3	+0.000	+0.010	+0.006	+0.046	-0.025	+0.000
> 3 - 6	+0.000	+0.012	+0.010	+0.058	-0.030	+0.000
> 6 - 10	+0.000	+0.015	+0.013	+0.071	-0.036	+0.000
> 10 - 18	+0.000	+0.018	+0.016	+0.086	-0.043	+0.000
> 18 - 30	+0.000	+0.021	+0.020	+0.104	-0.052	+0.000
> 30 - 50	+0.000	+0.025	+0.025	+0.125	-0.062	+0.000
> 50 - 80	+0.000	+0.030	+0.030	+0.150	-0.074	+0.000
> 80 - 120	+0.000	+0.035	+0.036	+0.176	-0.087	+0.000
> 120 - 180	+0.000	+0.040	+0.043	+0.203	+0.000	+0.100

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

Technical data

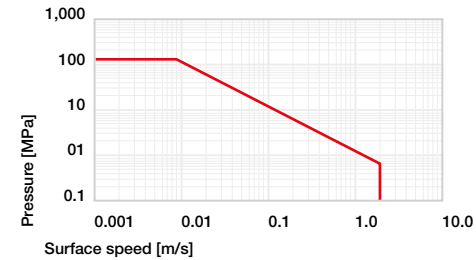


Diagram 01: Permissible pv values for iglidur® X plain bearings with a wall thickness of 1mm, dry operation against a steel shaft, at +20°C, mounted in a steel housing

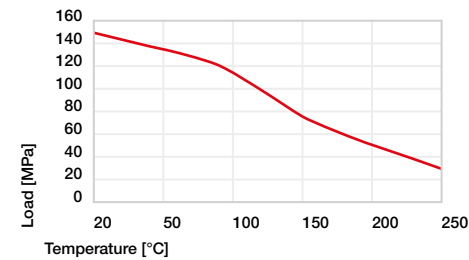


Diagram 02: Maximum recommended surface pressure as a function of temperature (150MPa at +20°C)

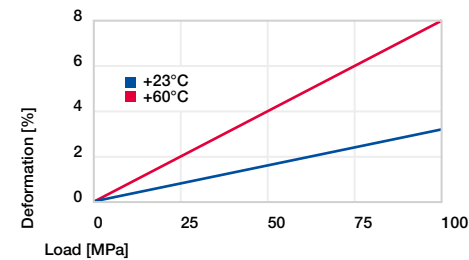


Diagram 03: Deformation under pressure and temperature

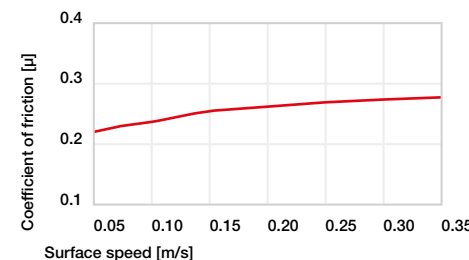


Diagram 04: Coefficient of friction as a function of the surface speed, $v = 0.01\text{m/s}$

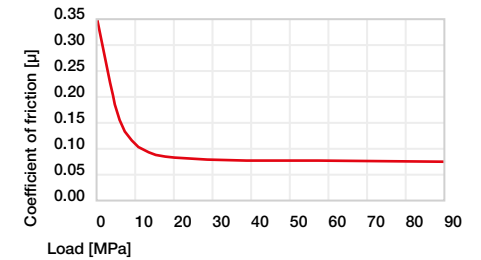


Diagram 05: Coefficient of friction as a function of the pressure, $v = 0.01\text{m/s}$

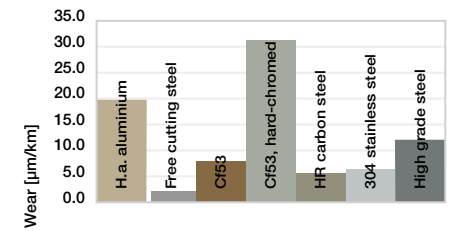


Diagram 06: Wear, rotating with different shaft materials, pressure, $p = 1\text{MPa}$, $v = 0.3\text{m/s}$

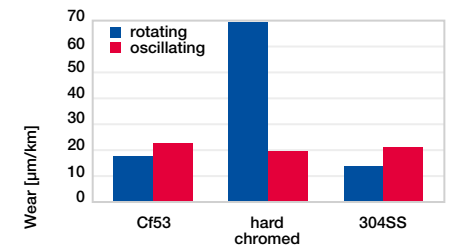
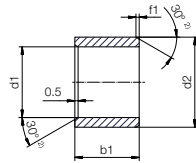


Diagram 07: Wear for rotating and oscillating applications with different shaft materials, $p = 2\text{MPa}$

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: **XSM-0203-03** – no minimum order quantity.

X iglidur® material **S** Sleeve bearing **M** Metric **02** Inner Ø d1 **03** Outer Ø d2 **03** Total length b1

d1	d1	d2	b1	Part No.	d1	d1	d2	b1	Part No.
[mm]	Tolerance ³⁾	[mm]	h13	[mm]	[mm]	Tolerance ³⁾	[mm]	h13	[mm]
2.0	+0.006	3.5	3.0	XSM-0203-03	12.0		14.0	3.5	XSM-1214-035
3.0	+0.046	4.5	3.0	XSM-0304-03	12.0		14.0	6.0	XSM-1214-06
3.0		4.5	6.0	XSM-0304-06	12.0		14.0	8.0	XSM-1214-08
4.0		5.5	4.0	XSM-0405-04	12.0		14.0	10.0	XSM-1214-10
4.0		5.5	6.0	XSM-0405-06	12.0		14.0	12.0	XSM-1214-12
4.0		5.5	9.0	XSM-0405-09	12.0		14.0	15.0	XSM-1214-15
4.0		5.5	10.0	XSM-0405-10	12.0		14.0	20.0	XSM-1214-20
5.0		7.0	3.5	XSM-0507-035	12.0		14.0	25.0	XSM-1214-25
5.0	+0.010	7.0	5.0	XSM-0507-05	13.0		15.0	10.0	XSM-1315-10
5.0	+0.058	7.0	8.0	XSM-0507-08	13.0		15.0	20.0	XSM-1315-20
5.0		7.0	10.0	XSM-0507-10	14.0		16.0	12.0	XSM-1416-12
6.0		8.0	6.0	XSM-0608-06	14.0		16.0	15.0	XSM-1416-15
6.0		8.0	8.0	XSM-0608-08	14.0		16.0	20.0	XSM-1416-20
6.0		8.0	10.0	XSM-0608-10	14.0		16.0	25.0	XSM-1416-25
6.0		8.0	13.8	XSM-0608-13	15.0	+0.016	17.0	7.0	XSM-1517-07
7.0		9.0	10.0	XSM-0709-10	15.0	+0.086	17.0	10.0	XSM-1517-10
7.0		9.0	12.0	XSM-0709-12	15.0		17.0	15.0	XSM-1517-15
8.0		10.0	6.0	XSM-0810-06	15.0		17.0	20.0	XSM-1517-20
8.0		10.0	8.0	XSM-0810-08	15.0		17.0	25.0	XSM-1517-25
8.0		10.0	10.0	XSM-0810-10	16.0		18.0	10.0	XSM-1618-10
8.0		10.0	12.0	XSM-0810-12	16.0		18.0	12.0	XSM-1618-12
8.0	+0.013	10.0	15.0	XSM-0810-15	16.0		18.0	15.0	XSM-1618-15
10.0	+0.071	12.0	3.5	XSM-1012-035	16.0		18.0	20.0	XSM-1618-20
10.0		12.0	6.0	XSM-1012-06	16.0		18.0	25.0	XSM-1618-25
10.0		12.0	8.0	XSM-1012-08	16.0		18.0	35.0	XSM-1618-35
10.0		12.0	10.0	XSM-1012-10	17.0		19.0	20.0	XSM-1719-20
10.0		12.0	12.0	XSM-1012-12	18.0		20.0	15.0	XSM-1820-15
10.0		12.0	15.0	XSM-1012-15	18.0		20.0	20.0	XSM-1820-20
10.0		12.0	20.0	XSM-1012-20	18.0		20.0	25.0	XSM-1820-25

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

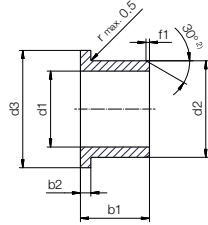
Product range

d1	d1	d2	b1	Part No.	d1	d1	d2	b1	Part No.
[mm]	Tolerance ³⁾	[mm]	h13	[mm]	[mm]	Tolerance ³⁾	[mm]	h13	[mm]
20.0	+0.016 +0.086	22.0	14.0	XSM-2022-140	30.0		34.0	20.0	XSM-3034-20
20.0		22.0	14.5	XSM-2022-145	30.0	+0.020	34.0	25.0	XSM-3034-25
20.0		22.0	17.0	XSM-2022-17	30.0	+0.104	34.0	30.0	XSM-3034-30
20.0		22.0	18.0	XSM-2022-18	30.0		34.0	40.0	XSM-3034-40
20.0		22.0	20.0	XSM-2022-20	32.0		36.0	20.0	XSM-3236-20
20.0		23.0	7.0	XSM-2023-07	32.0		36.0	25.0	XSM-3236-25
20.0		23.0	10.0	XSM-2023-10	32.0		36.0	30.0	XSM-3236-30
20.0		23.0	15.0	XSM-2023-15	32.0		36.0	35.0	XSM-3236-35
20.0		23.0	20.0	XSM-2023-20	32.0		36.0	40.0	XSM-3236-40
20.0		23.0	25.0	XSM-2023-25	32.0		36.0	54.0	XSM-3236-54
20.0		23.0	30.0	XSM-2023-30	35.0		39.0	20.0	XSM-3539-20
22.0		25.0	15.0	XSM-2225-15	35.0		39.0	30.0	XSM-3539-30
22.0		25.0	20.0	XSM-2225-20	35.0		39.0	40.0	XSM-3539-40
22.0		25.0	25.0	XSM-2225-25	35.0		39.0	50.0	XSM-3539-50
22.0		25.0	30.0	XSM-2225-30	40.0		44.0	20.0	XSM-4044-20
24.0		26.0	20.0	XSM-2426-20	40.0	+0.025 +0.125	44.0	30.0	XSM-4044-30
24.0		27.0	6.0	XSM-2427-06	40.0		44.0	40.0	XSM-4044-40
24.0		27.0	15.0	XSM-2427-15	40.0		44.0	50.0	XSM-4044-50
24.0		27.0	20.0	XSM-2427-20	45.0		50.0	20.0	XSM-4550-20
24.0	+0.020 +0.104	27.0	25.0	XSM-2427-25	45.0		50.0	30.0	XSM-4550-30
24.0		27.0	30.0	XSM-2427-30	45.0		50.0	40.0	XSM-4550-40
25.0		28.0	7.7	XSM-2528-077	45.0		50.0	50.0	XSM-4550-50
25.0		28.0	9.0	XSM-2528-09	50.0		55.0	20.0	XSM-5055-20
25.0		28.0	12.0	XSM-2528-12	50.0		55.0	30.0	XSM-5055-30
25.0		28.0	13.0	XSM-2528-13	50.0		55.0	40.0	XSM-5055-40
25.0		28.0	15.0	XSM-2528-15	50.0		55.0	50.0	XSM-5055-50
25.0		28.0	20.0	XSM-2528-20	50.0		55.0	60.0	XSM-5055-60
25.0		28.0	25.0	XSM-2528-25	55.0		60.0	50.0	XSM-5560-50
25.0		28.0	30.0	XSM-2528-30	60.0		65.0	45.0	XSM-6065-45
25.0		28.0	35.0	XSM-2528-35	60.0	+0.030 +0.150	65.0	60.0	XSM-6065-60
26.0		28.0	10.0	XSM-2628-10	65.0		70.0	50.0	XSM-6570-50
27.0		30.0	5.7	XSM-2730-05	70.0		75.0	70.0	XSM-7075-70
28.0		32.0	20.0	XSM-2832-20	75.0		80.0	60.0	XSM-7580-60
28.0		32.0	25.0	XSM-2832-25	80.0		85.0	100.0	XSM-8085-100
28.0		32.0	30.0	XSM-2832-30	90.0		95.0	100.0	XSM-9095-100
28.0		32.0	69.0	XSM-2832-69	100.0	+0.036	105.0	100.0	XSM-100105-100
30.0		34.0	10.0	XSM-3034-10	110.0	+0.176	115.0	100.0	XSM-110115-100
30.0		34.0	15.0	XSM-3034-15	120.0		125.0	100.0	XSM-120125-100

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

Bearing technology | Plain bearing | iglidur® X

Flange bearing (form F)



³⁾ 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



Dimensions according to ISO 3547-1 and special dimensions



Order example: **XF**M-0304-05 – no minimum order quantity.

X iglidur® material F Flange bearing M Metric 03 Inner Ø d1 04 Outer Ø d2 05 Total length b1

d1	d1	d2	d3	b1	b2	Part No.
[mm]	Tolerance ³⁾	[mm]	d13 ³⁾	[mm]	[mm]	
2.0	+0.006	4.0	6.0	3.0	1.00	XFM-020406-03
3.0	+0.046	4.5	7.5	5.0	0.75	XFM-0304-05
4.0		5.5	9.5	4.0	0.75	XFM-0405-04
4.0		5.5	9.5	6.0	0.75	XFM-0405-06
4.0	+0.010	5.5	8.0	6.0	0.75	XFM-040508-06
5.0	+0.058	7.0	11.0	5.0	1.00	XFM-0507-05
6.0		8.0	12.0	4.0	1.00	XFM-0608-04
6.0		8.0	12.0	8.0	1.00	XFM-0608-08
6.0		8.0	12.0	10.0	1.00	XFM-0608-10
8.0		10.0	12.0	4.0	1.00	XFM-081012-04
8.0		10.0	15.0	5.5	1.00	XFM-0810-05
8.0		10.0	15.0	7.5	1.00	XFM-0810-07
8.0		10.0	15.0	8.0	1.00	XFM-0810-08
8.0		10.0	15.0	9.5	1.00	XFM-0810-09
8.0		10.0	14.0	31.5	1.00	XFM-081014-31
9.0		11.0	15.0	18.0	0.50	XFM-0911-18
10.0		12.0	18.0	5.0	1.00	XFM-1012-05
10.0	+0.013	12.0	18.0	6.0	1.00	XFM-1012-06
10.0	+0.071	12.0	18.0	7.0	1.00	XFM-1012-07
10.0		12.0	15.0	8.0	1.00	XFM-1012-08
10.0		12.0	18.0	9.0	1.00	XFM-1012-09
10.0		12.0	18.0	12.0	1.00	XFM-1012-12
10.0		12.0	18.0	15.0	1.00	XFM-1012-15
10.0		12.0	18.0	17.0	1.00	XFM-1012-17
10.0		12.0	18.0	18.0	1.00	XFM-1012-18
10.0		12.0	15.0	22.0	1.00	XFM-1012-22
10.0		12.0	18.0	25.0	1.00	XFM-1012-25

d1	d1	d2	d3	b1	b2	Part No.
[mm]	Tolerance ³⁾	[mm]	d13 ³⁾	[mm]	[mm]	
12.0		14.0	18.0	3.9	1.00	XFM-121418-039
12.0		14.0	20.0	5.5	1.00	XFM-1214-055
12.0		14.0	18.0	5.9	1.00	XFM-121418-059
12.0		14.0	20.0	9.0	1.00	XFM-1214-09
12.0		14.0	20.0	12.0	1.00	XFM-1214-12
12.0		14.0	20.0	15.0	1.00	XFM-1214-15
12.0		14.0	20.0	17.0	1.00	XFM-1214-17
14.0		16.0	22.0	10.0	1.00	XFM-1416-10
14.0		16.0	22.0	12.0	1.00	XFM-1416-12
14.0	+0.016	16.0	22.0	17.0	1.00	XFM-1416-17
15.0	+0.086	17.0	23.0	6.0	1.00	XFM-1517-06
15.0		17.0	23.0	9.0	1.00	XFM-1517-09
15.0		17.0	23.0	12.0	1.00	XFM-1517-12
15.0		17.0	23.0	17.0	1.00	XFM-1517-17
16.0		18.0	24.0	12.0	1.00	XFM-1618-12
16.0		18.0	24.0	17.0	1.00	XFM-1618-17
18.0		20.0	26.0	12.0	1.00	XFM-1820-12
18.0		20.0	26.0	17.0	1.00	XFM-1820-17
18.0		20.0	26.0	22.0	1.00	XFM-1820-22
20.0		23.0	30.0	6.5	1.50	XFM-2023-065
20.0		23.0	30.0	7.5	1.50	XFM-2023-075
20.0		23.0	30.0	11.5	1.50	XFM-2023-11
20.0		23.0	30.0	16.5	1.50	XFM-2023-16
20.0	+0.020	23.0	30.0	21.0	1.50	XFM-2023-21
20.0	+0.104	28.0	33.0	8.0	1.00	XFM-252833-08
25.0		28.0	35.0	11.5	1.50	XFM-2528-11
25.0		28.0	35.0	13.5	1.50	XFM-2528-13
25.0		28.0	35.0	16.5	1.50	XFM-2528-16

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

Product range

d1	d1	d2	d3	b1	b2	Part No.
[mm]	Tolerance ³⁾	[mm]	d13 ³⁾	[mm]	[mm]	
25.0		28.0	35.0	21.0	1.50	XFM-2528-21
27.0		30.0	38.0	20.0	1.50	XFM-2730-20
30.0	+0.020	34.0	42.0	16.0	2.00	XFM-3034-16
30.0	+0.104	34.0	42.0	26.0	2.00	XFM-3034-26
30.0		34.0	42.0	40.0	2.00	XFM-3034-40
32.0		36.0	45.0	15.0	2.00	XFM-3236-15
32.0	+0.025	36.0	45.0	26.0	2.00	XFM-3236-26
35.0	+0.125	39.0	47.0	16.0	2.00	XFM-3539-16
35.0		39.0	47.0	26.0	2.00	XFM-3539-26

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

d1	d1	d2	d3	b1	b2	Part No.
[mm]	Tolerance ³⁾	[mm]	d13 ³⁾	[mm]	[mm]	
40.0		44.0	52.0	22.0	2.00	XFM-4044-22
40.0	+0.025	44.0	52.0	30.0	2.00	XFM-4044-30
40.0	+0.125	44.0	52.0	40.0	2.00	XFM-4044-40
45.0		50.0	58.0	50.0	2.00	XFM-4550-50
50.0		55.0	63.0	40.0	2.00	XFM-5055-40
60.0		65.0	73.0	40.0	2.00	XFM-6065-40
60.0	+0.030	65.0	73.0	40.0	2.00	XFM-6065-40
70.0	+0.150	75.0	83.0	40.0	2.00	XFM-7075-40
75.0		80.0	88.0	50.0	2.00	XFM-7580-50



Available from stock

Detailed information about delivery time online.

www.igus.eu/24



Online ordering

Including delivery times, prices, online tools

www.igus.eu/X



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.