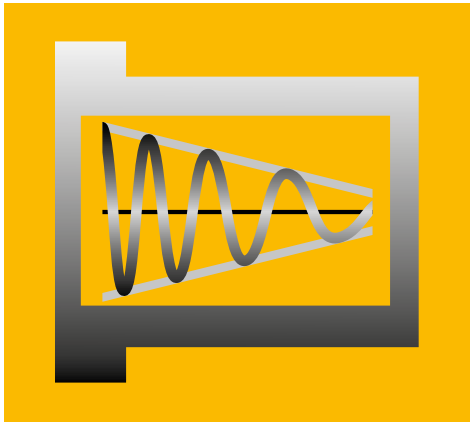


Ideal for pivoting movement

Vibration-dampening with low coefficient of friction for low or medium loads

iglidur® E7

When to use it?

- When good dampening properties and quiet operation are required
- When a low coefficient of friction in a pivoting movement is required
- When a tough material is required

When not to use?

- When high pressures occur
  iglidur® G, iglidur® Z
- When continuous operating temperatures are higher than 70°C
  iglidur® J350
- When universal wear resistance is required
  iglidur® J

Bearing technology | Plain bearing | iglidur® E7

Ø
6.0 – 20.0mm

Also available as:

Bar stock, round bar
Page 677

Bar stock, plate
Page 683

tribo-tape liner
Page 691

Piston rings
Page 581

Two hole flange bearings
Page 603

Moulded special parts
Page 624

igubal® spherical balls
Page 841

Ideal for pivoting movement

Vibration-dampening with low coefficient of friction for low or medium loads

For the first time, the material iglidur® E7, well-known from drylin® linear technology, is also available as a plain bearing. Plain bearings made of the material offer excellent coefficient of friction and wear with low to medium loads.

- Noise-dampening
- Very low coefficients of friction
- Lubrication-free
- Corrosion-free

Typical application areas

- Packaging industry
- Textile industry
- Furniture/Industrial design

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.sk/iglidur-finder

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

iglidur® E7
+70°C
18MPa

Technical data

General properties			Testing method
Density	g/cm³	1.05	
Colour		dark grey	
Max. moisture absorption at +23°C and 50% r.h.	% weight	0.1	DIN 53495
Max. moisture absorption	% weight	0.1	
Coefficient of friction, dynamic, against steel	µ	0.09 – 0.23	
pv value, max. (dry)	MPa · m/s	0.22	
Mechanical properties			
Flexural modulus	MPa	1,477	DIN 53457
Flexural strength at +20°C	MPa	22	DIN 53452
Compressive strength	MPa	18	
Max. recommended surface pressure (+20°C)	MPa	18	
Shore D hardness		61	DIN 53505
Physical and thermal properties			
Max. application temperature long-term	°C	+70	
Max. application temperature short-term	°C	+90	
Min. application temperature	°C	–50	
Thermal conductivity	W/m · K	0.24	ASTM C 177
Coefficient of thermal expansion (at +23°C)	$K^{-1} \cdot 10^{-5}$	25	DIN 53752
Electrical properties			
Specific contact resistance	Ωcm	$>10^9$	DIN IEC 93
Surface resistance	Ω	$>10^9$	DIN 53482

–50°C up to +70°C

18MPa

HB

RoHS-II

ISO 3547-1

Table 01: Material properties

The material E7 offers good vibration-dampening properties. With low coefficient of friction at low and medium loads, the material is a suitable partner for almost all shaft materials.

Moisture absorption

Under standard climatic conditions, the moisture absorption of iglidur® E7 plain bearings is approximately 0.1% weight. The saturation limit in water is 0.1% weight. These values are so low that a moisture expansion need to be considered only in extreme cases.

Vacuum

In vacuum, any present moisture is released as vapour. The use in vacuum is generally possible.

Radiation resistance

Plain bearings made from iglidur® E7 are resistant up to a radiation intensity of $3 \cdot 10^2$Gy.

Resistance to weathering

iglidur® E7 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® E7 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. At the maximum permissible load of 18MPa, the deformation is approximately 6% (diagram 03). A plastic deformation can be negligible up to this value. However, it is also dependent on the service time.

Surface pressure, page 41

Bearing technology | Plain bearing | iglidur® E7

Permissible surface speeds

iglidur® E7 attains high surface speeds due to its excellent coefficient of friction. Continuous rotation speeds of 0.5m/s are possible. The permitted speeds are clearly higher yet in linear movements or in short-term operation. Speeds of over 3.0m/s have been successfully tested in linear applications.

Surface speed, page 44

Temperature

The maximum permissible temperature of +90°C should not be exceeded. Therefore the ambient temperature generated by friction has to be added. From +30°C onward, the bearing should be mechanically retained, so as to avoid the bearing moving out of the hole. The wear resistance also decreases exponentially from +90°C upwards.

Application temperatures, page 49
Additional securing, page 49

Friction and wear

Among all the iglidur® materials, iglidur® E7 exhibits the lowest coefficient of friction. The average coefficient of friction of all measurements, even with different shaft materials, is 0.11µ. The use of hard-anodised aluminium as a shaft material is also of importance. The comparison with the rest of the iglidur® materials shows that iglidur® E7 plain bearings are suitable for rather low loads. The influence of surface speed and load on the coefficient of friction is small. The change of the coefficient of friction at high loads is in the normal range (diagrams 04 and 05). Surface finishes (Ra) of the shaft between 0.8µm are ideal. The influence of the shaft material on the wear resistance is significant. Even at low loads, we recommend to have a closer look into the wear database.

Coefficient of friction and surfaces, page 47
Wear resistance, page 50

Shaft materials

The shaft material has a great impact on the wear resistance. In fact, all shaft materials (smooth or hardened) are suitable for use with iglidur® E7, but the best results are achieved with hard-anodised aluminium. In particular when used in linear motion, this running surface has proven its value.

Shaft materials, page 52

Installation tolerances

iglidur® E7 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	+ up to 0

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

Table 02: Chemical resistance

Chemical table, page 1636

		Rotating	Oscillating	linear
long-term	m/s	0.5	0.4	2.0
short-term	m/s	0.8	0.6	3.0

Table 03: Maximum surface speeds

	Dry	Greases	Oil	Water
Coefficient of friction µ	0.09 – 0.23	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

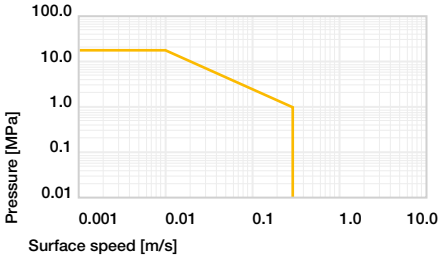


Diagram 01: Permissible pv values for iglidur® E7 plain bearings with a wall thickness of 1mm, dry operation against a steel shaft, at +20°C, mounted in a steel housing

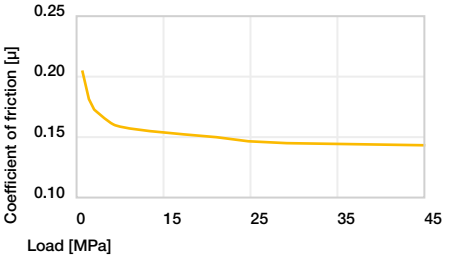


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01m/s

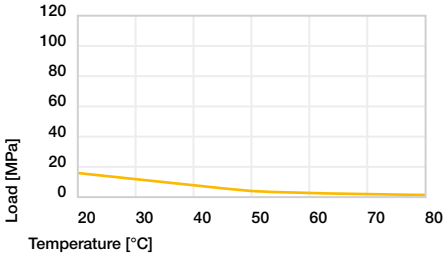


Diagram 02: Maximum recommended surface pressure as a function of temperature (18MPa at +20°C)

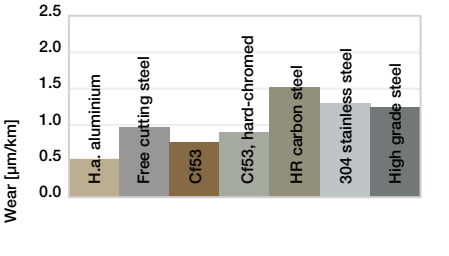


Diagram 06: Wear, rotating with different shaft materials, pressure, p = 1MPa, v = 0.3m/s

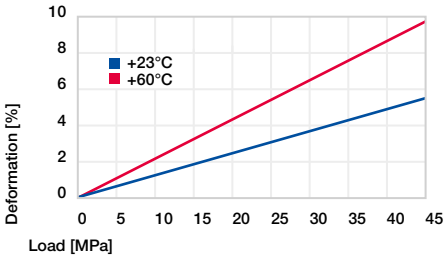


Diagram 03: Deformation under pressure and temperature

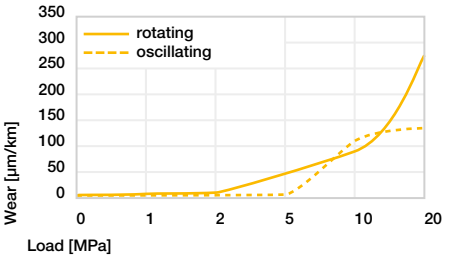


Diagram 07: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the load

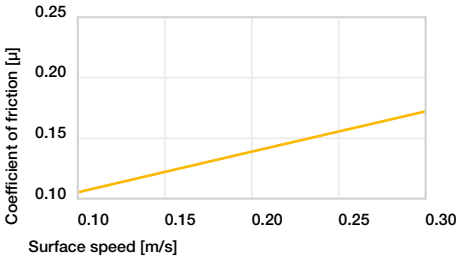
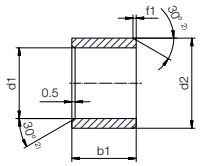


Diagram 04: Coefficient of friction as a function of the surface speed, p = 0.75MPa

Bearing technology | Plain bearing | iglidur® E7

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
f1 [mm]	0.3	0.5	0.8

Dimensions according to ISO 3547-1 and special dimensions

Order example: E7SM-0608-06 – no minimum order quantity.
E7 iglidur® material S Sleeve bearing M Metric 06 Inner Ø d1 08 Outer Ø d2 06 Total length b1

d1 [mm]	d1 Tolerance[3]	d2 [mm]	b1 h13 [mm]	Part No.
6.0	+0.020 +0.068	8.0	6.0	**E7SM-0608-06**
8.0	+0.025 +0.083	10.0	10.0	**E7SM-0810-10**
10.0		12.0	10.0	**E7SM-1012-10**
12.0	+0.032 +0.102	14.0	12.0	**E7SM-1214-12**
16.0		18.0	15.0	**E7SM-1618-15**
20.0	+0.040 +0.124	23.0	20.0	**E7SM-2023-20**

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

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Detailed information about delivery time online.
www.igus.sk/24

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Including delivery times, prices, online tools
www.igus.sk/E7

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

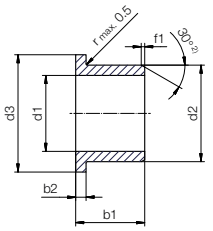
Discount scaling		
1 – 9	50 – 99	500 – 999
10 – 24	100 – 199	1,000 – 2,499
25 – 49	200 – 499	2,500 – 4,999

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

iglidur® E7
+70°C
18MPa

Bearing technology | Plain bearing | iglidur® E7

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
f1 [mm]	0.3	0.5	0.8

Dimensions according to ISO 3547-1 and special dimensions

Order example: E7FM-0608-06 – no minimum order quantity.
E7 iglidur® material F Flange bearing M Metric 06 Inner Ø d1 08 Outer Ø d2 06 Total length b1

d1 [mm]	d1 Tolerance[3]	d2 [mm]	d3 d13[3] [mm]	b1 h13 [mm]	b2 h13 [mm]	Part No.
6.0	+0.020 +0.068	8.0	12.0	6.0	1.00	**E7FM-0608-06**
8.0	+0.025 +0.083	10.0	15.0	10.0	1.00	**E7FM-0810-10**
10.0		12.0	18.0	10.0	1.00	**E7FM-1012-10**
12.0	+0.032 +0.102	14.0	20.0	12.0	1.00	**E7FM-1214-12**
16.0		18.0	24.0	17.0	1.00	**E7FM-1618-17**
20.0	+0.040 +0.124	23.0	30.0	21.5	1.50	**E7FM-2023-21**

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

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Detailed information about delivery time online.
www.igus.sk/24

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