



Suitable for contact with drinking water

KTW-compliant
igidur® UW160



When to use it?

- When a KTW-compliant material is required
- When a wear-resistant material for continuous operation in liquid is required



When not to use?

- When a recurring media-resistant plain bearing with intermittent dry operation is required
igidur® A160
- When a media and temperature-resistant universal plain bearing is required
igidur® X
- When a standard plain bearing is required for use in a moist environment
igidur® P

Bearing technology | Plain bearing | iglidur® UW160



Ø
3.0 – 10.0mm



Also available
as:



Bar stock,
round bar
Page 683

Suitable for contact with drinking water KTW-compliant

iglidur® UW160 is tribologically optimised for continuous operation in liquid media. Its superior media resistance not only permits uses with potable water contact.

- Suitable for applications in liquids
- Suitable for contact with drinking water (KTW-compliant)
- High media resistance
- Lubrication-free
- Maintenance-free



Bar stock,
plate
Page 683

Typical application areas

- Fluid technology
- Pumps
- Water meters



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

Descriptive technical specifications				
Wear resistance at +23°C	-	<div style="width: 100%; height: 10px; background-color: green;"></div>		+
Wear resistance at +90°C	-	<div style="width: 25%; height: 10px; background-color: green;"></div>		+
Wear resistance at +150°C	-	<div style="width: 10%; height: 10px; background-color: green;"></div>		+
Low coefficient of friction	-	<div style="width: 75%; height: 10px; background-color: green;"></div>		+
Low moisture absorption	-	<div style="width: 100%; height: 10px; background-color: green;"></div>		+
Wear resistance under water	-	<div style="width: 100%; height: 10px; background-color: green;"></div>		+
High media resistance	-	<div style="width: 80%; height: 10px; background-color: green;"></div>		+
Resistant to edge pressures	-	<div style="width: 75%; height: 10px; background-color: green;"></div>		+
Suitable for shock and impact loads	-	<div style="width: 75%; height: 10px; background-color: green;"></div>		+
Resistant to dirt	-	<div style="width: 75%; height: 10px; background-color: green;"></div>		+

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

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

Technical data

General properties		Testing method	
Density	g/cm³	1.04	
Colour		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	0.17 – 0.31	
pv value, max. (dry)	MPa · m/s	0.22	
Mechanical properties			
Flexural modulus	MPa	1,349	DIN 53457
Flexural strength at +20°C	MPa	22	DIN 53452
Compressive strength	MPa	32	
Max. recommended surface pressure (+20°C)	MPa	15	
Shore D hardness		60	DIN 53505
Physical and thermal properties			
Max. application temperature long-term	°C	+90	
Max. application temperature short-term	°C	+100	
Min. application temperature	°C	-50	
Thermal conductivity	W/m · K	0.50	ASTM C 177
Coefficient of thermal expansion (at +23°C)	K ⁻¹ · 10 ⁻⁵	18	DIN 53752
Electrical properties			
Specific contact resistance	Ωcm	> 10 ¹²	DIN IEC 93
Surface resistance	Ω	> 10 ¹²	DIN 53482

Table 01: Material properties

iglidur® UW160 was developed quite specifically with regard to maximum wear resistance in media-based continuous operation. In such applications, low radial loads and medium temperatures usually occur. The suitability for contact with drinking water and very good durability complete the profile of properties.

Moisture absorption

Under standard climatic conditions, the moisture absorption of iglidur® UW160 plain bearings is approximately 0.1% weight. The saturation limit in water is 0.1% weight.

Vacuum

In vacuum, any present moisture is released as vapour. Use in vacuum is only possible with dehumidified iglidur® UW160 bearings.

Radiation resistance

Plain bearings made from iglidur® UW160 are resistant up to a radiation intensity of 3 · 10²Gy.

Resistance to weathering

iglidur® UW160 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® UW160 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® UW160 at radial loads.

Surface pressure, page 41



-50°C up to
+90°C



15MPa



Permissible surface speeds

The maximum recommended surface speed is based on the friction heat generated at the bearing surface. The temperature should only be permitted to increase to a value that will ensure a sustainable use of the bearing with respect to wear and dimensional integrity. The maximum values specified in table 03 are for the dry operation. In media-based application, sometimes significantly higher speeds are achieved due to reduced heat generation depending on the installation.

Surface speed, page 44

Temperature

iglidur® UW160 was developed for use in liquid media in the normal and medium temperature range. As in the case of all thermoplastics, the compression strength of iglidur® UW160 decreases when temperatures rise. The temperatures prevailing in the bearing system also have an influence on the wear. The wear rises with increasing temperatures. For temperatures over +70°C an additional securing is required.

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). The influence of surface speed and surface finish of the shaft on the friction coefficient is low, but with increasing radial load the coefficient of friction decreases significantly, mainly in the range of up to 7.5MPa.

Coefficient of friction and surfaces, page 47

Wear resistance, page 50

Shaft materials

Diagram 06 shows results of testing different shaft materials with plain bearings made from iglidur® UW160. In the example of a rotational movement with radial loads of 1MPa and a speed of 0.3m/s, it becomes clear that iglidur® UW160 achieves good coefficient of wear with the most varied shafts. It is also clear that there are better iglidur® materials for dry operation. As with many other iglidur® materials in dry operation, diagram 07 shows the significantly higher wear in rotation than in pivoting with otherwise identical parameters.

Shaft materials, page 52

Installation tolerances

iglidur® UW160 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.

Testing methods, page 57

Chemicals	Resistance
Alcohols	+
Diluted acids	+
Diluted alkalines	+
Fuels	+ up to 0
Greases, oils without additives	+
Hydrocarbons	+
Strong acids	+
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 0.3	0.3	1.0
short-term	m/s 0.5	0.4	2.5

Table 03: Maximum surface speeds

	Dry	Greases	Oil	Water
Coefficient of friction μ	0.17 – 0.31	0.08	0.03	0.03

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

\varnothing d1 [mm]	Housing		Plain bearing		Shaft	
	H7 [mm]	E10 [mm]	E10 [mm]	h9 [mm]	h9 [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

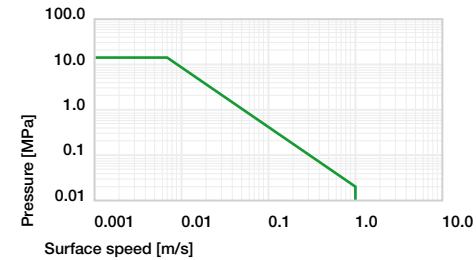


Diagram 01: Permissible pv values for iglidur® UW160 plain bearings with a wall thickness of 1mm, dry operation against a steel shaft, at +20°C, mounted in a steel housing

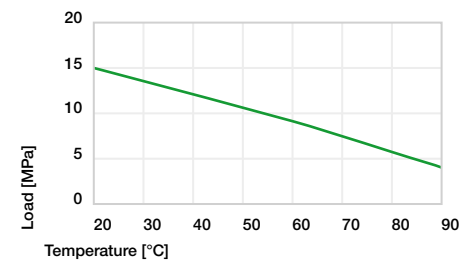


Diagram 02: Maximum recommended surface pressure as a function of temperature (15MPa at +20°C)

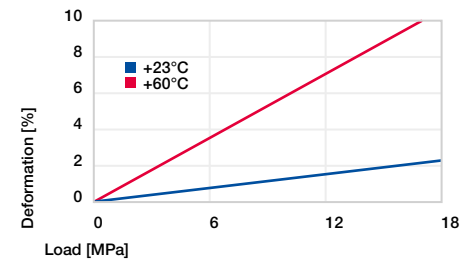


Diagram 03: Deformation under pressure and temperature

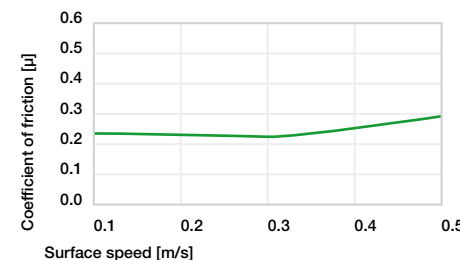


Diagram 04: Coefficient of friction as a function of the surface speed, p = 1MPa

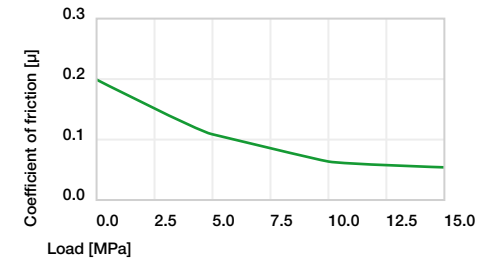


Diagram 05: Coefficient of friction as a function of the load, v = 0.01m/s

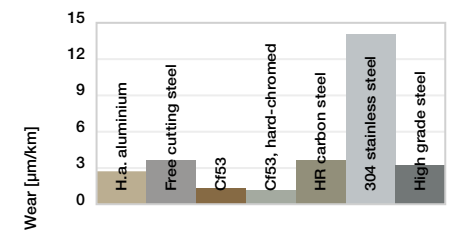


Diagram 06: Wear, rotating with different shaft materials, pressure, p = 1MPa, v = 0.3m/s

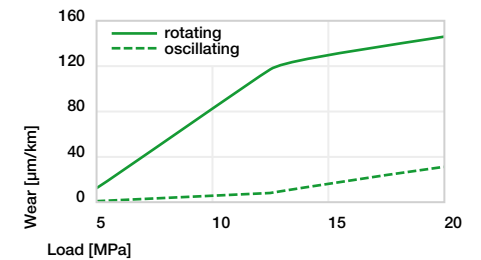
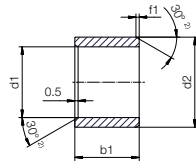


Diagram 07: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the load

Bearing technology | Plain bearing | iglidur® UW160

Sleeve bearing (form S)



²⁾ Thickness < 0.6mm: Chamfer = 20°

i Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to d1

d1 [mm]	Ø 1-6	Ø 6-12
f1 [mm]	0.3	0.5



Order example: **UW160SM-0304-03** – no minimum order quantity.

UW160 iglidur® material **S** Sleeve bearing **M** Metric **03** Inner Ø d1 **04** Outer Ø d2 **03** Total length b1

d1	d1	d2	b1	Part No.
[mm]	Tolerance ³⁾	[mm]	h13 [mm]	
3.0		4.0	3.0	UW160SM-0304-03
4.0	+0.014 +0.054	5.0	4.0	UW160SM-0405-04
5.0		7.0	5.0	UW160SM-0507-05
6.0	+0.020 +0.068	8.0	6.0	UW160SM-0608-06
8.0		10.0	10.0	UW160SM-0810-10
10.0	+0.025 +0.083	12.0	10.0	UW160SM-1012-10

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/UW160



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

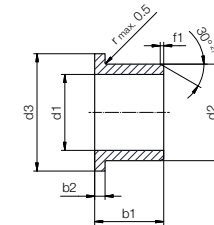
No minimum order value.

No low-quantity surcharges.

Free shipping within Germany for orders above €150.

Bearing technology | Plain bearing | iglidur® UW160

Flange bearing (form F)



²⁾ Thickness < 0.6mm: Chamfer = 20°

i Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to d1

d1 [mm]	Ø 1-6	Ø 6-12
f1 [mm]	0.3	0.5



Order example: **UW160FM-0304-05** – no minimum order quantity.

UW160 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]	h13 [mm]	h13 [mm]	
3.0		4.5	7.5	5.0	0.75	UW160FM-0304-05
4.0	+0.014 +0.054	5.5	9.5	6.0	0.75	UW160FM-0405-06
5.0		7.0	11.0	7.0	1.00	UW160FM-0507-07
6.0	+0.020 +0.068	8.0	12.0	6.0	1.00	UW160FM-0608-06
8.0		10.0	14.0	10.0	1.00	UW160FM-0810-10
10.0	+0.025 +0.083	12.0	18.0	10.0	1.00	UW160FM-1012-10

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/UW160



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.