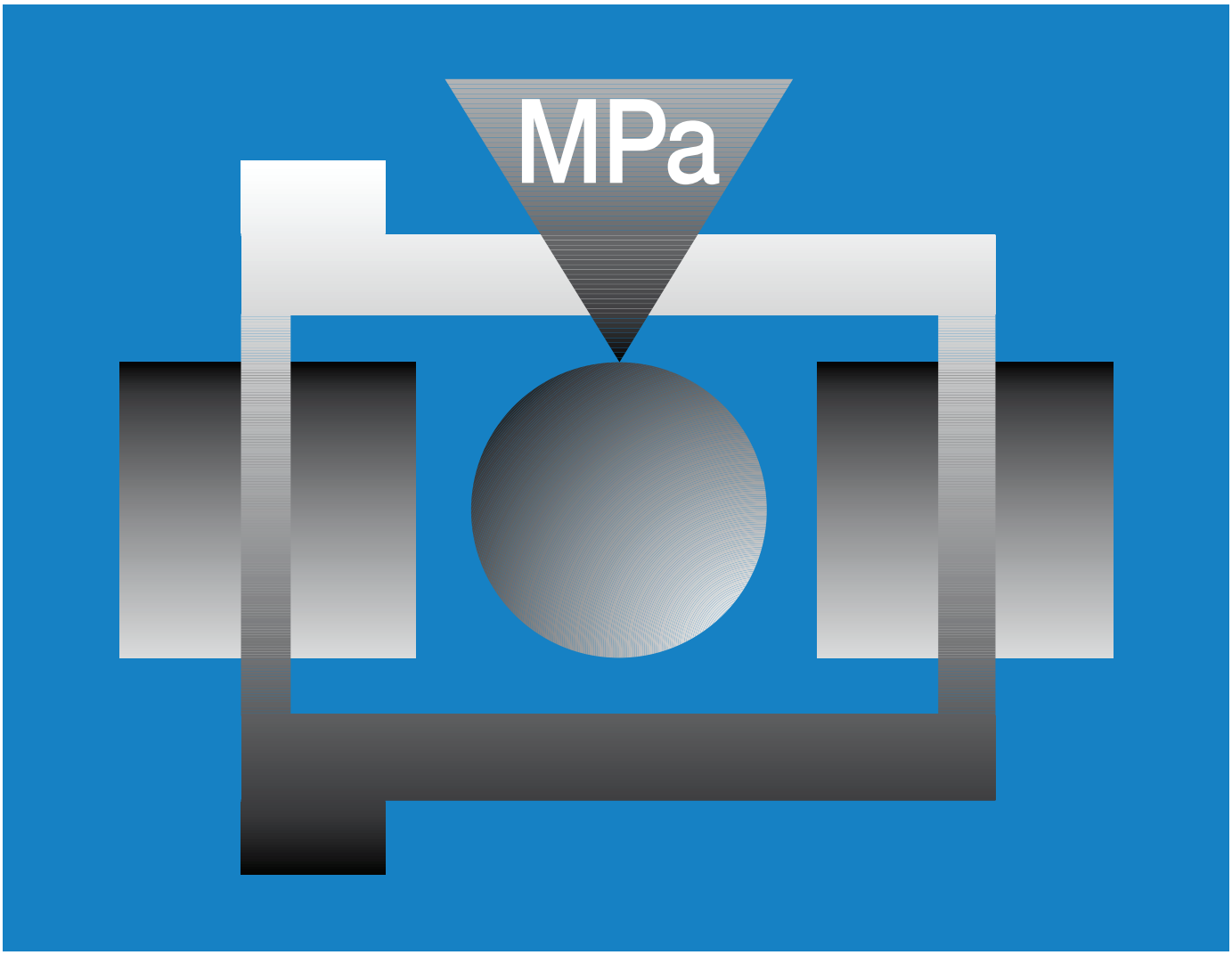
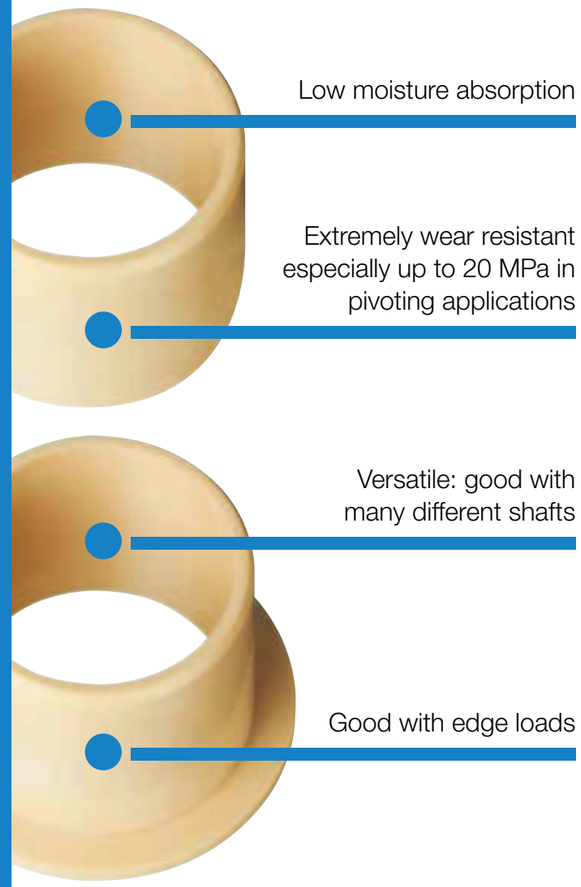


Flexible, wear resistant & more – iglidur® P210

- Low moisture absorption
- Extremely wear resistant especially up to 20 MPa in pivoting applications
- Versatile: good with many different shafts
- Good with edge loads
- Lubrication and maintenance free
- Standard range from stock

iglidur® P210 | Extremely wear-resistant in pivoting motions

Flexible, wear resistant & more



This versatile material has already proven its worth in many customer-specific solutions and as a bar stock material. Clip-on or pretensioned design as well as vehicle interior applications are possible. Now available in a standard size range.

When to use it?

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

When not to use it?

- When you need a universal bearing with the largest possible range of dimensions
  ▶ iglidur® G, page 83
- ▶ When you need a bearing for highly loaded pivoting applications
  ▶ iglidur® Q, page 401
  ▶ iglidur® Q2, page 409
- When temperatures in excess of +100 °C occur
  ▶ iglidur® G, page 83
  ▶ iglidur® J350, page 199

Available from stock
Detailed information about delivery time online.

max. +100 °C
min. –40 °C

Block pricing online
No minimum order value. From batch size 1

Ø 6–25 mm
more dimensions on request

Typical application areas
● Automotive interior area, hinges ● Sports and leisure ● Bicycles etc.

iglidur® P210 | Technical data

Material properties table

General properties	Unit	iglidur® P210	Testing method
Density	g/cm³	1.40	
Colour		yellow	
Max. moisture absorption at +23 °C/50 % r.h.	% weight	0.3	DIN 53495
Max. water absorption	% weight	0.5	
Coefficient of sliding friction, dynamic against steel	µ	0.07–0.19	
pv value, max. (dry)	MPa · m/s	0.4	
Mechanical properties			
Modulus of elasticity	MPa	2,500	DIN 53457
Tensile strength at +20 °C	MPa	70	DIN 53452
Compressive strength	MPa	50	
Max. recommended surface pressure (+20 °C)	MPa	50	
Shore-D hardness		75	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+100	
Max. short term application temperature	°C	+160	
Min. application temperature	°C	–40	
Thermal conductivity	W/m · K	0.25	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	$K^{-1} \cdot 10^{-5}$	8	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	$> 10^{12}$	DIN IEC 93
Surface resistance	Ω	$> 10^{11}$	DIN 53482

Table 01: Material properties table

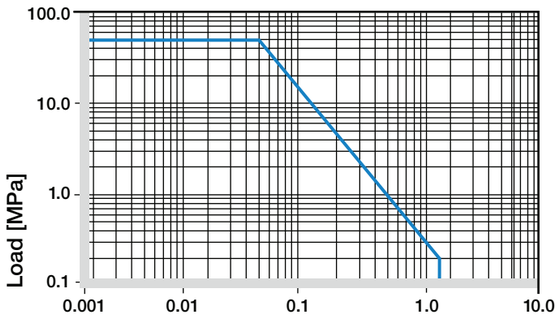


Diagram 01: Permissible pv values for iglidur® P210 bearings with a wall thickness of 1 mm dry running against a steel shaft, at 20 °C, mounted in a steel housing

Moisture absorption

The moisture absorption of iglidur® P210 plain bearings is approximately 0.3 % in ambient conditions. The saturation limit in water is 0.5 %. This low moisture absorption is well below the values of iglidur® G.

▶ Diagram, www.igus.eu/p210-moisture

Vacuum

In a vacuum environment, any existing moisture in iglidur® P210 plain bearings is released as a vapour. Use in vacuum is limited.

Radiation resistance

Plain bearings made from iglidur® P210 have limited use under radioactive radiation. They are resistant to radiation up to an intensity of $3 \cdot 10^2$ Gy.

UV resistance

iglidur® P210 bearings have a good resistance to UV radiation.

Medium	Resistance
Alcohol	+
Hydrocarbons	–
Greases, oils without additives	+
Fuels	+
Diluted acids	0
Strong acids	–
Diluted alkalines	–
Strong alkalines	–

+ resistant 0 conditionally resistant – not resistant
All data given at room temperature [+20 °C]
Table 02: Chemical resistance

▶ Chemical table, **page 1226**

iglidur® P210 | Technical data

iglidur® P210 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 20 MPa.

Mechanical properties

With increasing temperatures, the compressive strength of iglidur® P210 plain bearings decreases. The diagram 02 shows this inverse relationship. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

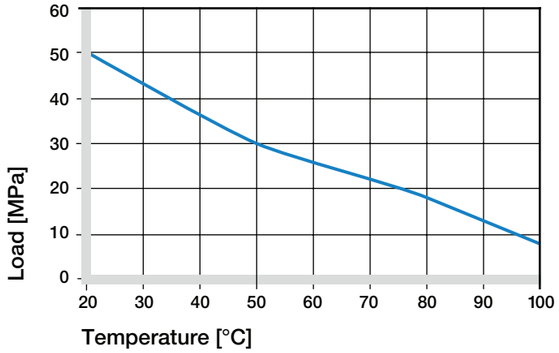


Diagram 02: Recommended maximum surface pressure of as a function of temperature (50 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® P210 as a function of radial pressure. At the recommended maximum surface pressure of 50 MPa the deformation at room temperature is less than 3 %.

▶ Surface pressure, **page 63**

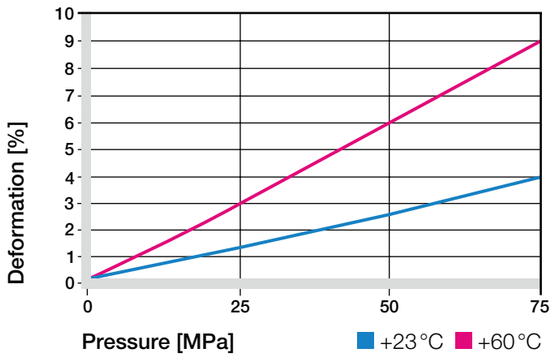


Diagram 03: Deformation under pressure and temperature

Permissible surface speeds

Plain bearings made from iglidur® P210 are maintenance-free plain bearings, which were developed for low to average 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 65**

m/s	Rotating	Oscillating	Linear
Constant	1	0.7	3
Short term	2	1.4	4

Table 03: Maximum surface speeds

Temperatures

With its highest long term application temperature of +100 °C, iglidur® P210 is suitable for a large application spectrum. If higher temperatures are required, iglidur® G with a max. long-term temperature of +130 °C can be used. The ambient application temperature has a direct impact on bearing wear, an increase in temperature results in an increase in wear. The wear rises with increasing temperatures. At temperatures over +50 °C an additional securing is required.

▶ Application temperatures, **page 66**
▶ Additional securing, **page 67**

Friction and wear

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

▶ Coefficients of friction and surfaces, **page 68**
▶ Wear resistance, **page 69**

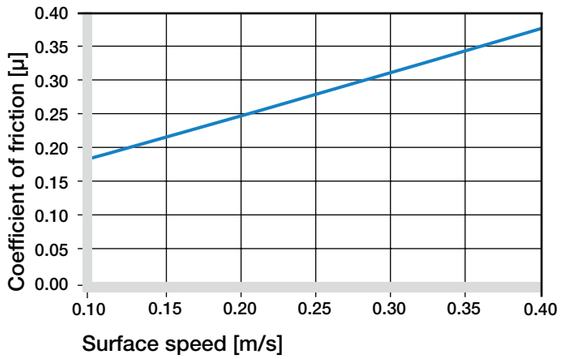


Diagram 04: Coefficient of friction as a function of the surface speed, p = 1 MPa

iglidur® P210

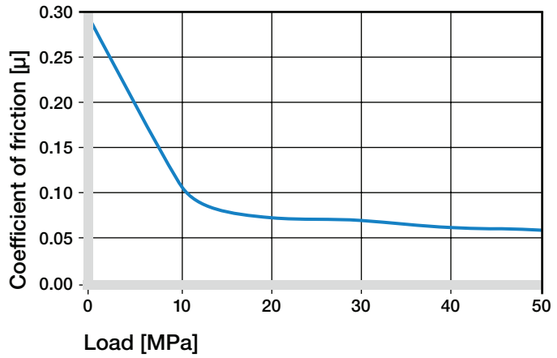


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

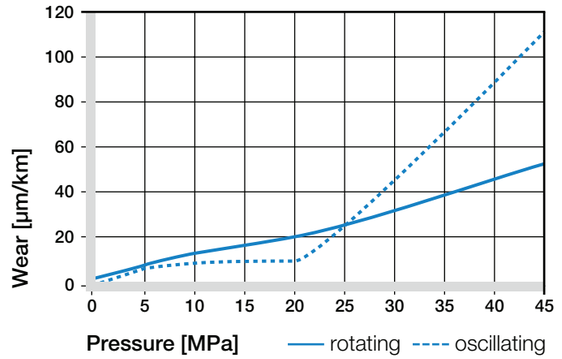


Diagram 07: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

Shaft materials

Diagram 06 shows results of testing different shaft materials with plain bearings made from iglidur® P210.
For rotating motions at radial loads below 1 MPa, iglidur® P210 has generally very low wear. Wear is only significantly higher in combination with St37 shafts. Generally, rotational wear will be higher than for a pivoting application of equal load. This is only reversed at loads above 25 MPa (diagram 07).

▶ Shaft materials, **page 71**

iglidur® P210	Dry	Greases	Oil	Water
C. o. f. µ	0.07–0.19	0.09	0.04	0.04

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

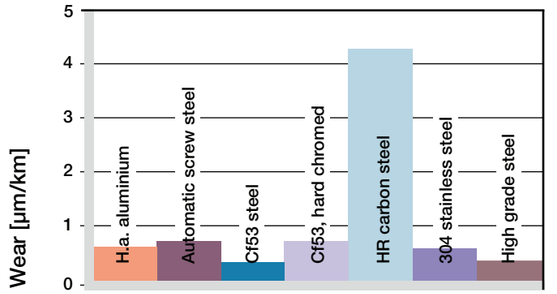


Diagram 06: Wear, rotating with different shaft materials, p = 1 MPa, v = 0.3 m/s

Installation tolerances

iglidur® P210 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, 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).

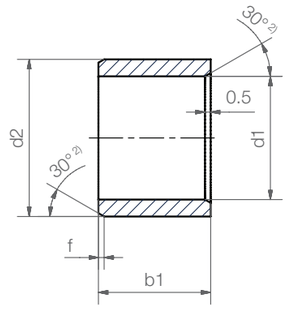
▶ Testing methods, **page 75**

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® P210 E10 [mm]	Housing H7 [mm]
up to 3	0–0.025	+0.014 +0.054	0 +0.010
> 3 to 6	0–0.030	+0.020 +0.068	0 +0.012
> 6 to 10	0–0.036	+0.025 +0.083	0 +0.015
> 10 to 18	0–0.043	+0.032 +0.102	0 +0.018
> 18 to 30	0–0.052	+0.040 +0.124	0 +0.021
> 30 to 50	0–0.062	+0.050 +0.150	0 +0.025
> 50 to 80	0–0.074	+0.060 +0.180	0 +0.030
> 80 to 120	0–0.087	+0.072 +0.212	0 +0.035
>120 to 180	0–0.100	+0.085 +0.245	0 +0.040

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

iglidur® P210 | Product range

Sleeve bearing (Form S)



[2] thickness < 1 mm, chamfer = 20°

Chamfer in relation to the d1

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

Order key

Type			Dimensions		
P210	S	M	-0608	-06	
iglidur® material	Form S	Metric	Inner-Ø d1 [mm]	Outer-Ø d2 [mm]	Length b1 [mm]

Dimensions according to ISO 3547-1 and special dimensions

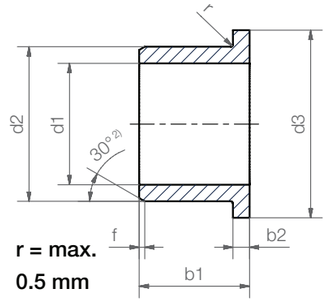
Dimensions [mm]

d1	d1-Tolerance[3]	d2	b1 h13	Part No.
6.0	+0.020 +0.068	8.0	6.0	**P210SM-0608-06**
8.0	+0.025 +0.083	10.0	10.0	**P210SM-0810-10**
10.0	+0.025 +0.083	12.0	10.0	**P210SM-1012-10**
12.0	+0.032 +0.102	14.0	12.0	**P210SM-1214-12**
16.0	+0.032 +0.102	18.0	15.0	**P210SM-1618-15**
20.0	+0.040 +0.124	23.0	20.0	**P210SM-2023-20**

[3] after pressfit. Testing methods ▶ Page 75

iglidur® P210 | Product range

Flange bearing (Form F)



r = max. 0.5 mm

[2] thickness < 1 mm, chamfer = 20°

Chamfer in relation to the d1

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

Order key

Type			Dimensions		
P210	F	M	-0608	-06	
iglidur® material	Form F	Metric	Inner-Ø d1 [mm]	Outer-Ø d2 [mm]	Length b1 [mm]

Dimensions according to ISO 3547-1 and special dimensions

Dimensions [mm]

d1	d1-Tolerance[3]	d2	d3 d13	b1 h13	b2 –0.14	Part No.
6.0	+0.020 +0.068	8.0	12.0	6.0	1.0	**P210FM-0608-06**
8.0	+0.025 +0.083	10.0	15.0	10.0	1.0	**P210FM-0810-10**
8.0	+0.025 +0.083	10.0	16.0	15.0	1.0	**P210FM-081016-15**
10.0	+0.025 +0.083	12.0	18.0	10.0	1.0	**P210FM-1012-10**
12.0	+0.032 +0.102	14.0	20.0	12.0	1.0	**P210FM-1214-12**
16.0	+0.032 +0.102	18.0	24.0	17.0	1.0	**P210FM-1618-17**
20.0	+0.040 +0.124	23.0	30.0	21.5	1.5	**P210FM-2023-21**
25.0	+0.040 +0.124	28.0	35.0	21.0	1.5	**P210FM-2528-21**

[3] after pressfit. Testing methods ▶ Page 75

Don’t find your size?

Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.