

GGB EP™ Range

High-Performance Engineered Plastic Bearings



The Global Leader
in High Performance Bearing Solutions



an EnPro Industries company

GGB Bearing Technology

GGB's history as the global leader in plain bearing technologies dates back more than 115 years, beginning with the founding of Glacier Antifriction Metal Company in 1899. GGB introduced the industry-leading DU® bearing in 1965. Since that time, GGB has continued to create innovative technologies and solutions that improve safety, performance and profitability in a wide range of markets. Today, our products can be found everywhere – from scientific vessels at the bottom of the ocean to racecars

speeding down the tarmac to jumbo jets slicing through the sky to the Curiosity rover exploring the surface of Mars.

Throughout our history, safety, excellence and respect have formed the foundational values for the entire GGB family. They are of paramount importance as we seek to maximize personal possibility, achieve excellence and establish open, creative work environments with the highest safety standards in the industry.

- **Safety:** GGB's deep-rooted culture of safety places a relentless focus on creating a secure, healthy work environment for all. A core value of GGB, safety is critically essential at all levels of business in order to achieve our goal of having the safest employees in the industry.
- **Excellence:** A world-class organization is built by fostering excellence throughout the company in all positions and functional areas. Our world-class manufacturing plants are certified in quality and excellence in the industry according

to ISO 9001, TS 16949, ISO 14001, ISO 50001 and OHSAS 18001, allowing us to access the industry's best practices while aligning our quality management system with global standards.

- **Respect:** We believe that respect is consistent with the growth of individuals and groups. Our teams work together with mutual respect regardless of background, nationality or function, embracing the diversity of people and learning from one another.

The GGB Advantage

With manufacturing facilities around the world, including cutting edge R&D facilities, flexible production platforms and extensive customer support networks, GGB offers unmatched technical expertise combined with razor sharp responsiveness and customized solutions. Our global presence and local logistics networks ensure our customers receive only the highest quality bearing solutions, in a timely manner and with extensive engineering support. We don't just make products, we build partnerships. That's the GGB Advantage.

Quality/Certification

Our world-class manufacturing plants in the United States, Brazil, China, Germany, France and Slovakia are CERTIFIED IN QUALITY AND EXCELLENCE IN THE INDUSTRY according to ISO 9001, TS 16949, ISO 14001, ISO 50001 and OHSAS 18001. This allows us to access the industry's best practices while aligning our quality management system with global standards.

For a complete listing of our certifications, please visit our website:

<https://www.ggbearings.com/en/company/certificates>

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Standard Range

EP™, KA and Multilube Bearing Material

The more and more demanding specifications of today's high performance equipment and systems require that the bearings operate not only under severe working conditions with minimal or no maintenance but that they also offer increased reliability and durability with lower operating costs.

With more than 100 years of experience and expertise in tribology, GGB offers, along with the widest range of lubricated and self-lubricating bearing products, a comprehensive technical and application engineering knowledge.

In this respect, our Application Engineers can assist you in:

- Choosing the right type of plain bearing for your application
- Design of the bearing according to standard dimensions or to customer specific requirements
- Establishing a life time estimate
- Assembly and installation recommendations

Thanks to our global production and supply network, we are able to offer customers throughout the world the industry's most extensive range of self-lubricating and prelubricated plain bearings for literally thousands of applications in scores of industries.

As a reliable supplier with flexible manufacturing, we can respond quickly to customer needs with either standard or customized products.

Our advanced R&D and testing facilities help us deliver comprehensive solutions and assure their performance, reliability and cost-effectiveness.

Our high performance bearing specialists have the experience and expertise to provide innovative solutions to even the most challenging applications.

The Highest Standards in Quality

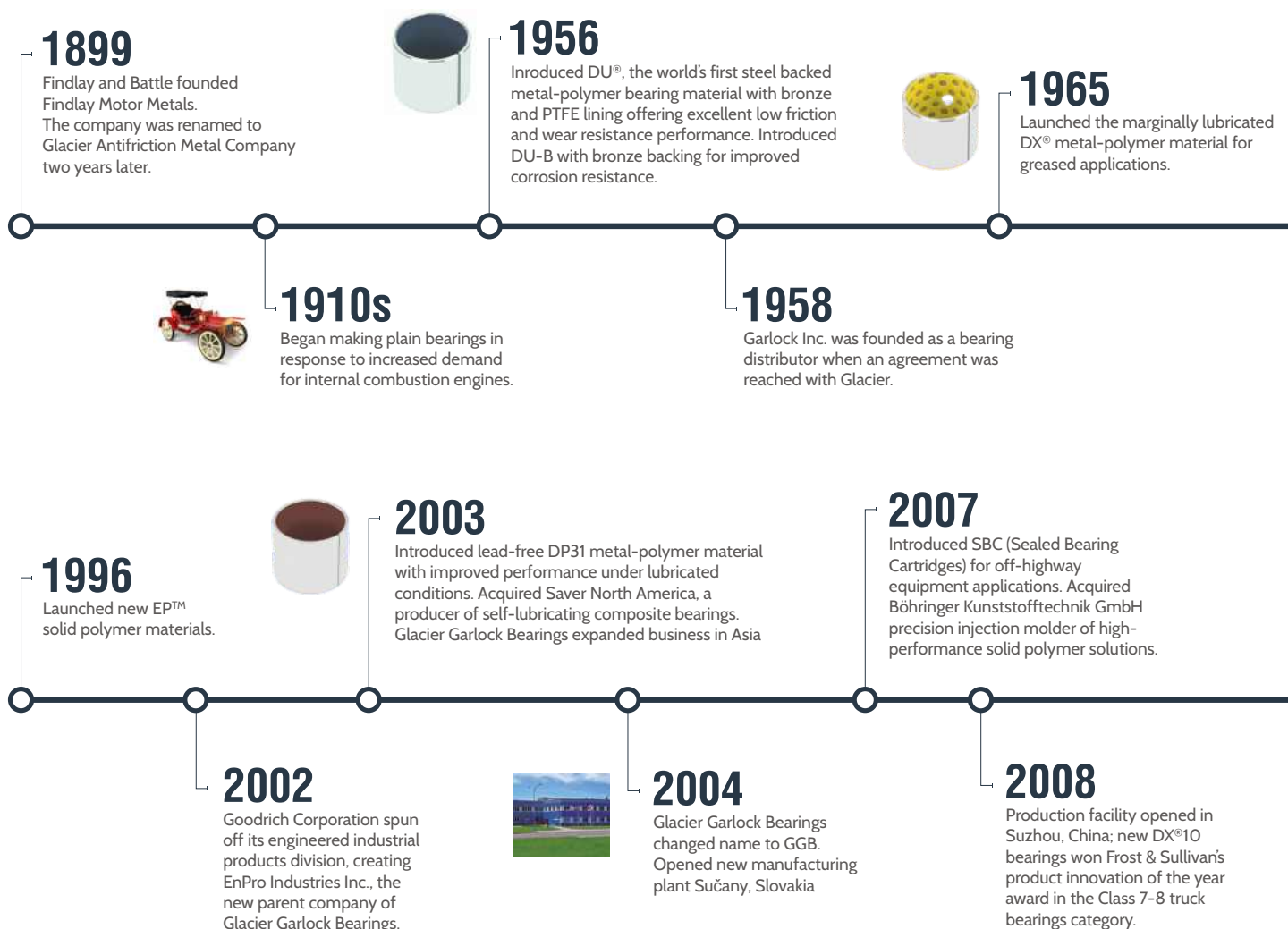
Our world-class manufacturing plants in the United States, Brazil, China, Germany, France and Slovakia are certified in quality and excellence according to ISO 9001, TS 16949, ISO 14001, ISO 50001 and OHSAS 18001. This allows us to access the industry's best practices while aligning our management system with global standards.

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A Long History of Innovation

From our modest beginnings over 115 years ago, GGB grew through innovation and technical expertise to become the world's leading manufacturer of plain bearing solutions.





1974

Began continuous casting of the SICAL® range of aluminum alloys and high precision machining of bushing blocks in Dieuze, France.

1978

Introduced filament wound product range in the USA, including GAR-MAX®.



1995

Introduced lead-free steel backed DP4 metal-polymer material for automotive shock absorbers and other hydraulic applications. Introduced DP4-B with bronze backing for improved corrosion resistance.



1970s

Glacier licensed technology to a number of overseas bearing manufacturers. Licenses included: SIC (France), Garlock Bearings (USA).

1976

Glacier and Garlock Inc. established joint venture company Garlock Bearings Inc.



1986

Launched HI-EX® metal-polymer material, designed for high temperature applications.

2009

Filament-wound product range introduced to the European and Asian markets; GGB North America certified to AS9100B, the aerospace industry's standard for quality management systems.

2011

Acquired PI Bearing Technologies, now GGB Chicago, a producer of PICAL® aluminum alloy bushing blocks for demanding fluid power applications. GGB plants certified to OHS18001 for health and safety management systems.

2013

Launched new self-lubricating metallic bearing materials GGB-CSM® and GGB-CBM® as well as FLASH-CLICK® two-piece, double-flanged solid polymer bearings.



2014

Series of self-lubricating sintered bronze and sintered iron bearings introduced, including GGB-BP25, GGB-FP20 and GGB-SO16. Three plants mark milestone anniversaries: 40 years for Heilbronn, Germany and Dieuze, France and 10 years for Sucãny, Slovakia.

2010

Introduced lead-free DP10 and DP11 metal-polymer materials for superior performance under marginally lubricated and dry running conditions.

2012

DTS10® machinable metal-polymer bearings are launched for the fluid power and compressor markets. GGB bearings land on Mars aboard NASA's Curiosity rover.



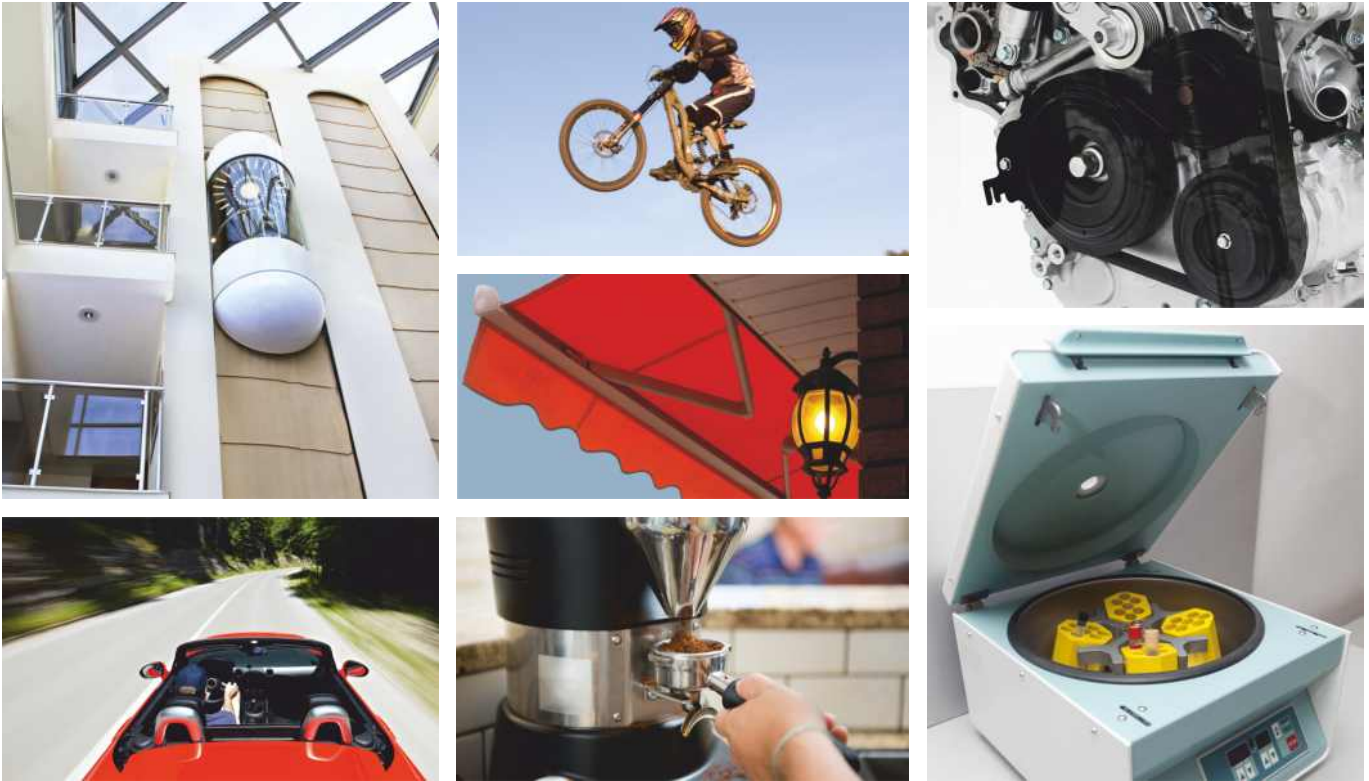
2015

Introduced HPMB®, a fully machinable, made-to-order filament wound bearing material. Also introduced the lead-free GGB-SZ, for high specific loads with low-frequency, oscillating motion.

2016

Introduced GGB-SHB™ case hardened steel bearings.





Applications

Our EP™ materials cover a wide range of applications within the scope of their material properties. Bearings made of these materials can be found in many different types of equipment, including agricultural, chemical processing, material handling, electronics assembly, food processing, gaming, medical, office, packaging, scientific, sports and recreation, textile and transportation.

They also are used in apparatus engineering, household appliances, awnings and blinds, cash

boxes, furniture, industrial fittings, slot machines and valves.

In addition, our EP™73 bearings are being used in automotive applications such as automatic gears, pumps, sealing for turbo compressors, piston rings and valve seats, as well as industrial ovens.

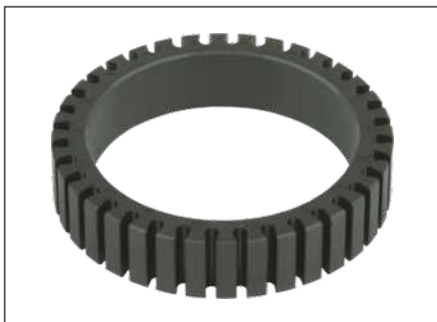
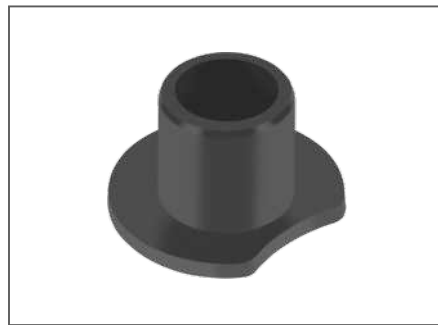
Additionally, EP™73 is used in the aerospace industry as it offers weight savings in compressor blades for turbojet engines.

Available Forms

EP™ Engineered Plastic Bearings are available as a standard range of cylindrical bushes and flanged bushes in metric sizes.



Non standard parts, strip and special forms to order.



EP™ Bearing Material



STRUCTURE

Thermoplastic Bearing Compound

CHARACTERISTICS



- Good bearing performance in dry working conditions
- Good bearing performance in lubricated or marginally lubricated applications
- Corrosion resistant in humid/saline environments
- Very good price performance ratio
- Very good weight performance ratio
- Within injection moulding tool feasibility unlimited dimensions and design features
- Compliant to EVL, WEEE and RoHS specifications

AVAILABILITY

Bearing forms available in standard dimensions

- Plain cylindrical bushes
- Plain flanged bushes

Bearing forms made to order: Standard forms in special dimensions, thrust washers, half-bearings, sliding plates, customized bearing designs

APPLICATIONS

General: Generally applicable within the limits of the material properties

Industrial: Medical equipment, awnings and blinds, scientific equipment, gaming equipment, office equipment, etc.



Operating Performance

Dry	Good
Oil lubricated	Good
Grease lubricated	Good
Water lubricated	Fair
Process fluid lubricated	Good after resistance testing

For Superior Performance

Water lubricated	EP22
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EP™ Technical Data

Bearing Properties		Units	Value
General			
Maximum load, p	Static	N/mm ²	80
	Dynamic	N/mm ²	40
Operating temperature	Min	°C	- 40
	Max	°C	140
Coefficient of linear thermal expansion		10 ⁻⁶ /K	22
Dry			
Maximum sliding speed, U		m/s	1.0
Maximum pU factor	for A _H /A _C = 5	N/mm ² x m/s	0.06
	for A _H /A _C = 10	N/mm ² x m/s	0.24
	for A _H /A _C = 20	N/mm ² x m/s	1.00
Coefficient of friction f			0.15 - 0.3
Recommendations			
Shaft surface roughness, Ra		µm	0.2 - 0.8
Surface hardness		HV	> 200

EP™12 Bearing Material



AVAILABILITY

Bearing forms made to order: Cylindrical bushes, flanged bearings, thrust washers, sliding plates, half-bearings, customized bearing designs

STRUCTURE

Thermoplastic Bearing Compound



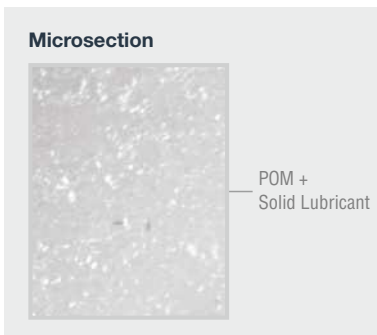
CHARACTERISTICS

- Good bearing performance in dry working conditions
- Good bearing performance in lubricated or marginally lubricated applications
- Corrosion resistant in humid/saline environments
- Very good price performance ratio
- Very good weight performance ratio
- Within injection moulding tool feasibility unlimited dimensions and design features
- Compliant to EVL, WEEE and RoHS specifications

APPLICATIONS

General: Generally applicable within the limits of the material properties

Industrial: Domestic appliances, furniture, office equipment, sports equipment and many more



EP™12 Technical Data

Bearing Properties		Units	Value
General			
Maximum load, p	Static	N/mm ²	65
Operating temperature	Min	°C	- 40
	Max	°C	125
Coefficient of linear thermal expansion		10 ⁻⁶ /K	120
Dry			
Maximum sliding speed, U		m/s	1.0
Maximum pU factor	for A _H /A _C = 5	N/mm ² x m/s	0.04
	for A _H /A _C = 10	N/mm ² x m/s	0.09
	for A _H /A _C = 20	N/mm ² x m/s	0.18
Coefficient of friction f			0.18 - 0.3
Recommendations			
Shaft surface roughness, Ra		µm	0.1 - 0.5
Surface hardness		HV	> 200

Operating Performance

Dry	Very Good
Oil lubricated	Good
Grease lubricated	Good
Water lubricated	Fair
Process fluid lubricated	Good after resistance testing

For Superior Performance

Water lubricated	EP22
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EP™22 Bearing Material



AVAILABILITY

Bearing forms available in standard dimensions

- Plain cylindrical bushes
- Plain flanged bushes

Bearing forms made to order: Standard forms in special dimensions, thrust washers, half-bearings, sliding plates, customized bearing designs

STRUCTURE

Thermoplastic Bearing Compound



CHARACTERISTICS

- Good bearing performance in dry working conditions
- Very good bearing performance in lubricated or marginally lubricated applications
- Corrosion resistant in humid/saline environments
- Very good price performance ratio
- Very good weight performance ratio
- Within injection moulding tool feasibility unlimited dimensions and design features
- Compliant to EVL, WEEE and RoHS specifications

APPLICATIONS

General: Generally applicable within the limits of the material properties

Industrial: Domestic appliances, chemical equipment, office equipment, sports equipment and many more



Operating Performance

Dry	Very Good
Oil lubricated	Good
Grease lubricated	Good
Water lubricated	Very Good
Process fluid lubricated	Good after resistance testing

EP™22 Technical Data

Bearing Properties		Units	Value
General			
Maximum load, p	Static	N/mm ²	50
Operating temperature	Min	°C	- 50
	Max	°C	170
Coefficient of linear thermal expansion		10 ⁻⁶ /K	90
Dry			
Maximum sliding speed, U		m/s	1.0
Maximum pU factor	for A _H /A _C = 5	N/mm ² x m/s	0.05
	for A _H /A _C = 10	N/mm ² x m/s	0.10
	for A _H /A _C = 20	N/mm ² x m/s	0.20
Coefficient of friction f			0.22 - 0.37
Recommendations			
Shaft surface roughness, Ra		µm	0.1 - 0.5
Surface hardness		HV	> 200

EP™43 Bearing Material



STRUCTURE

Thermoplastic Bearing Compound

CHARACTERISTICS



- Good bearing performance in dry working conditions
- Good bearing performance in lubricated or marginally lubricated applications
- Corrosion resistant in humid/saline environments
- Very good price performance ratio for high temperature applications
- Very good weight performance ratio
- Within injection moulding tool feasibility unlimited dimensions and design features
- Compliant to EVL, WEEE and RoHS specifications

AVAILABILITY

Bearing forms available in standard dimensions

- Plain cylindrical bushes
- Plain flanged bushes

Bearing forms made to order: Standard forms in special dimensions, thrust washers, half-bearings, sliding plates, customized bearing designs

APPLICATIONS

General: Generally applicable within the limits of the material properties

Industrial: Domestic appliances, materials handling equipment, apparatus engineering, slot machines and cash boxes and many more



Operating Performance	
Dry	Very Good
Oil lubricated	Good
Grease lubricated	Good
Water lubricated	Very Good
Process fluid lubricated	Good after resistance testing

EP™43 Technical Data

Bearing Properties		Units	Value
General			
Maximum load, p	Static	N/mm ²	83
Operating temperature	Min	°C	- 40
	Max	°C	240
Coefficient of linear thermal expansion		10 ⁻⁶ /K	45
Dry			
Maximum sliding speed, U		m/s	1,0
Maximum pU factor	for A _H /A _C = 5	N/mm ² x m/s	0.22
	for A _H /A _C = 10	N/mm ² x m/s	0.90
	for A _H /A _C = 20	N/mm ² x m/s	3.59
Coefficient of friction f			0.11 - 0.2
Recommendations			
Shaft surface roughness, Ra		µm	0.2 - 0.8
Surface hardness		HV	> 200

EP™44 Bearing Material



AVAILABILITY

Bearing forms made to order: Cylindrical bushes, thrust washers, sliding plates, half-bearings, special shapes obtained by stamping, bearings with locating notches, lubricant holes and machined grooves, customized bearing designs

STRUCTURE

Thermoplastic Bearing Compound



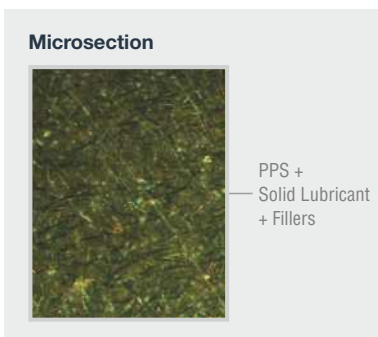
CHARACTERISTICS

- Good bearing performance in dry working conditions
- Good bearing performance in lubricated or marginally lubricated applications
- Corrosion resistant in humid/saline environments
- Very good price performance ratio for high temperature applications
- Very good weight performance ratio
- Within injection moulding tool feasibility unlimited dimensions and design features
- Compliant to EVL, WEEE and RoHS specifications

APPLICATIONS

General: Generally applicable within the limits of the material properties

Industrial: Domestic appliances, valve technology, electronics assembly, apparatus engineering and many more



Operating Performance

Dry	Good
Oil lubricated	Very Good
Grease lubricated	Very Good
Water lubricated	Very Good
Process fluid lubricated	Good after resistance testing

EP™44 Technical Data

Bearing Properties		Units	Value
General			
Maximum load, p	Static	N/mm ²	95
Operating temperature	Min	°C	- 40
	Max	°C	240
Coefficient of linear thermal expansion		10 ⁻⁶ /K	27
Dry			
Maximum sliding speed, U		m/s	1.0
Maximum pU factor	for A _H /A _C = 5	N/mm ² x m/s	0.11
	for A _H /A _C = 10	N/mm ² x m/s	0.42
	for A _H /A _C = 20	N/mm ² x m/s	1.69
Coefficient of friction f			0.16 - 0.26
Recommendations			
Shaft surface roughness, Ra		µm	0.2 - 0.8
Surface hardness		HV	> 450

EP™63 Bearing Material



STRUCTURE

Thermoplastic Bearing Compound

CHARACTERISTICS



- Good bearing performance in dry working conditions
- Good bearing performance in lubricated or marginally lubricated applications
- Corrosion resistant in humid/saline environments
- Suitable for very high temperature applications
- Very good weight performance ratio
- Within injection moulding tool feasibility unlimited dimensions and design features
- Compliant to EVL, WEEE and RoHS specifications

AVAILABILITY

Bearing forms available in standard dimensions

- Plain cylindrical bushes
- Plain flanged bushes

Bearing forms made to order: Standard forms in special dimensions, thrust washers, half-bearings, sliding plates, customized bearing designs

APPLICATIONS

General: Generally applicable within the limits of the material properties

Industrial: Domestic appliances, valve technology, electronics assembly, agricultural machinery and many more



EP™63 Technical Data

Bearing Properties		Units	Value
General			
Maximum load, p	Static	N/mm ²	90
Operating temperature	Min	°C	- 100
	Max	°C	290
Coefficient of linear thermal expansion		10 ⁻⁶ /K	50
Dry			
Maximum sliding speed, U		m/s	1.0
Maximum pU factor	for A _H /A _C = 5	N/mm ² x m/s	0.16
	for A _H /A _C = 10	N/mm ² x m/s	0.66
	for A _H /A _C = 20	N/mm ² x m/s	2.63
Coefficient of friction f			0.12 - 0.21
Recommendations			
Shaft surface roughness, Ra		µm	0.1 - 0.5
Surface hardness		HV	> 200

Operating Performance

Dry	Good
Oil lubricated	Good
Grease lubricated	Good
Water lubricated	Fair
Process fluid lubricated	Good after resistance testing

For Superior Performance

Water lubricated	EP64
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EP™64 Bearing Material



AVAILABILITY

Bearing forms made to order: Cylindrical bushes, flanged bearings, thrust washers, sliding plates, half-bearings, customized bearing designs

STRUCTURE

Thermoplastic Bearing Compound



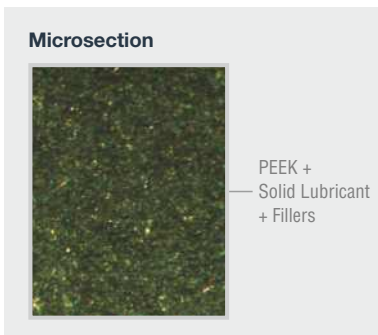
CHARACTERISTICS

- Good bearing performance in lubricated or marginally lubricated applications
- Excellent flow erosion and cavitation resistance
- Corrosion resistant in humid/saline environments
- Suitable for very high temperature applications
- Very good weight performance ratio
- Within injection moulding tool feasibility unlimited dimensions and design features
- Compliant to EVL, WEEE and RoHS specifications

APPLICATIONS

General: Generally applicable within the limits of the material properties

Industrial: Domestic appliances, transportation equipment, apparatus engineering, conveyor equipment and many more



EP™64 Technical Data

Bearing Properties		Units	Value
General			
Maximum load, p	Static	N/mm ²	125
Operating temperature	Min	°C	- 100
	Max	°C	290
Coefficient of linear thermal expansion		10 ⁻⁶ /K	14
Dry			
Maximum sliding speed, U		m/s	1.0
Maximum pU factor	for A _H /A _C = 5	N/mm ² x m/s	0.09
	for A _H /A _C = 10	N/mm ² x m/s	0.35
	for A _H /A _C = 20	N/mm ² x m/s	1.40
Coefficient of friction f			0.3 - 0.5
Recommendations			
Shaft surface roughness, Ra		µm	0.1 - 0.5
Surface hardness		HV	> 450

Operating Performance

Dry	Good
Oil lubricated	Very Good
Grease lubricated	Very Good
Water lubricated	Good
Process fluid lubricated	Good after resistance testing

EP™73 Bearing Material



AVAILABILITY

Bearing forms made to order: Cylindrical bushes, flanged bearings, thrust washers, sliding plates, half-bearings, customized bearing designs

APPLICATIONS

General: Generally applicable within the limits of the material properties

Automotive: Automatic gears, pumps, sealing in turbo compressors, piston rings, valve seats, sealings

Industrial: Continuous furnaces, drying furnaces for coating, textile machines and many more

Other: Aerospace: Weight saving by replacement of aluminum or metal alloys, while providing superior stability and viscosity. Applicable in extreme high and low temperatures e.g. turbojet engine compressor blade

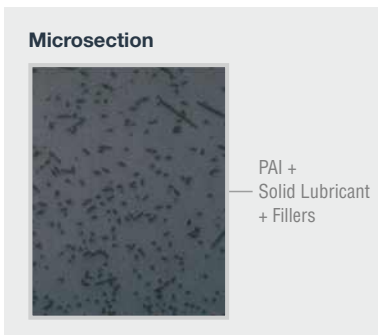
STRUCTURE

Thermoplastic Bearing Compound



CHARACTERISTICS

- Good bearing performance in dry working conditions
- Good bearing performance in lubricated or marginally lubricated applications
- Corrosion resistant in humid/saline environments
- Very good dimensional stability
- Very good weight performance ratio
- Within injection moulding tool feasibility unlimited dimensions and design features
- Compliant to EVL, WEEE and RoHS specifications



EP™73 Technical Data

Bearing Properties		Units	Value
General			
Maximum load, p	Static	N/mm ²	105
Operating temperature	Min	°C	- 200
	Max	°C	260
Coefficient of linear thermal expansion		10 ⁻⁶ /K	25
Dry			
Maximum sliding speed, U		m/s	2.5
Maximum pU factor	for A _H /A _C = 5	N/mm ² x m/s	0.10
	for A _H /A _C = 10	N/mm ² x m/s	0.39
	for A _H /A _C = 20	N/mm ² x m/s	1.57
Coefficient of friction f			0.19 - 0.31
Lubricated			
Maximum sliding speed, U		m/s	5.0
Recommendations			
Shaft surface roughness, Ra		µm	0.2 - 0.8
Surface hardness		HV	> 200

Operating Performance

Dry	Good
Oil lubricated	Good
Grease lubricated	Good
Water lubricated	Fair
Process fluid lubricated	Good after resistance testing

For Superior Performance

Water lubricated	EP64
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EP™79 Bearing Material



AVAILABILITY

Bearing forms made to order: Cylindrical bushes, flanged bearings, thrust washers, sliding plates, half-bearings, customized bearing designs

STRUCTURE

Thermoplastic Bearing Compound



CHARACTERISTICS

- Excellent flow erosion and cavitation resistance
- Excellent performance in fully lubricated applications
- Corrosion resistant in humid/saline environments
- Excellent dimensional stability
- Very good weight performance ratio
- Within injection moulding tool feasibility unlimited dimensions and design features
- Compliant to EVL, WEEE and RoHS specifications

APPLICATIONS

General: Generally applicable within the limits of the material properties

Automotive: Automatic gears

Industrial: Domestic appliances, control valves, fittings, textile machines and many more



EP™79 Technical Data

Bearing Properties		Units	Value
General			
Maximum load, p	Static	N/mm ²	130
Operating temperature	Min	°C	- 200
	Max	°C	260
Coefficient of linear thermal expansion		10 ⁻⁶ /K	9
Lubricated			
Maximum sliding speed, U		m/s	10.0
Maximum pU factor		N/mm ² x m/s	10.0
Coefficient of friction f			0.005 - 0.1
Recommendations			
Shaft surface roughness, Ra		µm	0.2 - 0.8
Surface hardness		HV	> 500

Operating Performance

Dry	Not recommended
Oil lubricated	Very Good
Grease lubricated	Very Good
Water lubricated	Fair
Process fluid lubricated	Good after resistance testing

For Superior Performance

Dry	EP73
Water lubricated	EP64

FLASH-CLICK® Design



STRUCTURE

Thermoplastic Special Double Flanged Bearing Design



CHARACTERISTICS

- Can be used with different housing materials, e.g. aluminium, magnesium and plastic
- Feasible for a larger variety of housing dimensions, from thin metal sheet housings up to multiple and sectional longer housing areas
- Reduced total system costs with increased housing tolerances, even stamped or laser burned housings are suitable
- Manual and automated installation possible



AVAILABILITY

Non standard parts made to order

APPLICATIONS

General: Generally applicable within the limits of the material properties

Industrial: Domestic appliances, materials handling equipment, apparatus engineering, slot machines and cash boxes and many more

BEARING PROPERTIES

The **FLASH-CLICK®** bearing design can be applied to all of the solid polymer bearing materials



KA Glacetal Bearing Material



STRUCTURE

Thermoplastic Bearing Compound



CHARACTERISTICS

- Good bearing performance in light duty working conditions
- Good performance in lubricated or marginally lubricated applications
- Corrosion resistant in humid/saline environments
- Very good price performance ratio
- Very good weight performance ratio

AVAILABILITY

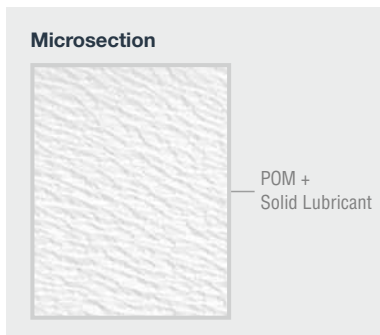
Bearing forms available in standard dimensions

- Plain thrust washers

Non standard parts made to order

APPLICATIONS

Industrial: Thrust washers are used as axial bearings in conjunction with all cylindrical bushes according to ISO 3547 to prevent metal-to-metal contact and fretting damage



Operating Performance

Dry	Fair
Oil lubricated	Good
Grease lubricated	Good
Water lubricated	Fair
Process fluid lubricated	Fair

For Superior Performance

Dry	EP22
Water lubricated	EP22
Process fluid lubricated	EP22

KA Glacetal Technical Data

Bearing Properties		Units	Value
General			
Maximum load, p	Static	N/mm ²	20
	Dynamic	N/mm ²	10
Operating temperature	Min	°C	- 40
	Max	°C	80
Greased			
Maximum sliding speed, U		m/s	1.5
Maximum pU factor		N/mm ² x m/s	0.35
Coefficient of friction f			0.08 - 0.12
Recommendations			
Shaft surface roughness, Ra		µm	≤ 0.4
Shaft surface hardness	Normal	HB	> 200
	For longer service life		> 350

Multilube Bearing Material



STRUCTURE

Thermoplastic Bearing Compound



CHARACTERISTICS

- Good bearing performance in dry working conditions
- Good performance in lubricated or marginally lubricated applications
- Corrosion resistant in humid/saline environments
- Good price performance ratio
- Very good weight performance ratio
- Within injection moulding tool feasibility unlimited dimensions and design features

AVAILABILITY

Bearing forms made to order: Cylindrical bushings, flanged bearings, thrust washers, sliding plates, half-bearings, customized bearing designs

APPLICATIONS

Industrial: Linkages, seat suspensions



Multilube Technical Data

Bearing Properties		Units	Value
General			
Maximum load, p	Static	N/mm ²	60
	Dynamic	N/mm ²	30
Operating temperature	Min	°C	- 40
	Max	°C	80
	Momentary	°C	120
Coefficient of linear thermal expansion		10 ⁻⁶ /K	101
Dry			
Maximum sliding speed, U		m/s	1.5
Maximum pU factor		N/mm ² x m/s	0.6
Coefficient of friction f			0.1 - 0.2
Recommendations			
Shaft surface roughness, Ra		µm	0.2 - 0.8
Shaft surface hardness		Normal For longer service life	HB > 200 > 350

Operating Performance

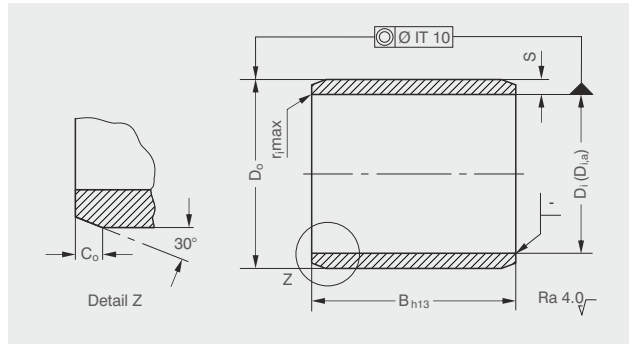
Dry	Good
Oil lubricated	Good
Grease lubricated	Good
Water lubricated	Fair
Process fluid lubricated	Fair

For Superior Performance

Water lubricated	EP22
Process fluid lubricated	EP22



EP™ Cylindrical Bushes



Dimensions [mm], tests and material in accordance GGB specification.

Outside chamfers and inside radii

S	C _o	r _{max}
1.0	0.5	0.1
1.5	0.8	0.2
2	0.8	0.2

Recommended tolerance class for shafts h7

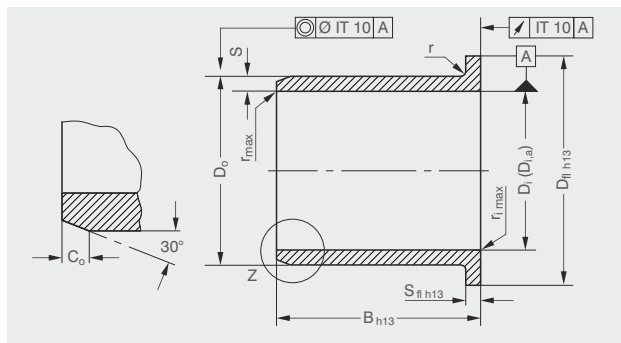
Part No.	Technical Data					
	Dimensions				Installation tolerance	
GGB	Inside Ø D _i	Outside Ø D _o	Width B	Weight g	Housing H7	D _{i,a}
0505EP	5	7	5	0.1	+0.015 0	+0.105 +0.030
0508EP	5	7	8	0.2		
0510EP	5	7	10	0.3		
0606EP	6	8	6	0.2		
0608EP	6	8	8	0.3		
0610EP	6	8	10	0.3		
0806EP	8	10	6	0.2	+0.018 0	+0.130 +0.040
0808EP	8	10	8	0.3		
0810EP	8	10	10	0.4		
0812EP	8	10	12	0.5		
0815EP	8	10	15	0.6		
1004EP	10	12	4	0.2		
1006EP	10	12	6	0.3	+0.021 0	+0.195 +0.065
1008EP	10	12	8	0.4		
1010EP	10	12	10	0.5		
1015EP	10	12	15	0.7		
1020EP	10	12	20	1.0		
1210EP	12	14	10	0.6		
1212EP	12	14	12	0.7	+0-0.025 0	+0.240 +0.080
1215EP	12	14	15	0.9		
1220EP	12	14	20	1.2		
1415EP	14	16	15	1.0		
1420EP	14	16	20	1.4		
1425EP	14	16	25	1.7		
1515EP	15	17	15	1.1	+0-0.025 0	+0.240 +0.080
1520EP	15	17	20	1.4		
1525EP	15	17	25	1.7		
2015EP	20	23	15	2.2		
2020EP	20	23	20	2.9		
2030EP	20	23	30	4.4		
2515EP	25	28	15	2.7	+0-0.025 0	+0.240 +0.080
2520EP	25	28	20	3.6		
2530EP	25	28	30	5.4		
3020EP	30	34	20	5.8		
3030EP	30	34	30	8.6		
3040EP	30	34	40	11.6		

Other dimensions available on request.

D_{i,a} = Tolerances of internal bush diameter after installation in housing centre H7.



EPTM Flanged Bushes



Dimensions [mm], tests and material in accordance GGB specification.

Outside chamfers and inside radii

S	C _o	r _{max}
1.0	0.5	0.1
1.5	0.8	0.2

S	r (mm)
≤ 1	0.3
> 1	0.5

Recommended tolerance class for shafts h7

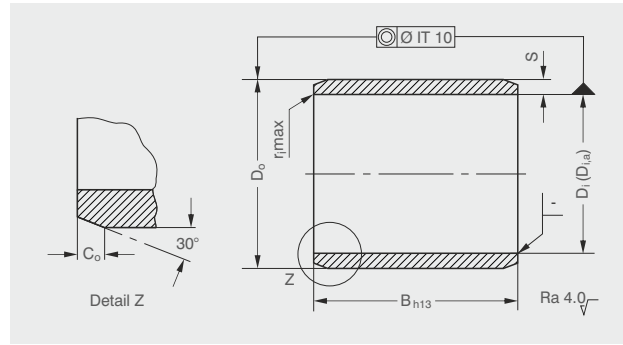
Part No.	Technical Data						Installation tolerance	
	Dimensions					Weight g	Housing H7	D _{i,a}
GGB	Inside Ø D _i	Outside Ø D _o	Flange Ø D _{fl}	Flange thickness S _{fl}	Width B			
BB0505EP	5	7	11	1.0	5.0	0.2	+0.015 0	+0.105 +0.030
BB0604EP	6	8	12	1.0	4.0	0.2		
BB0606EP	6	8	12	1.0	6.0	0.3		
BB0608EP	6	8	12	1.0	8.0	0.4		
BB0610EP	6	8	12	1.0	10.0	0.4		
BB0806EP	8	10	15	1.0	5.5	0.4		
BB0808EP	8	10	15	1.0	7.5	0.5		
BB0810EP	8	10	15	1.0	10.0	0.5		
BB1007EP	10	12	18	1.0	7.0	0.6	+0.018 0	+0.130 +0.040
BB1009EP	10	12	18	1.0	9.0	0.7		
BB1012EP	10	12	18	1.0	12.0	0.8		
BB1015EP	10	12	18	1.0	15.0	1.0		
BB1017EP	10	12	18	1.0	17.0	1.1		
BB1207EP	12	14	20	1.0	7.0	0.6	+0.018 0	+0.160 +0.050
BB1209EP	12	14	20	1.0	9.0	0.8		
BB1212EP	12	14	20	1.0	12.0	1.2		
BB1215EP	12	14	20	1.0	15.0	1.3		
BB1217EP	12	14	20	1.0	17.0	1.4		
BB1220EP	12	14	20	1.0	20.0	1.5		
BB1412EP	14	16	22	1.0	12.0	0.9		
BB1417EP	14	16	22	1.0	17.0	1.5		
BB1509EP	15	17	23	1.0	9.0	1.0		
BB1512EP	15	17	23	1.0	12.0	1.2		
BB1517EP	15	17	23	1.0	17.0	1.5		
BB1520EP	15	17	23	1.0	20.0	1.8		
BB1617EP	16	18	24	1.0	17.0	1.7	+0.021 0	+0.195 +0.065
BB2012EP	20	23	30	1.5	11.5	2.4		
BB2017EP	20	23	30	1.5	16.5	3.2		
BB2022EP	20	23	30	1.5	21.5	3.9		
BB2512EP	25	28	35	1.5	11.5	2.9		
BB2517EP	25	28	35	1.5	16.5	3.9		
BB2522EP	25	28	35	1.5	21.5	4.9		

Other dimensions available on request.





EP™22 Cylindrical Bushes



Dimensions [mm], tests and material in accordance GGB specification.

Outside chamfers and inside radii

S	C _o	r _{max}
1.0	0.5	0.2
1.5	0.8	0.3
2	0.8	0.3

Recommended tolerance class for shafts h9

Part No.	Technical Data							
	Dimensions				Installation tolerance			
	Inside Ø D _i	Outside Ø D _o	Width B	Weight g	Housing H7	D _{i,a}		
GGB								
0806EP22	8	10	6	0.2	+0.015 0	+0.083 +0.025		
0808EP22	8	10	8	0.3				
0810EP22	8	10	10	0.4				
0812EP22	8	10	12	0.5				
0815EP22	8	10	15	0.6				
1004EP22	10	12	4	0.2	+0.018 0	+0.102 +0.032		
1006EP22	10	12	6	0.3				
1008EP22	10	12	8	0.4				
1010EP22	10	12	10	0.5				
1015EP22	10	12	15	0.7				
1020EP22	10	12	20	1.0				
1210EP22	12	14	10	0.6			+0.021 0	+0.124 +0.040
1212EP22	12	14	12	0.7				
1215EP22	12	14	15	0.9				
1220EP22	12	14	20	1.2				
1410EP22	14	16	10	0.7				
1412EP22	14	16	12	0.9				
1415EP22	14	16	15	1.0				
1420EP22	14	16	20	1.4				
1425EP22	14	16	25	1.7				
1510EP22	15	17	10	0.8				
1515EP22	15	17	15	1.1				
1520EP22	15	17	20	1.4				
1525EP22	15	17	25	1.7				
1610EP22	16	18	10	0.8	+0.025 0	+0.150 +0.050		
1612EP22	16	18	12	1.0				
1615EP22	16	18	15	1.2				
1620EP22	16	18	20	1.6				
1625EP22	16	18	25	1.8				
1810EP22	18	20	10	0.9				
1815EP22	18	20	15	1.4				
1820EP22	18	20	20	1.8				
1825EP22	18	20	25	2.0				
2010EP22	20	23	10	1.5				
2015EP22	20	23	15	2.2				
2020EP22	20	23	20	2.9				
2025EP22	20	23	25	3.9				
2030EP22	20	23	30	4.4				
2515EP22	25	28	15	2.7				
2520EP22	25	28	20	3.6				
3010EP22	30	34	10	3.1				
3015EP22	30	34	15	4.6				
3020EP22	30	34	20	6.2				
3030EP22	30	34	30	9.3				
3040EP22	30	34	40	12.4				
4020EP22	40	44	20	8.1				
4025EP22	40	44	25	10.2				
4030EP22	40	44	30	12.2				
4040EP22	40	44	40	16.3				
4050EP22	40	44	50	20.3				

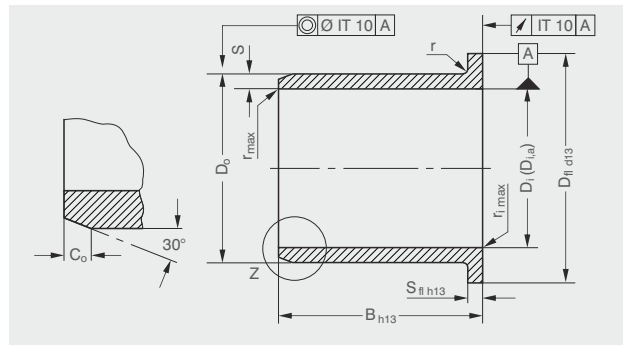
Part No.	Technical Data					
	Dimensions				Installation tolerance	
	Inside Ø D _i	Outside Ø D _o	Width B	Weight g	Housing H7	D _{i,a}
GGB						
5020EP22	50	55	20	12,7	+0.030 0	+0.150 +0.050
5030EP22	50	55	30	19,0		
5040EP22	50	55	40	25,4		
5050EP22	50	55	50	31,7		
5060EP22	50	55	60	38,1		
6020EP22	60	65	20	15,1		
6030EP22	60	65	30	22,7		
6040EP22	60	65	40	30,2		
6060EP22	60	65	60	45,4		
6070EP22	60	65	70	52,9		

Other dimensions available on request.

D_{i,a} = Tolerances of internal bush diameter after installation in housing centre H7.



EP™22 Flanged Bushes



Dimensions [mm], tests and material in accordance GGB specification.

Outside chamfers and inside radii

S	C ₀	r _{max}
1.0	0.5	0.1
1.5	0.8	0.2

S	r (mm)
≤ 1	0.3
> 1	0.5

Recommended tolerance class for shafts h9

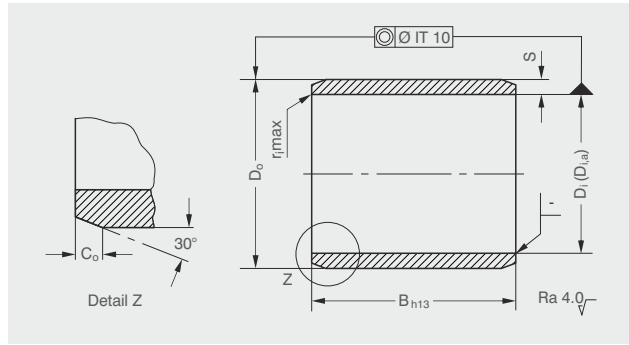
Part No.	Technical Data							Installation tolerance		
	Dimensions					Weight g	Housing H7	D _{i,a}		
GGB	Inside Ø D _i	Outside Ø D _o	Flange Ø D _{fl}	Flange thickness S _{fl}	Width B					
BB0806EP22	8	10	15	1.0	5.5	0.4	+0.015 0	+0.083 +0.025		
BB0808EP22	8	10	15	1.0	7.5	0.5				
BB0810EP22	8	10	15	1.0	10	0.5				
BB1007EP22	10	12	18	1.0	7	0.6	+0.018 0		+0.102 +0.032	
BB1009EP22	10	12	18	1.0	9	0.7				
BB1012EP22	10	12	18	1.0	12	0.8				
BB1015EP22	10	12	18	1.0	15	1.0				
BB1017EP22	10	12	18	1.0	17	1.1				
BB1207EP22	12	14	20	1.0	7	0.6				
BB1209EP22	12	14	20	1.0	9	0.8				
BB1212EP22	12	14	20	1.0	12	1.2				
BB1215EP22	12	14	20	1.0	15	1.3				
BB1217EP22	12	14	20	1.0	17	1.4				
BB1220EP22	12	14	20	1.0	20	1.5				
BB1412EP22	14	16	22	1.0	12	0.9		+0.021 0		+0.124 +0.040
BB1417EP22	14	16	22	1.0	17	1.5				
BB1509EP22	15	17	23	1.0	9	1.0				
BB1512EP22	15	17	23	1.0	12	1.2				
BB1517EP22	15	17	23	1.0	17	1.5				
BB1520EP22	15	17	23	1.0	20	1.8				
BB1612EP22	16	18	24	1.0	12	1.3				
BB1617EP22	16	18	24	1.0	17	1.7				
BB1812EP22	18	20	26	1.0	12	1.4				
BB1817EP22	18	20	26	1.0	17	2.1				
BB2012EP22	20	23	30	1.5	11.5	2.4	+0.025 0		+0.150 +0.050	
BB2017EP22	20	23	30	1.5	16.5	3.2				
BB2022EP22	20	23	30	1.5	21.5	3.9				
BB2512EP22	25	28	35	1.5	11.5	2.9				
BB2517EP22	25	28	35	1.5	16.5	3.9				
BB2522EP22	25	28	35	1.5	21.5	4.9				
BB3016EP22	30	34	42	2.0	16	6.4				
BB3026EP22	30	34	42	2.0	26	9.5				
BB3040EP22	30	34	42	2.0	40	13.9				
BB4016EP22	40	44	52	2.0	16	8.4				
BB4026EP22	40	44	52	2.0	26	12.4				
BB4050EP22	40	44	52	2.0	50	22.2				
BB5026EP22	50	55	63	2.0	26	18.8	+0.030 0			
BB5060EP22	50	55	63	2.0	60	40.4				
BB6050EP22	60	65	73	2.0	50	40.5				
BB6070EP22	60	65	73	2.0	70	55.6				

Other dimensions available on request.



EP™43

Cylindrical Bushes



Dimensions [mm], tests and material in accordance GGB specification.

Outside chamfers and inside radii

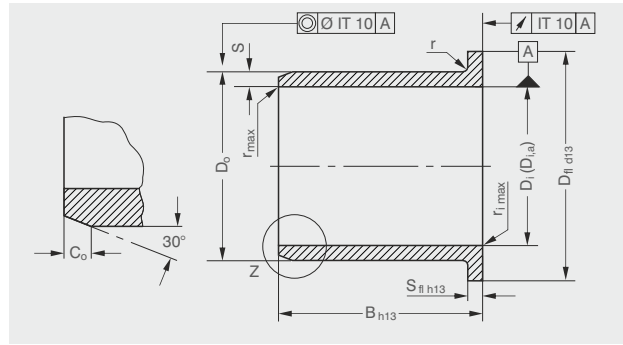
S	C _o	r _{max}
1.0	0.5	0.2
1.5	0.8	0.3
2	0.8	0.3

Recommended tolerance class for shafts h9

Part No.	Technical Data					
	Dimensions				Installation tolerance	
GGB	Inside Ø D _i	Outside Ø D _o	Width B	Weight g	Housing H7	D _{i,a}
0806EP43	8	10	6	0.2	+0.015 0	+0.071 +0.013
0808EP43	8	10	8	0.3		
0810EP43	8	10	10	0.4		
0812EP43	8	10	12	0.5		
0815EP43	8	10	15	0.6		
1004EP43	10	12	4	0.2	+0.018 0	+0.086 +0.016
1006EP43	10	12	6	0.3		
1008EP43	10	12	8	0.4		
1010EP43	10	12	10	0.5		
1015EP43	10	12	15	0.7		
1020EP43	10	12	20	1.0		
1210EP43	12	14	10	0.6		
1212EP43	12	14	12	0.7		
1215EP43	12	14	15	0.9		
1220EP43	12	14	20	1.2		
1415EP43	14	16	15	1.0	+0.021 0	+0.104 +0.020
1420EP43	14	16	20	1.4		
1425EP43	14	16	25	1.7		
1515EP43	15	17	15	1.1		
1520EP43	15	17	20	1.4		
1525EP43	15	17	25	1.7		
1625EP43	16	18	25	1.8		
1825EP43	18	20	25	2.0		
2010EP43	20	23	10	1.5		
2015EP43	20	23	15	2.2		
2020EP43	20	23	20	2.9		
2030EP43	20	23	30	4.4		
2515EP43	25	28	15	2.7		
2520EP43	25	28	20	3.6		



EP™43 Flanged Bushes



Dimensions [mm], tests and material in accordance GGB specification.

Outside chamfers and inside radii

S	C ₀	r _{max}
1.0	0.5	0.1
1.5	0.8	0.2

S	r (mm)
≤ 1	0.3
> 1	0.5

Recommended tolerance class for shafts h9

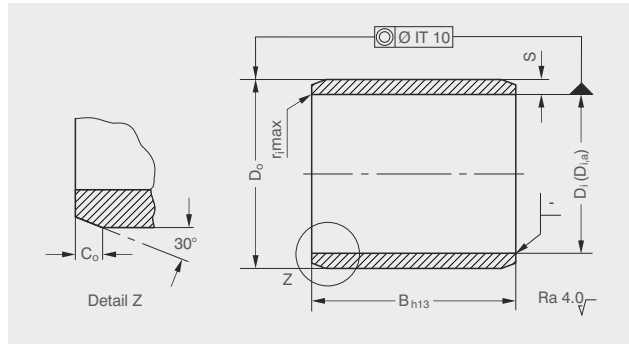
Part No.	Technical Data							Installation tolerance	
	Dimensions					Weight g	Housing H7	D _{i,a}	
GGB	Inside Ø D _i	Outside Ø D _o	Flange Ø D _{fl}	Flange thickness S _{fl}	Width B				
BB0806EP43	8	10	15	1.0	5.5	0.4	+0.015 0	+0.071 +0.013	
BB0808EP43	8	10	15	1.0	7.5	0.5			
BB0810EP43	8	10	15	1.0	10	0.5			
BB1007EP43	10	12	18	1.0	7	0.6	+0.018 0		+0.086 +0.016
BB1009EP43	10	12	18	1.0	9	0.7			
BB1012EP43	10	12	18	1.0	12	0.8			
BB1015EP43	10	12	18	1.0	15	1.0			
BB1017EP43	10	12	18	1.0	17	1.1			
BB1207EP43	12	14	20	1.0	7	0.6			
BB1209EP43	12	14	20	1.0	9	0.8			
BB1212EP43	12	14	20	1.0	12	1.2			
BB1215EP43	12	14	20	1.0	15	1.3			
BB1217EP43	12	14	20	1.0	17	1.4			
BB1220EP43	12	14	20	1.0	20	1.5			
BB1412EP43	14	16	22	1.0	12	0.9			
BB1417EP43	14	16	22	1.0	17	1.5			
BB1509EP43	15	17	23	1.0	9	1.0			
BB1512EP43	15	17	23	1.0	12	1.2			
BB1517EP43	15	17	23	1.0	17	1.5			
BB1520EP43	15	17	23	1.0	20	1.8			
BB1617EP43	16	18	24	1.0	17	1.7			
BB2012EP43	20	23	30	1.5	11.5	2.4	+0.021 0	+0.104 +0.020	
BB2017EP43	20	23	30	1.5	16.5	3.2			
BB2022EP43	20	23	30	1.5	21.5	3.9			
BB2512EP43	25	28	35	1.5	11.5	2.9			
BB2517EP43	25	28	35	1.5	16.5	3.9			
BB2522EP43	25	28	35	1.5	21.5	4.9			

Other dimensions available on request.



EP™63

Cylindrical Bushes



Dimensions [mm], tests and material in accordance GGB specification.

Outside chamfers and inside radii

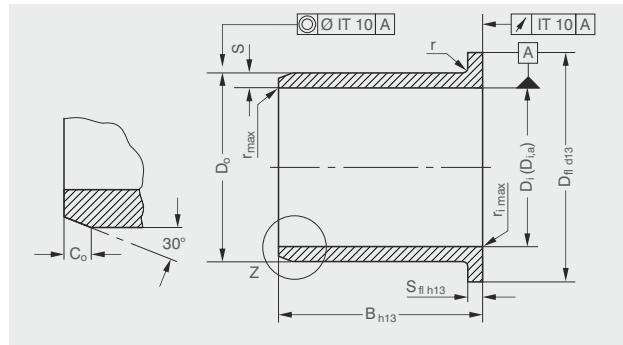
S	C _o	r _{max}
1.0	0.5	0.2
1.5	0.8	0.3
2	0.8	0.3

Recommended tolerance class for shafts h9

Part No.	Technical Data					
	Dimensions				Installation tolerance	
GGB	Inside Ø D _i	Outside Ø D _o	Width B	Weight g	Housing H7	D _{i,a}
0806EP63	8	10	6	0.2	+0.015 0	+0.071 +0.013
0808EP63	8	10	8	0.3		
0810EP63	8	10	10	0.4		
0812EP63	8	10	12	0.5		
0815EP63	8	10	15	0.6		
1004EP63	10	12	4	0.2	+0.018 0	+0.086 +0.016
1006EP63	10	12	6	0.3		
1008EP63	10	12	8	0.4		
1010EP63	10	12	10	0.5		
1015EP63	10	12	15	0.7		
1020EP63	10	12	20	1.0		
1210EP63	12	14	10	0.6		
1212EP63	12	14	12	0.7		
1215EP63	12	14	15	0.9		
1220EP63	12	14	20	1.2		
1415EP63	14	16	15	1.0		
1420EP63	14	16	20	1.4		
1425EP63	14	16	25	1.7		
1515EP63	15	17	15	1.1	+0.021 0	+0.104 +0.020
1520EP63	15	17	20	1.4		
1525EP63	15	17	25	1.7		
2010EP63	20	23	10	1.5		
2015EP63	20	23	15	2.2		
2020EP63	20	23	20	2.9		
2030EP63	20	23	30	4.4		
2515EP63	25	28	15	2.7		
2520EP63	25	28	20	3.6		



EPTM63 Flanged Bushes



Dimensions [mm], tests and material in accordance GGB specification.

Outside chamfers and inside radii

S	C _o	r _{max}
1.0	0.5	0.1
1.5	0.8	0.2

S	r (mm)
≤ 1	0,3
> 1	0,5

Recommended tolerance class for shafts h9

Part No.	Technical Data						Installation tolerance	
	Dimensions					Weight g	Housing H7	D _{i,a}
GGB	Inside Ø D _i	Outside Ø D _o	Flange Ø D _{fl}	Flange thickness S _{fl}	Width B			
BB0806EP63	8	10	15	1.0	5.5	0.4	+0.015 0	+0.071 +0.013
BB0808EP63	8	10	15	1.0	7.5	0.5		
BB0810EP63	8	10	15	1.0	10	0.5		
BB1007EP63	10	12	18	1.0	7	0.6	+0.018 0	
BB1009EP63	10	12	18	1.0	9	0.7		
BB1012EP63	10	12	18	1.0	12	0.8		
BB1015EP63	10	12	18	1.0	15	1.0		
BB1017EP63	10	12	18	1.0	17	1.1		
BB1207EP63	12	14	20	1.0	7	0.6		
BB1209EP63	12	14	20	1.0	9	0.8		
BB1212EP63	12	14	20	1.0	12	1.2		
BB1215EP63	12	14	20	1.0	15	1.3		
BB1217EP63	12	14	20	1.0	17	1.4		
BB1220EP63	12	14	20	1.0	20	1.5		
BB1412EP63	14	16	22	1.0	12	0.9	+0.086 +0.016	
BB1417EP63	14	16	22	1.0	17	1.5		
BB1509EP63	15	17	23	1.0	9	1.0	+0.021 0	
BB1512EP63	15	17	23	1.0	12	1.2		
BB1517EP63	15	17	23	1.0	17	1.5		
BB1520EP63	15	17	23	1.0	20	1.8		
BB1617EP63	16	18	24	1.0	17	1.7		
BB2012EP63	20	23	30	1.5	11.5	2.4		
BB2017EP63	20	23	30	1.5	16.5	3.2		
BB2022EP63	20	23	30	1.5	21.5	3.9		
BB2512EP63	25	28	35	1.5	11.5	2.9		
BB2517EP63	25	28	35	1.5	16.5	3.9		
BB2522EP63	25	28	35	1.5	21.5	4.9		

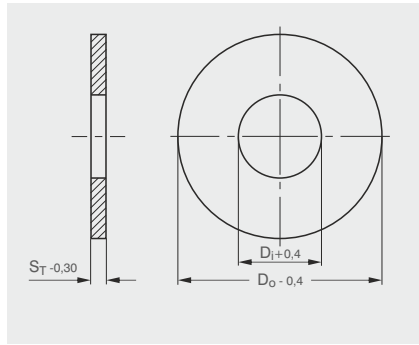
Other dimensions available on request.





KA Glacetal

Thrust washers



Part No.	Technical Data			
	Dimensions			Weight g
GGB	Inside Ø D _I	Outside Ø D _O	Thick- ness S _T	
WC10KA	10.5	24.20	1.65	0.8
WC12KA	12.5	26.20	1.65	0.9
WC14KA	14.5	30.20	1.65	1.1
WC16KA	16.5	32.20	1.65	1.3
WC18KA	18.5	36.20	1.65	1.6
WC20KA	20.5	38.20	1.65	1.7
WC22KA	22.5	42.20	1.65	2.0
WC24KA	24.5	44.20	1.65	2.2
WC25KA	25.5	48.20	1.65	2.8
WC28KA	28.5	48.20	1.65	2.5
WC30KA	30.5	54.20	1.65	3.3
WC35KA	36.0	62.20	1.65	4.3
WC40KA	41.0	66.20	1.65	4.7
WC45KA	46.0	74.20	2.15	5.6
WC50KA	51.0	78.20	2.15	5.8

Other dimensions available on request.

Installation

Housings

GGB injection moulded bearings are manufactured suitable for press fitting into housings machined to H7 tolerance. The press fit interference is 0.5-1.5 % depending upon the diameter. For GGB injection moulded thermoplastic bearings the interference is maintained at temperatures between -40 °C and the maximum temperature, although some reduction in the press-fit force will occur at temperatures above 100 °C. The bore of installed bushes will generally lie within the following tolerance range: EP™ bushes D11 - D12.

Journals

Journals finished to h7 tolerance are preferred. For EP™ and KA bearings optimum wear performance is obtained with a journal surface finish ground to Ra 0.4-0.8 µm. A minimum shaft hardness of HRC 50 is recommended.

Bearing Clearance

The bearing clearance is designed for bush operating temperatures in the range -10 °C to +80 °C. Attention should be paid to the effect of thermal expansion. Where the normal operating temperature is above 80 °C, the clearance should be increased by about 0.15 o/oo per 10 °C increment.

Installation

A GGB injection moulded bearing should be assembled into its housing with the aid of a stepped mandrel, preferably made from case-hardened mild steel. To assist assembly a lead-in chamfer should be machined according to Fig. 4. The bush, mandrel and housing must be correctly aligned during assembly. Recommended mandrel and chamfer dimensions are given in Fig. 4.

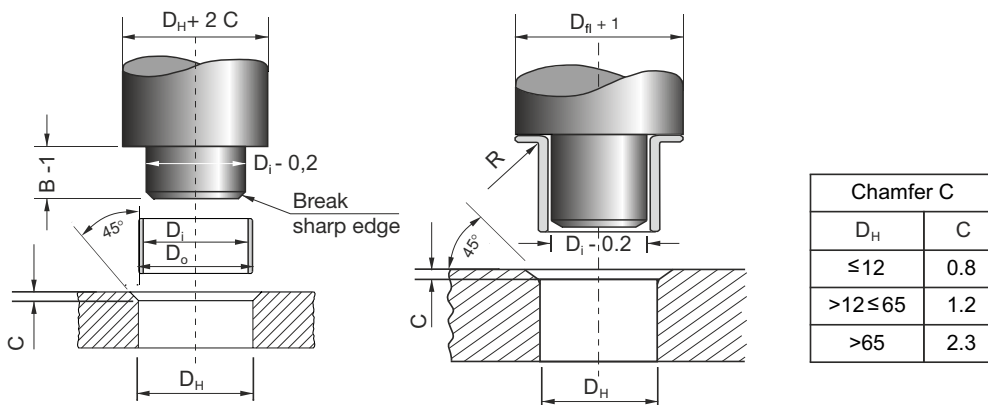


Figure 4: Fitting of cylindrical bushes

Machining

GGB injection moulded bushes can be machined with conventional tools at normal speeds. For materials containing glass fibres, such as EP™, machining of the running surfaces is not recommended due to the increased exposure of glass fibre to the bearing surface which may result in excessive wear of the mating surface.

Bearing Application Data Sheet

Not sure which GGB part fits your application requirements? Go to <https://www.ggbpartfinder.com/> to complete a Bearing Application Data Sheet online, and one of our GGB bearing specialists will reach out to you with recommended options that meet your application requirements. You can also complete the form below and share it with your GGB sales person or distributor representative.

DATA FOR BEARING DESIGN CALCULATION

Application: _____

Project / No.: _____ Quantity: _____ New Design Existing Design

DIMENSIONS (mm)

Inside diameter	D_i	
Outside diameter	D_o	
Length	B	
Flange diameter	D_{fl}	
Flange thickness	B_{fl}	
Wall thickness	S_T	
Length of slideplate	L	
Width of slideplate	W	
Thickness of slideplate	S_S	

LOAD

Radial load F	static [N]	
	dynamic [N]	
Axial load F	static [N]	
	dynamic [N]	
Specific load p	radial [MPa]	
	axial [MPa]	

MOVEMENT

Rotational speed	N [1/min]	
Speed	U [m/s]	
Length of stroke	L_s [mm]	
Frequency of stroke	[1/min]	
Oscillating cycle	ϕ [°]	
Osc. frequency	N_{osz} [1/min]	

MATING SURFACE

Material		
Hardness	HB/HRC	
Surface finish	Ra [μ m]	

CUSTOMER INFORMATION

Company _____
 Street _____
 City / State / Province / Post Code _____
 Telephone _____ Fax _____
 Name _____
 Email Address _____ Date _____

FITS & TOLERANCES

Shaft	D_J	
Bearing housing	D_H	

OPERATING ENVIRONMENT

Ambient temperature	T_{amb} [°]	
<input type="checkbox"/>	Housing with good heating transfer properties	
<input type="checkbox"/>	Light pressing or insulated housing with poor heat transfer properties	
<input type="checkbox"/>	Non metal housing with poor heat transfer properties	
<input type="checkbox"/>	Alternate operation in water and dry	

LUBRICATION

<input type="checkbox"/>	Dry	
<input type="checkbox"/>	Continuous lubrication	
<input type="checkbox"/>	Process fluid lubrication	
<input type="checkbox"/>	Initial lubrication only	
<input type="checkbox"/>	Hydrodynamic conditions	
Process fluid		
Lubricant		
Dynamic viscosity	η	

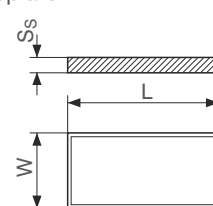
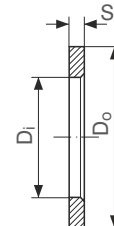
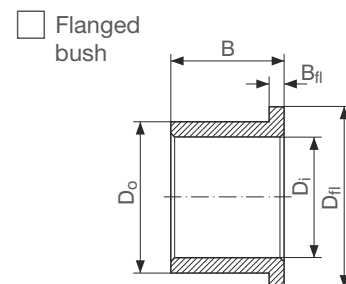
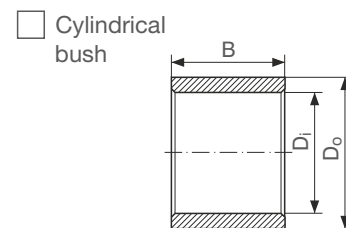
SERVICE HOURS PER DAY

Continuous operation		
Intermittent operation		
Operating time		
Days per year		

SERVICE LIFE

Required service life	L_H [h]	
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BEARING TYPE:



- Special parts (sketch)
- Rotational movement
- Steady load
- Rotating load
- Oscillating movement
- Linear movement

Product Information

GGB gives an assurance that the products described in this document have no manufacturing errors or material deficiencies.

The details set out in this document are registered to assist in assessing the material's suitability for the intended use. They have been developed from our own investigations as well as from generally accessible publications. They do not represent any assurance for the properties themselves.

Unless expressly declared in writing, GGB gives no warranty that the products described are suited to any particular purpose or specific operating circumstances. GGB accepts no liability for any losses, damages or costs however they may arise through direct or indirect use of these products.

GGB's sales and delivery terms and conditions, included as an integral part of quotations, stock and price lists, apply absolutely to all business conducted by GGB. Copies can be made available on request.

Products are subject to continual development. GGB retains the right to make specification amendments or improvements to the technical data without prior announcement.

Edition 2018 (This edition replaces earlier editions which hereby lose their validity).

Statement Regarding Lead Content in GGB Products & EU Directive Compliance

GGB is committed to adhering to all U.S., European and international standards and regulations with regard to lead content. We have established internal processes that monitor any changes to existing standards and regulations, and we work collaboratively with customers and distributors to ensure that all requirements are strictly followed. This includes RoHS and REACH guidelines.

GGB makes it a top priority to operate in an environmentally conscious and safe manner. We follow numerous industry best practices, and are committed to meeting or exceeding a variety of internationally recognized standards for emissions control and workplace safety.

Each of our global locations has management systems in place that adhere to ISO TS 16949, ISO 9001, ISO 14001, ISO 50001 and OHSAS 18001 quality regulations.

All of our certificates can be found here: <https://www.ggbearings.com/en/company/certificates>.

A detailed explanation of our commitment to REACH and RoHS directives can be found at <https://www.ggbearings.com/en/company/quality-and-environment>.



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