Steel Industry Applications
Where to use

deva.metal® is a self-lubricating bearing material manufactured by advanced powder metallurgy. It is fully compacted, unlike oil-impregnated porous bronze materials that are weak by comparison. deva.metal® is provided with an evenly distributed solid lubricant throughout its metallic matrix. deva.metal® is:
- Suitable for dry running at slow sliding speeds and high loads
- Stick-slip free
- Highly resistant to temperature and corrosion
- Insensitive to contamination and edge pressures
- Easy to machine if required

Reference applications
Cooling beds, furnace applications, mandrels, dummy bar chains, shears, wheels, etc.

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### Material property

<table>
<thead>
<tr>
<th>Material property</th>
<th>Unit</th>
<th>Value</th>
<th>Tolerances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. permitted static load (p)</td>
<td>MPa</td>
<td>260 MPa in excess of</td>
<td>H7</td>
</tr>
<tr>
<td>Max. permitted dynamic load (p)</td>
<td>MPa</td>
<td>130</td>
<td>Bearing outer Ø</td>
</tr>
<tr>
<td>Max. sliding speed (U)</td>
<td>m/s</td>
<td>0.4 m/s</td>
<td>Bearing inner Ø</td>
</tr>
<tr>
<td>Max. pU-value</td>
<td>MPa x m/s</td>
<td>1.5</td>
<td>Shaft Ø</td>
</tr>
<tr>
<td>Friction coefficient</td>
<td>μ</td>
<td>0.09 to 0.49</td>
<td>Counter material</td>
</tr>
<tr>
<td>Temperature range</td>
<td>°C</td>
<td>-200 to +800</td>
<td>Shaft surface finish</td>
</tr>
</tbody>
</table>

#### Structure
Bronze, iron or nickel matrix
Solid lubricant (Graphite, MoS₂ and other)

#### Basic forms
- Flanged bearings
- Cylindrical bearings
- Thrust washers
- Machinable blanks
- Sliding plates
- Spherical bearings

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1 depending on used material and operating conditions
Global Partner to the Steel Industry

The purpose of this brochure is to describe our products. All data given in the documentation are intended as an aid for assessing the suitability of the material. The load capacities, sliding friction coefficients and wear rates stated by us or appearing in catalogs and other technical documentation do not constitute a guarantee of the specified properties. They have been determined in our test facilities under conditions that do not necessarily reflect the actual application of our products and their service environment or permit comprehensive simulation in relation to them. We provide guarantees only after written agreement of the test procedures and parameters and of all the relevant characteristics which the product is required to have.

Our products are subject to a constant process of development. DEVA® reserves the right to introduce technical changes and improvements without prior notice and to make adjustments in line with changing standards and guidelines. The contractual agreements made, especially the agreed specifications, drawings and other data, are binding and paramount. We and any person acting for us accept no liability on account of the descriptions and information in this brochure. Reproductions and copies may only be made with our explicit consent.


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From iron ore to steel with DEVA

1) Steel making & secondary metallurgy
   • Regulating device in compressor for BOF
   • Sliding rings in sealing system of BOF
   • Wheels in charging car of converter
   • Lifting device in EAF
   • Tap hole drilling machine
   • Torpedo car
   • Ladle tilting device
   • Ladle hanger
   • Mobile inert gas coupling system in ladle transfer car

2) Continuous casting
   • Spherical bearing for hydraulic cylinder in ladle turret
   • Flanged bearing in swivel arm of ladle turret
   • Cylindrical bearing in dummy bar chain
   • Adjustable strand guide in CC
   • Guide roller in bloom caster
   • Torch cutting machine
   • Sliding plates in weight system of tundish car
   • Adjusting device of tundish car
   • Track roller bearing in torch cutting machine
   • Toggle joints in dividing shear
   • Knife guide system in dividing shear

3) Hot & cold forming
   • Main bearing for excenter shaft in pendulum shear
   • Sliding plates for roller changing system
   • Coil box (various)
   • Side guard system in rolling mill
   • Coil car scissor unit
   • Guide system in reversing mill
   • Sliding plates in mandrel
   • Cold & hot plate leveler
   • Lifting device in walking beam
   • Main drive in walking beam
   • Knife gap adjusting device in hot dividing shear
   • Height adjusting device in dividing shear
   • Carrying & support wheels in plate cooling bed

4) Various
   • Gripping tong for forging manipulator
   • Quenching station for tubes
   • Crane bucket
   • Conveyors
   • Turnover rail car dumper
   • Crane tong application
   • Sliding shoes in aluminium pusher furnace

Federal-Mogul DEVA GmbH

• Manufacturers of sliding materials for more than 100 years
• Introduced self-lubricating sliding materials more than 50 years ago
• Supplier for the iron and steel industry for more than 40 years
• Optimized materials for the toughest conditions in the iron and steel industry used in countless applications within this sector throughout the world by major OEMs and end users
• Certified according to all major requirements:
  DIN ISO 9001
  DIN EN ISO 14001
  ISO/TS 16949
1. Lifting device EAF
2. Ladle hanger
3. Spherical bearing for hydraulic cylinder in ladle turret
4. Flanged bearing in swivel area of ladle turret
5. Sliding plates in weight system of tundish car
6. Adjusting device of tundish car
7. Adjustable strand guide in CC
8. Toggle joints in diving shear
9. Knife guide system in diving shear
10. Knife gap adjusting device in hot dividing shear
11. Height adjusting device in dividing shear
12. Sliding plates for roller changing system
13. Sliding plates in mandrel
14. Lifting device in coil handling system
15. Coil car scissor unit
16. Crane tong

By courtesy of SMS Demag AG
Where to use

deva bm® and deva bm®/9P are thin-walled, self-lubricating composite sliding materials. They consist of a backing made of steel, stainless steel or bronze with a deva metal® layer applied in a combined rolling/sintering process. deva bm® uses graphite as lubricant while deva bm®/9P is PTFE-lubricated. deva bm® offers basically the same bearing characteristics as deva metal® but is capable of handling even higher loads and offers an economic solution to many bearing problems.

Reference applications
Cold plate levelers, mandrels, ladle hangers, coil cars, roller changing systems, shears, etc.

Tolerances
Other installation tolerances are possible, provided that a safe fit in the housing and the necessary running clearance are maintained.

Installation
Press-fit installation or supercooling.

Structure

Basic forms

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<td>MPa</td>
<td>320</td>
<td>H7</td>
</tr>
<tr>
<td>Max. permitted dynamic load (p)</td>
<td>MPa</td>
<td>150</td>
<td>Bearing inner Ø</td>
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<tr>
<td>Max. sliding speed (U)</td>
<td>m/s</td>
<td>1.0</td>
<td>Shaft Ø</td>
</tr>
<tr>
<td>Max. pU-value</td>
<td>MPa x m/s</td>
<td>2.0</td>
<td>Counter material</td>
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<tr>
<td>Friction coefficient</td>
<td>µ</td>
<td>0.05 to 0.18</td>
<td>Shaft surface finish</td>
</tr>
<tr>
<td>Temperature range</td>
<td>°C</td>
<td>-190 to +280</td>
<td></td>
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</tbody>
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