A member of NADELLA Group

DURBAL

HEAVY-DUTY ROD ENDS AND SPHERICAL-PLAIN BEARINGS

PREMIUM LINE

DURBAL HEAVY-DUTY ROD ENDS
THE ORIGINAL!

BRTF 01

BRTM 01 | **BRM** 02

BRF 02

PM 02

PF 02

DURBAL HEAVY-DUTY SPHERICAL-PLAIN BEARINGS

WLT 01

WLT 01 | **WLK** 02

WLK 02

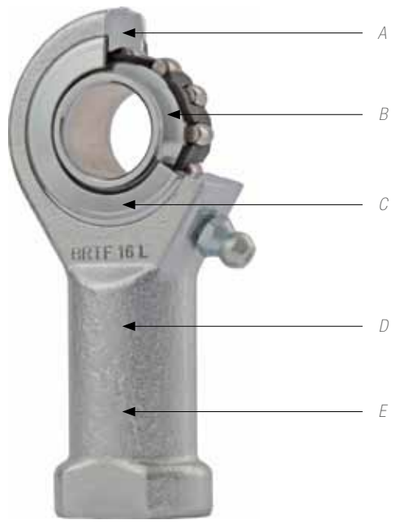
Our heavy-duty rod ends and spherical-plain bearings of DURBAL Premium Line are very resilient and of low maintenance. The roller-types work well for large tilting angles or in rotating movements. Here, the cage design is for high speed applications, the full complement variant in contrast stands for higher loads. Those with integrated aligning ball bearing have low bearing friction and are „keen“ on being used in fields of application with high speeds.

DURBAL creates a 100 % control measuring for the radial clearance at each rod end and spherical-plain bearing of the Premium Line. The Original with all the well-known technical benefits can be purchased from DURBAL only!

DURBAL has invested a great deal in recent years. The goal was and still is to offer our customers a greater variety by expanding the product range. New in our product program are the sizes 10, 18 and 22 for roller-shaped products and size 35 and 40 for self-aligning ball bearings.
We additionally offer you all on roller- and ball-bearing rod ends and spherical-plain bearings now in stainless steel (except size 35, 40 and the PM / PF series).

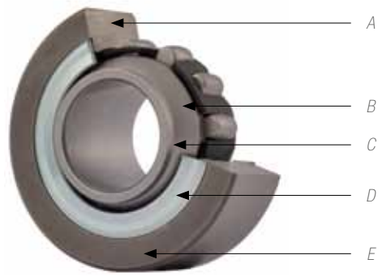
01 = Roller bearing
02 = Self-aligning ball bearing

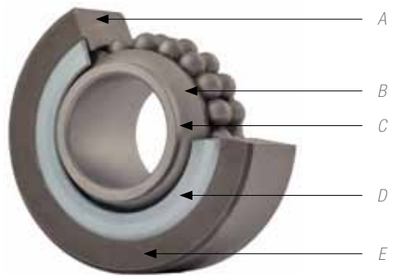
DURBAL HEAVY-DUTY ROD ENDS
HIGHLIGHTS!



A = Radial-clearance: 10 – 30 µm, low friction
B = Inner ring made of bearing steel, hardened, ball groves super finished including shoulder due to limitation of tilt angle
C = Shields on both sides against rough dirt penetration
D = All rod end housings are made of forged steel, case hardened bearing race
E = Long maintenance due to long-term greasing, especially suitable for high-speed large swivelling angles or rotating movements

DURBAL HEAVY-DUTY SPHERICAL-PLAIN BEARINGS

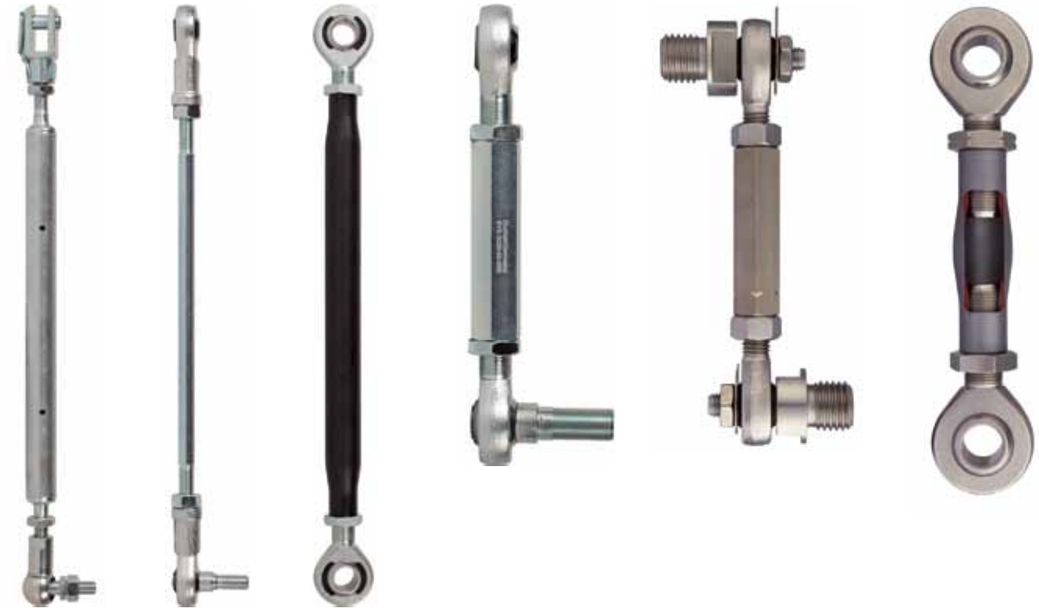




A = Radial-clearance: 10 – 30 µm, low friction
B = Outer- and inner ring made of bearing steel, hardened, ball groves super finished
C = Inner ring with shoulder due to limitation of tilt angle
D = Shields on both sides against rough dirt penetration
E = Long maintenance due to long-term greasing, especially suitable for high-speed large swivelling angles or rotating movements

PREMIUM LINE

DURBAL HEAVY-DUTY SYSTEM LINKAGES
DURBAL WITH OPERATIONAL SYSTEM



DURBAL HEAVY-DUTY SYSTEM LINKAGES
HIGHLIGHTS!

DURBAL Heavy-duty system linkages transmit dynamic and static forces and are available with internal or external threads. All products from the DURBAL Premium, Classic and Basic Line can be combined with a heavy-duty system linkage.

The different single components of these heavy-duty system linkages are of highest quality, precisely produced and signalize consistent reliability.

HEAVY-DUTY SYSTEM LINKAGES

We offer these heavy-duty systems in different materials: steel, stainless steel, aluminium and others on request. We offer different types:

- With hexagonal pipe/rod
- With reduced pipe/rod
- Linkages with male thread
- With press-fitted spherical-plain bearing
- With integrated joint ball (DURBAL glide)

DURBAL converts these heavy-duty systems for your specific applications and according to your needs. DURBAL customers have the choice to combine all articles of the complete DURBAL program: DURBAL heavy-duty rod ends, DURBAL heavy-duty spherical-plain bearings, clevises and angle joints.

PARTICULAR FEATURES

- Many variations available that can combined individually and modularly
- Machine set-up times can be clearly reduced with these easy to use system-applications
- Convenient article management due to reduced article-numbers (one system instead of different single items)

HEAVY-DUTY SYSTEMS CAN BE COMBINED WITH:

Rod ends and spherical-plain bearings of Premium, Classic and Basic Line as well clevises or angle joints.

SYSTEM OF RODS IN DIFFERENT MATERIALS AVAILABLE:

Steel, stainless steel and aluminium (others on request).

SURFACE PROTECTION AVAILABLE:

Galvanized, Cr VI-free, painted, special coating, chromium-plated or anodized (others on request).

CLASSIC LINE

DURBAL HEAVY-DUTY ROD ENDS
MAINTENANCE-FREE

BEM 01 / 02 / 03

BEF 01 / 02 / 03

EM 01 / 02 / 03

EF 01 / 02 / 03

DURBAL HEAVY-DUTY ROD ENDS
MAINTENANCE-REQUIRED

BEMN 01 / 02

BEFN 01 / 02

EMN 02

EFN 02

01 = Stainless steel
02 = X-type for higher demands
03 = DURBAL Coat (see on page 17)

DURBAL HEAVY-DUTY ROD ENDS
HIGHLIGHTS!

BENEFITS
SERIES BEM / BEF / EM / EF ... – 20-501 / -502

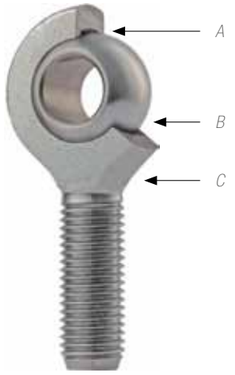
DURBAL race is made of nylon / teflon / glass fibre. This construction ensures absolute maintenance-free operations. The plastic used has the capability of absorbing penetrating particles to a certain extent and prevents the bearing from being disrupted. This fact and the greater overlay thickness compared to other sliding materials assure a longer durability. (In our competitors' items respectively in our BASIC Line-products a thin PTFE-film is inserted, which will be destroyed at the slightest impurity followed by failure of the rod ends and spherical-plain bearings.)

DURBAL joint balls are made of bearing steel, hardened, ground on all sides, polished and with hard-chromium plated raceway. This effective corrosion protection ensures that the function of the joint head is not affected by any rust on the spherical surface even in humid ambient air.
(Our competitors offer joint balls made of bearing steel. A hard-chromium plated joint ball is offered on specific request only.)

DURBAL technology is free of clearance: 0 – 10 µm (light preload of the joint ball)
(Our competitors often have a clearance of 0 – 30 µm or even more; lower clearance on specific request only.)

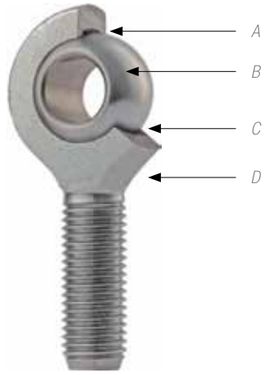
DURBAL rod end housings consist of a forged and heat-treated, hardened steel. They are suitable for extremely high loads and even usable for shock loads.
(Our competitors regularly offer turned parts up to size 12. The load capacities of these turned parts can significantly be lower compared to DURBAL products.)

Competitor or
DURBAL Basic Line edition



DURBAL Classic Line
edition

A = DURBAL Glide is better than PTFE-foil of the competitors
B = DURBAL Radial clearance is 0 – 10 µm as a standard; Our competitors often have a clearance of 0 – 30 µm or even more; lower clearance on specific request only
C = DURBAL Housings are made of forged steel, more material at housing compared to competitors. Ours are suitable for extremely high loads and even used for shock loads



DURBAL Classic Line
edition

DURBAL Classic Line
edition

A = DURBAL-Glide (race) consists of polyamide-PTFE-glass fibre compound; maintenance-free, absorbs impurities
B = Joint ball made of bearing steel, hardened, ground on all sides, polished and with hard-chromium plated raceway and thereby effective anti-corrosion protection
C = Free of clearance: radial clearance 0 – 10 µm
D = All rod end housings made of a forged and heat-treated, hardened steel, appropriate for extremely high loads

CLASSIC LINE

DURBAL ALUMINIUM ROD ENDS
WE MOVE LIGHT THINGS!

BEMA 01

BEFA 01

EMA 02

EFA 02

DURBAL Heavy-duty rod ends in Aluminium, maintenance-free
01 = With integral spherical-plain bearing, series K
02 = With integral spherical-plain bearing, series E

DURBAL ALUMINIUM ROD ENDS
HIGHLIGHTS!

BENEFITS

- **Extreme low** weight compared to other rod ends made of steel; for example size 12 ALU-type: weight: 0.057 kg; stainless steel – type: 0.109 kg
- The aluminium rod ends are insulated, in consequence **do not conduct current** and therefore ideal for outdoor applications
- **DURBAL Glide** (race) made of polyamide – PTFE – glass-fibre compound that will absorb impurities; maintenance-free
- Joint balls are made of bearing steel, hardened, ground on all sides, polished and with **hard-chromium plated raceway** or in **stainless steel** available
- All **housings** are made of high-strength aluminium with a very good corrosion resistance, an extremely hard and scratch-resistant surface that is standard anodized silver; several colour variants available additionally on request. Furthermore all of them show a high mechanical load capacity and approximately have the same load ratings as the steel items of a competitor (e.g. size 12: static 23 kN; DURBAL aluminium – joint head BEFA 12-60-501: static 22.1 kN). Compared to stainless steel variant of size 12: static 15 kN; DURBAL has significantly got higher values at 22.1 kN
- **Free of clearance:** radial clearance 0 – 10 µm
- Use under **shock load**
- Use with small swivelling movements and low speeds

COLOUR UP YOUR MACHINE!

DURBAL Heavy-duty rod ends in Aluminium, maintenance-free, with integral spherical-plain bearing, anodized in different colours available on request.

DURBAL HEAVY-DUTY SPHERICAL-PLAIN BEARINGS
THE DIFFERENT SPHERICAL-PLAIN BEARING

GLK 01

GLKS 02

GLE 03

GLG 04

DURBAL Heavy-duty spherical-plain bearings: maintenance-free, stainless steel and customized products available on request.
01 = With DURBAL Glide, series K
02 = With DURBAL Glide, quite similar to series K but with expanded outer ring
03 = With DURBAL Glide, series E
04 = With DURBAL Glide, series G

DURBAL HEAVY-DUTY SPHERICAL-PLAIN BEARINGS
HIGHLIGHTS!

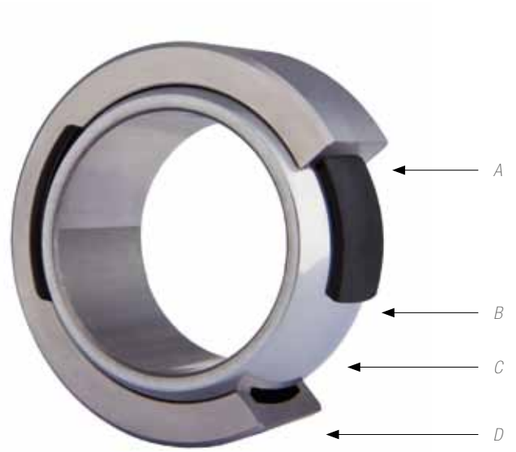
BENEFITS
SERIES GLK / GLKS / GLE / GLG

DURBAL race is made of nylon / teflon / glass fibre. This construction ensures absolute maintenance-free operations. The plastic used has the capability of absorbing penetrating particles to a certain extent and prevents the bearing from disruption. This fact and the greater overlay thickness compared to other sliding materials assure a longer durability.
(In our competitors' items respectively in our BASIC Line-products a thin PTFE-film is inserted, which will be destroyed at the slightest impurity followed by failure of the rod ends and spherical bearings.)

DURBAL joint balls are made of bearing steel, hardened, ground on all sides, polished and with hard-chromium plated raceway. This effective corrosion protection ensures that the function of the joint head is not affected by any rust on the spherical surface even in humid ambient air.
(Our competitors offer joint balls made of bearing steel. A hard-chromium plated joint ball is offered on specific request only.)

DURBAL technology is free of clearance: 0 – 10 µm (light preload of the joint ball).

All **DURBAL heavy-duty spherical-plain bearings** have no predetermined breaking point on the outer ring and are thus not blasted. These compact heavy-duty spherical-plain bearings are especially suitable for heavy loads and even for impulsive events used.
(Our competitors' items respectively in our BASIC Line-products you get the spherical-plain bearings of the size 15 mm and higher with a seal, such as -2 RS, and with blasted breaking point on the outer ring.)



GLE 70-20-500
A = DURBAL Glide (race) consists of polyamide-PTFE-glass fibre compound; maintenance-free absorbs impurities. This fact and the greater overlay thickness compared to other sliding materials assure a longer durability.
B = Joint ball made of bearing steel, hardened, ground on all sides, polished and with hard-chromium plated raceway and thereby effective anti-corrosion protection
C = Free of clearance: radial clearance 0 – 10 µm
D = Consolidated spherical-plain bearing, not blasted and therefore no predetermined breaking point on the outer ring

DURBAL STANDARD ROD ENDS
CHECK BY DURBAL EYES!

DSA_T/K 01

DGAR_UK (-2RS) 02

DPHS_ 01

DSA_ES (-2RS) 02

DURBAL Standard rod ends I maintenance-free & -required
01 = With sliding bearing, series K I 02 = With sliding bearing bearing, series E

DURBAL SPHERICAL-PLAIN BEARINGS

DG_PW 01

DGE_UK (-2RS) 02

DGE_SW 01

DGE_ES (-2RS) 02

DURBAL Spherical-plain bearings
01 = As sliding bearing, maintenance-free I 02 = As sliding bearing, maintenance-required

DURBAL HYDRAULIC ROD ENDS

DGIHN-K_LO 01

DGIHR-K_DO 01

DGF_DO/LO 02

DGK_DO 02

DURBAL Hydraulic rod ends
01 = With female thread and pressed spherical-plain bearing I 02 = With welding end and pressed spherical-plain bearing

DURBAL BASIC LINE –
COMMITTED TO MAXIMUM QUALITY!

At DURBAL, all outsourced components undergo incoming goods inspections based on the sampling test procedures of the DGQ (German Society for Quality). If a sample fails this test, the entire batch is rejected.

Conformity to drawings has the utmost priority. Concessions for deviations are not part of the plan, and are not granted.

What's more, on completion all Basic Line products are laser-marked at the DURBAL plant, to guarantee the traceability of the entire supply chain.

As a certified company, DURBAL audits its suppliers every year in accordance with the requirements of ISO.

Particularly close attention is paid to long-term environmental protection.

THE ESSENTIAL CHARACTERISTICS OF ROD ENDS AND SPHERICAL-PLAIN BEARINGS ARE AS FOLLOWS:

- The bore
- The thread
- All dimensions must comply with the DIN standard
- Proper positioning of PTFE sheet for maintenance-free rod ends and spherical-plain bearings is absolutely mandatory

DURBAL XXL-RADIAL SPHERICAL-PLAIN BEARINGS
FOR HEAVY ISSUES!

DURBAL XXL-Radial Spherical-Plain Bearings from size 100 – 1000 mm
In maintenance-free or -required version, in stainless steel or even as a customized part possible on request.

DURBAL BASIC LINE
SPECIAL CHARACTERISTICS

- Types maintenance-free available
- Bore-diameter from 100 mm up to 600 mm
- DGE 320 DW (-2RS) up to DGE 600 DW (-2RS) optional sealed from both sides
- DGEP 100 FS up to DGEP 560 FS
- DGEC 320 FBAS up to DGEC 600 FBAS
- On request in stainless steel and where applicable in customized version feasible

- Types maintenance-required available
- Bore-diameter from 320 mm up to 1000 mm
- DGE 320 ES up to DGE 1000 ES
- On request sealed from both sides and where applicable in customized version feasible

DURBAL XXL-Radial Spherical-Plain Bearings can be used in the following areas:

- Ladle turrets in steelworks
- Hydropower plants (e.g. dams)
- Ship locks
- Offshore and superstructures (e.g. cranes)
- Bridge constructions (e.g. folding or hanging bridges)
- Roof constructions (e.g. stadiums)
- Mining (e.g. mining industry)
- Amusement parks (e.g. ferris wheels) etc.

DURBAL CUSTOM-MADE PRODUCTS
FOR SPECIAL NEEDS

PREMIUM LINE +

CLASSIC LINE ✕

BASIC LINE ○

DURBAL COAT
BENEFITS AND SPECIFICATIONS

DURBAL COAT can be supplied only in conjunction with our maintenance-free rod ends of the Classic Line BEM / BEF / EM / EF; we do recommend in this case the use of a joint ball made of stainless steel. This coating system multistage constructed denotes a surface treatment with very good corrosion protection properties, which has been demonstrated in the salt spray test (NSS). The layer structure consists of an electrodeposited cathodic zinc-nickel layer with subsequent passivation and a final, organic topcoat with aluminium flakes.

Using this method for the galvanic deposition of highly corrosion resistant zinc-nickel coatings we combine functional corrosion protection with an attractive surface design. Typical applications of components with zinc-nickel coating are automotive and electrical industry, equipment, mechanical engineering as well as metal processing. Furthermore materials such as cast iron that are very difficult to coat can safely be coated with this method.

BENEFITS

- Economic processes
- High long-term corrosion protection
- Constant film thickness distribution
- Bending and beading possible
- Increased temperature resistance
- High adhesion of passivation
- Attractive optical design
- Partial coating possible
- Inner anode technology
- Environmentally compliant

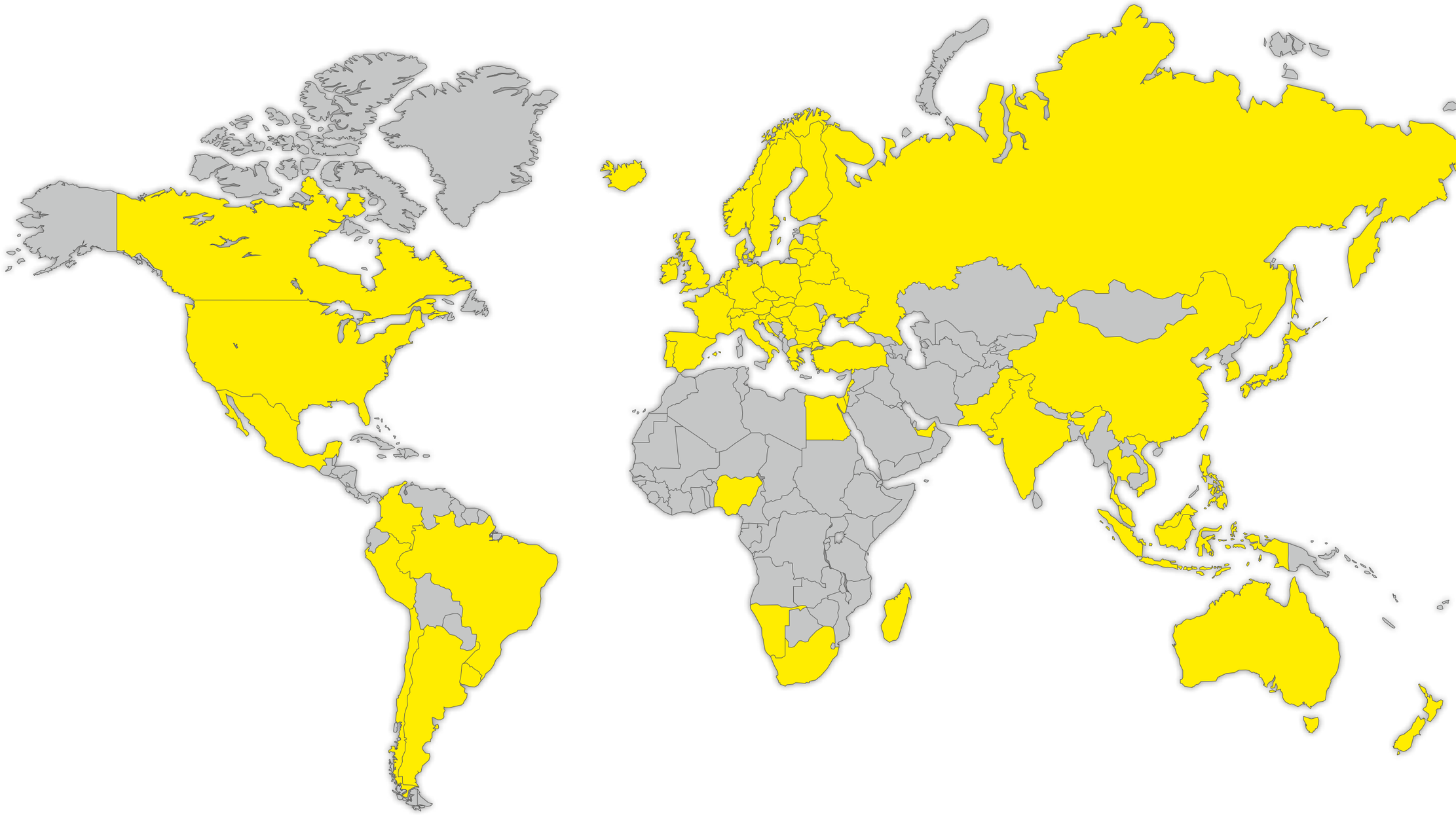
Due to European Directive, many manufacturers have to change the surface coating of metal components on chrome (VI)-free surface. DURBAL supplies you chromium (VI)-free galvanic zinc-nickel surface in a quality that meets all automotive specifications and surface standards or even exceeds these formalities. This specially developed corrosion protection system is temperature-resistant and even in extreme temperature conditions, e.g. in the engine compartment or in the brake area, the protective effect is fully retained. This corrosion protection system is environmentally friendly and has already established itself.

TECHNICAL DATA

Suitable materials
- Steel
- Grey cast iron

Corrosion resistance – values given were detected at the part in external test laboratories
- 168 h without white rust according to DIN EN ISO 9227
- 720 h without red rust according to DIN EN ISO 9227

Surface free from chromium
- TRICOAT silver > organic topcoat with aluminium-flakes



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Germany

NADELLA HEAD OFFICES

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DURBAL

DURBAL Metallwarenfabrik GmbH
Germany
Verrenberger Weg 2
74613 Öhringen

Tel: +49 7941 9460-0
Fax: +49 7941 9460-90
info@durbal.de

www.durbal.de

NADELLA S.r.l.
Italy
Via Melette, 16
20128 Milano

Tel.: +39 02 27 093 297
Fax: +39 02 25 51 768
customer.service@nadella.it

www.nadella.it

NADELLA GmbH
Germany
Rudolf-Diesel-Str. 28
71154 Nufringen

Tel.: +49 7032 9540-0
Fax: +49 7032 9540-25
info@nadella.de

www.nadella.de

NADELLA Inc.
USA
14115 – 63 Way North
Clearwater – Florida 33760-3621

Toll free: +1 844-537-0330
Fax: +1 844-537-0331
info@nadella.com

www.nadella.com

NADELLA Linear Shanghai Co. Ltd.
China
No. 3456 South Pudong Road –
Shanghai 200125

Tel.: +86 21 5068 3835
Fax: +86 21 5038 7725
info@nadella.cn.com

www.nadella.cn.com

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