components & coatings

TUNGSTEN CARBIDE

# DURIT

» TUNGSTEN CARBIDE SOLUTIONS

# » DEDICATED TO TUNGSTEN CARBIDE.

Tungsten carbide is very special to us: Components made of this material are **HIGHLY WEAR-RESISTANT, EXCEPTIONALLY DURABLE,** and **INDIVIDUALLY APPLICABLE.** This means: Tungsten carbide components by DURIT stand up to highest requirements.

# » WE KNOW HOW.

DURIT has been convincing in fields like offshore technology, exploration technology, drilling technology, and energy production for years – industries, in which tungsten carbide is becoming more and more important. For applications requiring **CORROSION RESISTANCE,** DURIT additionally offers a broad range of tungsten carbide grades with chrome/nickel-binders.

**» » EXPLORE OUR DURABLE SOLUTIONS FOR ABRASIVE AND CORROSIVE APPLICATIONS!**

VALVE FRONT DISC

**convincing tungsten carbide solutions:**

- **» EXTENDED DURABILITY**
- **» MORE EFFICIENT PROCESSES**
- **» LOWER MAINTENANCE COSTS**
- **» ENHANCED PRODUCTIVITY**

## » TUNGSTEN CARBIDE CO-BINDERS

| | grain size (µm) | binder | hardness (HV30) |
|---|---|---|---|
| **GD 02F** | 0.8 | Co | 1970 |
| **GD 03F** | 0.8 | Co | 1850 |
| **GD 05** | 1.2 | Co | 1700 |
| **GD 10** | 2.5 | Co | 1600 |

## » TUNGSTEN CARBIDE NICKEL/CHROME-BINDERS

| | grain size (µm) | binder | hardness (HV30) |
|---|---|---|---|
| **GD 05NC** | 0.8 | Co/Ni/$Cr_2C_3$ | 1900 |
| **GD 08NC** | 0.8 | Ni/$Cr_3C_2$ | 1700 |
| **GD 10NC** | 1.2 | Ni/$Cr_3C_2$ | 1630 |

# » FOR ABRASIVE AND CORROSIVE APPLICATIONS.

The specific use of tungsten carbide optimizes the **EFFICIENCY OF TECHNOLOGY.** Especially in pump, valve, and flow control technology, components and parts made of tungsten carbide create decisive **COMPETITIVE ADVANTAGES. ONSHORE AS WELL AS OFFSHORE,** there are often extreme conditions. Abrasive solids, sand, and liquids cause enormous wear – not only in downstream, but also in all steps of upstream processes, those processing operations subsequent to exploration.

PLUNGER

VALVE CONE

VALVE CAGE

VALVE ROD

# » SUCCESSFULLY HANDLING EXTREME CONDITIONS.

Tungsten carbide has been successfully applied in flow control technology for years. Especially when handling highly abrasive media in pumps and valves, for example in oil and gas industry. This field of application is characterized by **EXTREME CONDITIONS.**

In order to **RESIST WEAR AND CORROSION,** components and parts have to be made of a **HIGHLY DURABLE MATERIAL** specifically adapted to the respective application: **TUNGSTEN CARBIDE.** If a particularly high corrosion resistance is required, we offer specific tungsten carbide solutions with specified nickel- or nickel/chrome-binders.

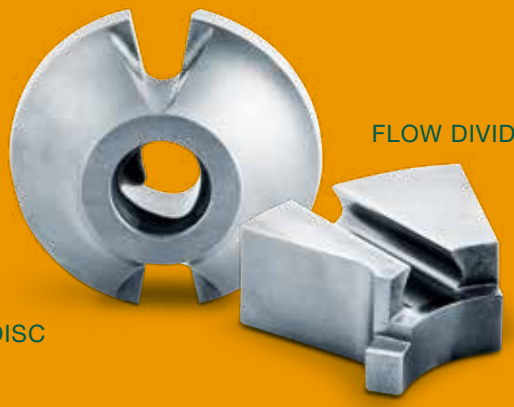
## » products

**Valve inserts · Radial sleeves · Pistons · Balls and Seats · Nozzles · Complex engineering components in solid or metal assemble execution**

## » typical fields of application

**Flow control technology · Choke valves · Control valves · Check valves · Shut-off valves · Drill drives · Processing systems · Onshore · Offshore**

VALVE BACK DISC



ROTOR

FLOW DIVIDER

VALVE BALL

# » THERMAL SPRAY COATINGS.

By effective flame spray processes, DURIT realizes **CUSTOMIZED SOLUTIONS,** which makes components more durable. Our experts develop and implement all improvements of the surface properties individually and specific to the respective requirement. This also applies to established production processes.

On that point, **WEAR PATTERNS** and potential **CAUSES OF MALFUNCTION** including all **PARAMETERS** decisive for the respective application, e.g. temperature, pressure, adjacent components, or the processed medium, are analyzed at first. Flame spray coatings by DURIT are the most effective and in many cases even the only possibility to considerably improve the operational performance.

## » COMMON THERMAL-SPRAYED SURFACES

| | layer thickness (mm) | hardness (HV30) |
|---|---|---|
| **WC/Co** | 0.3–0.5 | 1000–1020 |
| **$Cr_3C_2$/NiCr** | 0.3–0.5 | 950–1050 |

VALVE SEGMENT
$TiO_2$

PLUNGER
Bimetallic

## OUR PROCESSES AND OUR COATING MATERIALS*

### HVOF
**H**igh **V**elocity **O**xygen **F**uel

#### » CARBIDES
WC/Co | WC/Co-Cr | WC/Ni | WC/NiCr | WC/NiCrBSiFe | $Cr_2C_3$/NiCr

### APS
**A**tmospheric **P**lasma **S**praying

#### » CERAMICS
$Al_2O_3$ | $TiO_2$ | $Al_2O_3/TiO_2$ | $Cr_2O_3$ | $Cr_2O_3/TiO_2$ | $Cr_2O_3$/SiO | $ZrO_2$/CaO | $ZrO_2$/MgO | ZrO/YO/CeO | $ZrO_2/Y_2O_3$

### EAWS
**E**lectric **A**rc **W**ire **S**praying

#### » METALS
Cu | Co | Al | Zn | Mo | NiAl | NiCr | NiCrMo | NiCrAlY

### LASER CLADDING

#### » METALS
Weldable powders (carbide mixtures, alloys, metals) – comparable with Stellite, Tribaloy, Colmoloy, Hastaloy, Inconel or the like

* Additional coating materials on request.

DURIT
HARTMETALL

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