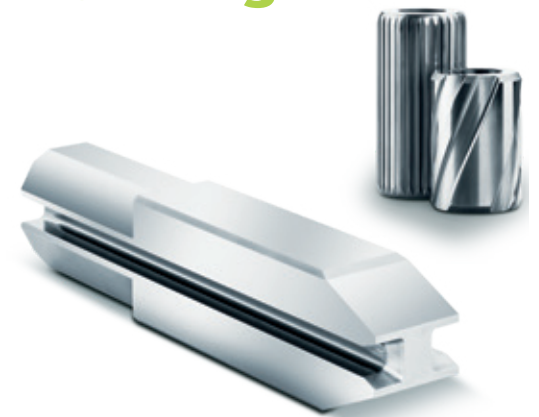


DURIT
HARTMETALL

CARBIDE
and Coatings



CARBIDE

successfully thinking ahead

- HARDFACTS**
- » **DURIT HARTMETALL**
 - » **SINCE 1982**
Successful and solution-oriented
 - » **OVER 500 EMPLOYEES**
Worldwide
 - » **MORE THAN 60 CARBIDE GRADES**
For wear protection and metal forming
 - » **100 % COATING EXPERTISE**
HVOF, APS, EAWS, Laser Cladding, PVD and CVD



Cemented carbide solutions from a single source—from the manufacturing of blanks to the high-precision end product. With **decades of experience and sound industry knowledge** we act as partners and think ahead.

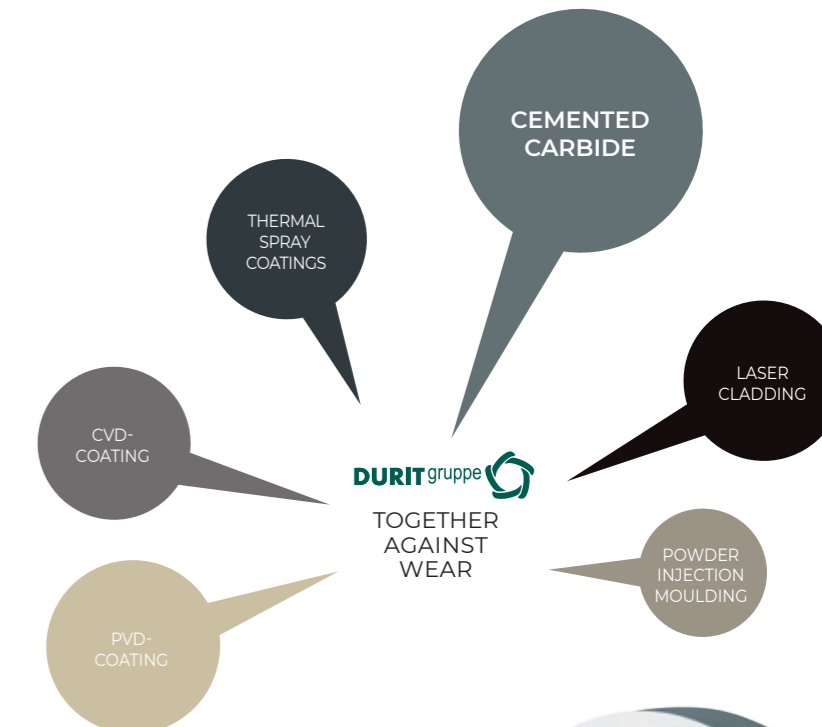
» **DEDICATED TO CARBIDE**

Our goal is to **minimize wear and optimize productivity**. For this purpose, we manufacture first-class carbide products and wear-resistant coatings that meet the highest demands—whether standard or tailor-made, in series production or individual production.

» **WE SOLVE YOUR WEAR PROBLEM**

As a globally operative company, DURIT is at the heart of an **international network** of experienced production companies, scientific establishments and renowned research institutes.

» **WE ARE GLOBALLY NETWORKED—GLOBALLY SUCCESSFUL**





CARBIDE

a material that fascinates

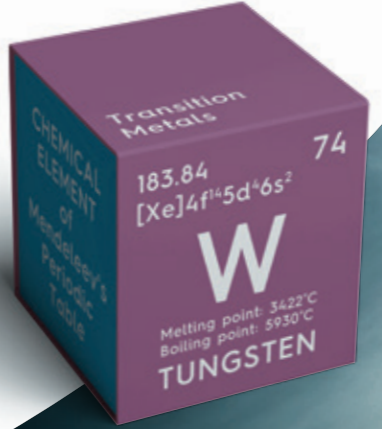
Cemented carbide is a sintered material that is primarily manufactured from **tungsten carbide** and a binding agent—usually cobalt. **A low binding agent content increases the wear resistance—a higher content the toughness.** The selection of the grain size influences the following properties:

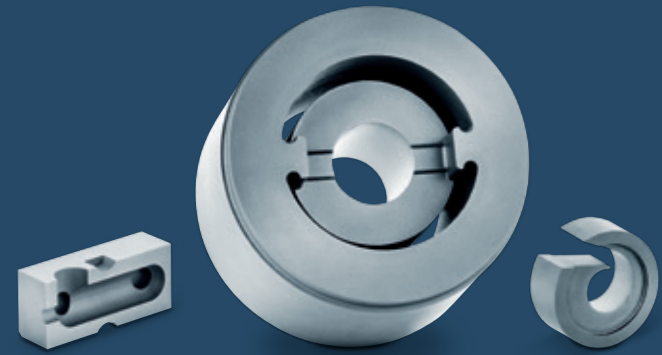
» **HARDNESS, WEAR RESISTANCE, FRACTURE TOUGHNESS**

The optimal material composition depends on the technical requirements and the respective application. Through **many years of experience** and with the substantial technical knowledge of our technicians and engineers, we are able to manufacture a suitable component in the **perfectly matched carbide grade.**

» **WITH MAXIMUM PRECISION**

- HARDFACTS**
- » **CARBIDE COMPONENTS**
 - » **HIGHLY PRECISE**
 - » **DURABLE**
 - » **EFFICIENT**
 - » **HIGH PERFORMANCE**





» **BLANKS**

True in form. Dimensional accuracy.



» **ENGINEERING COMPONENTS**

Maximum precision. Versatile. Improved efficiency.



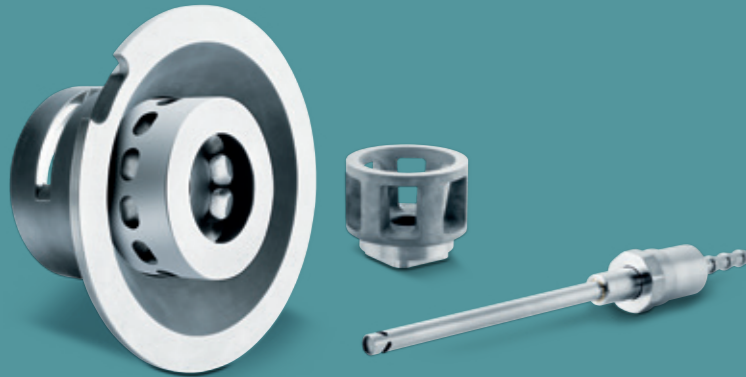
» **MACHINE PARTS**

Efficient. Individual. Performance enhancing.



» **CUTTING TOOLS**

Sharp. Clean. Precise.



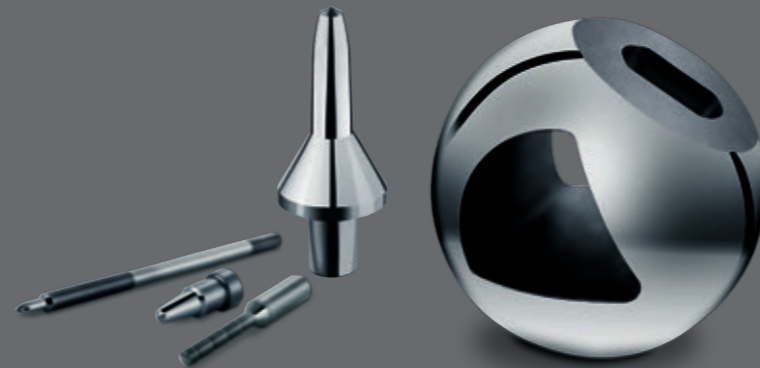
» **BLASTING AND SURFACE TECHNOLOGY**

Wear resistant. Permanently strong.



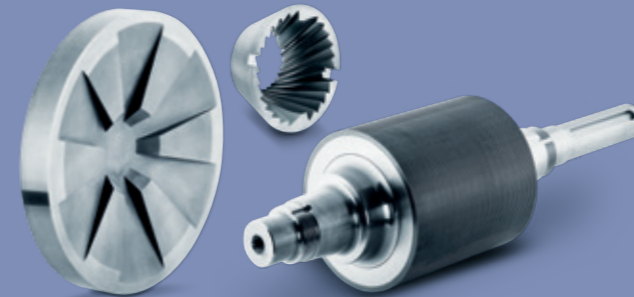
» **OIL GAS PETROCHEMICALS**

Enduring. Corrosion-proof.



» **PUMPS VALVES COMPRESSORS**

Resistant—especially for extreme applications



» **CRUSHING MILLING PELLETIZING RECYCLING**

Hard and strong performance.



» **CONVEYING MIXING EXTRUDING**

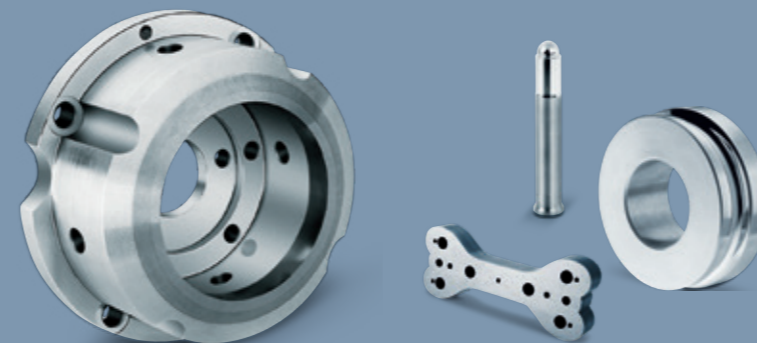
Consistent. Lasting. Dimensionally stable.



» **POWDER PRESSING AND TABLETING**

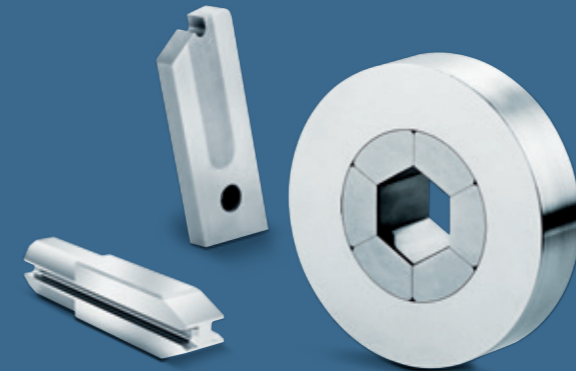
Pressure resistant. Efficient.

takes you to
EXTREMES



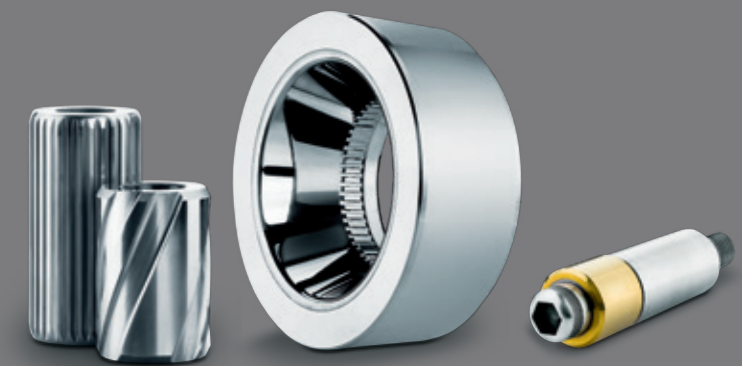
» **SHEET METAL FORMING AND METAL PACKAGING**

Extremely precise. Dimensionally stable.



» **FORMING TECHNOLOGY**

Impact resistant. Contour accurate. Strong in performance.



» **DRAWING TOOLS**

Perfect geometry. Perfect drawing.

HARDFACTS

» INDUSTRIES

- » PUMP, VALVE AND COMPRESSOR MANUFACTURING
- » OIL, GAS, PETROCHEMICALS
- » CHEMICAL AND PHARMACEUTICAL INDUSTRIES
- » METAL PACKAGING INDUSTRY AND SHEET METAL INDUSTRY
- » BLASTING AND SURFACE TECHNOLOGY
- » PAPER PROCESSING INDUSTRY
- » COLD HEADING AND METAL SHAPING
- » POWDER PROCESSING INDUSTRY
- » RECYCLING AND CRUSHING TECHNOLOGY
- » REFRACTORY INDUSTRY
- » AUTOMOTIVE INDUSTRY
- » ROOFTILE INDUSTRY
- » PLASTICS INDUSTRY
- » FOOD INDUSTRY
- » MECHANICAL ENGINEERING

HIGHTECH

for maximum precision

As one of the few full-range suppliers on the market, we offer a comprehensive concept from **consulting** to the **development, design** and **production of high-precision components**. Our production facilities are state of the art and equipped with the latest technology.

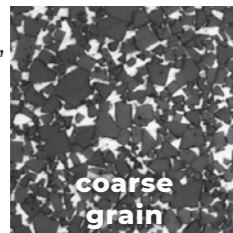
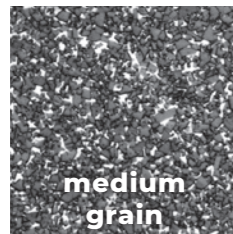
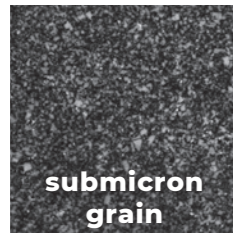
» CARBIDE IN FULL SERVICE

From our worldwide locations we create **perfect parts, tools and components for all industries**. And if you have special requirements, we will find the optimal solution together.

» WEAR PROTECTION FOR THE TOUGHEST REQUIREMENTS



Enormous VARIETY OF GRADES



» The finer the grain, the harder the material.

» The coarser the grain, the better the fracture toughness.

GRADE	Composition	Binder (%)	Grain size	Density (g/cm ³)	Hardness (HV30)	Bending strength (N/mm ²)	Compressive strength (N/mm ²)	Fracture toughness (MPa * m ^{1/2})
GD02F	WC-Co	3,50	submicron	15,10	1980	2200	6800	7
GD03F	WC-Co	5,75	submicron	14,95	1850	2700	7000	9
GD08F	WC-Co	8,00	submicron	14,75	1625	3400	5900	10
GD13F	WC-Co	10,00	submicron	14,50	1540	3600	5700	12
GD16F	WC-Co	13,00	submicron	14,20	1390	3700	5400	13
GD18F	WC-Co	15,00	submicron	14,00	1285	3800	5400	14
GD05	WC-Co	5,50	fine	14,95	1700	2700	6100	10
GD10	WC-Co	6,00	medium	14,95	1600	3000	5500	10
GD15	WC-Co	8,00	medium	14,70	1460	2800	5400	12
GD20	WC-Co	10,00	medium	14,50	1350	3100	4500	15
GD25E	WC-Co/Cr	15,60	submicron	13,90	1370	3600	4900	15
GD30	WC-Co	15,00	medium	14,00	1150	2900	4000	15,5
GD40	WC-Co	18,00	medium	13,80	1025	3000	3700	16
GD45	WC-Co	22,50	medium	13,45	920	3100	3400	18
GD50	WC-Co	25,00	medium	13,20	840	2900	3300	22
GD60	WC-Co	27,00	medium	13,05	770	2900	3200	25
GD10N	WC-Ni	7,00	fine	14,85	1530	2400	5400	10
GD20N	WC-Ni	9,00	fine	14,70	1400	2900	5200	10
GD05NC	WC-Co/Ni/Cr	5,80	submicron	14,85	1950	2400	5500	8,5
GD08NC	WC-Ni/Cr	8,80	submicron	14,65	1670	2600	4900	9
GD10NC	WC-Ni/Cr	6,80	fine	14,87	1630	2470	5100	11,5
GD14NC	WC-Co/Ni/Cr	7,60	fine	14,75	1650	3100	4900	9,5
BD05	WC-Co	6,00	coarse	14,95	1450	2500	5500	15
BD10	WC-Co	9,00	coarse	14,70	1250	2600	5000	16
BD20	WC-Co	10,00	coarse	14,55	1215	2700	4700	19
BD30	WC-Co	12,00	coarse	14,35	1130	2900	4000	20
BD40	WC-Co	15,00	coarse	14,00	1000	2700	3500	24
BD50	WC-Co	20,00	coarse	13,60	850	2800	3300	27

Effective COATINGS

HVOF

High Velocity Oxygen Fuel
High Velocity Flame Spraying

» Carbides

WC/Co	WC/Co-Cr	WC/Ni
WC/NiCrBSiFe	Cr ₂ C ₃ /NiCr	

APS

Atmospheric Plasma Spraying
Plasma Spraying

» Ceramics

Al ₂ O ₃	TiO ₂	Al ₂ O ₃ /TiO ₂	Cr ₂ O ₃
Cr ₂ O ₃ /TiO ₂	Cr ₂ O ₃ /SiO	ZrO ₂ /CaO	
ZrO ₂ /MgO	ZrO ₂ /YO/CeO	ZrO ₂ /Y ₂ O ₃	

EAWS

Electric Arc Wire Spraying
Wire or Rod

» Metals

Cu	Co	Al	Zn	Mo	NiAl	NiCr
NiCrMo	NiCrAlY					

LASER CLADDING

Laser-Beam Powder Coating

» Alloys

Weldable powders (carbides, metals)—
comparable with Stellite, Triballoy,
Colmology, Hastalloy, Inconel or similar

PVD

Coating + colour	Hardness HV 0,05	Working temperature max. in °C
HardTiN®	2600	650
MegaTiN®	2800–3100	1000
HardTiL®	3300	850
HardTiL ULTRA®	3100–3300	1000
HardCrom®	2700	900
HardTiC®	2700	450
DiExtra®	2700/1200	400
DiExtraUltra®	1470/3000	650
DiaPlus®	3300/1400	550
MoldLub®	2000	900
DuraLub®	2800–3000	600
D-Mold®	2000–2500	850
HardSilk®	2600	1100
Galaxy®	3600	1100
Hardinite®	3500–3700	1100
HardTribo®	3000–4000	900
UltraImpact®	2500–3000	1000–1100
UltraImpact EXCELL®	2800–3000	900
HardCut®	4000	900
CVD TiC/TiN	2700	500

COATINGS

for greater endurance

LASER CLADDING



HVOF



The product range, which we optimize through **thermal spray coatings, laser cladding, PVD or CVD coatings**, is limitless. The wear-optimizing coatings all represent technological innovation.

» **LONG SERVICE LIFE FOR TOOLS, PARTS AND COMPONENTS.**

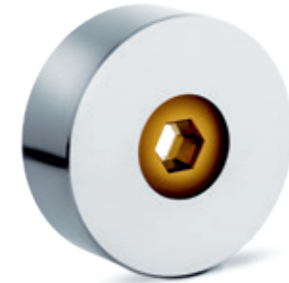
HARDFACTS

- » **PROCESSES**
- » **LASER CLADDING**
High layer thicknesses, extreme layer adhesion, gas-tight and diffusion-tight surfaces
- » **THERMAL SPRAY COATINGS**
HVOF—for carbides
APS—for ceramics
EAWS—for metals
- » **PVD AND CVD COATINGS**
Targeted improvement of the properties of the most diverse materials

APS



CVD



PVD





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takes you to EXTREMES

