



TOOLMAKER SOLUTIONS BY CERATIZIT

INNOVATION

HIGHLIGHTS ROUND TOOL MATERIALS 2016

EN



> 90 YEARS
OF EXPERIENCE



> 20 PRODUCTION SITES
WORLDWIDE

> 100  EMPLOYEES IN R&D

 **> 5,800** CARBIDE EXPERTS

> 10,000,000,000
SINTERED PARTS SOLD

> 800 mill. €
SALES IN 2014

> 90,000 ARTICLES
IN THE PRODUCT PORTFOLIO 

600  PATENTS

ORDER UNTIL **6.30 p.m.**  WITH GUARANTEED
(CET) DELIVERY ON THE
FOLLOWING DAY

Dear customers,

Toolmaker Solutions by CERATIZIT can always offer you the right answer for you to meet your individual requirements as a tool manufacturer. Whether special solutions or standard tools, our solid carbide and cermet rods and individually designed and manufactured near net shape blanks give you a decisive competitive advantage.

See for yourself the innovative highlights we have in store for you in 2016: These include the advanced CTS grade programme as well as our new grades for PCD tools and tool shanks. We have also expanded our end mill blanks programme and now offer drilling blanks from stock.

You can always rely on the highest quality and metallurgically as well as technically competent advice!

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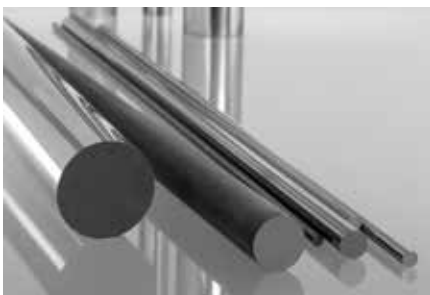
» WE ALWAYS HAVE
THE RIGHT SOLUTION FOR
YOUR APPLICATION. «


Your choice – 3 product lines for solid carbide rods

We offer the choice of three different product lines for solid carbide rods for tool production depending on the requirements and desired price range. Use our s-line (Solid) range for manufacturing high-performance standard tools from high-quality secondary raw materials. Our e-line (Economy) range also offers recognized industry quality with an excellent price-performance ratio. Or use the p-line (Premium) range for high-performance tools: This offers the widest selection of grades and designs for maximum performance in any application.

Choose the most suitable solution – the largest standard program range

Toolmaker Solutions by CERATIZIT offers one of the largest ranges of standard solid carbide rods. Select solid carbide grades with different properties for each application. From ultrafine grain grades for processing super-hard materials through submicron grain grades for universal use to cermet grades for layer processing in ferrous materials. We also hold an extensive range of designs with and without coolant holes and of various different tolerances and dimensions in stock.





**CTS25D:
FOR DIFFICULT
CONDITIONS**

CTS25D: Tough specialist in difficult conditions

The new star in our CTS grade family guarantees reliable processes even under difficult machining conditions.

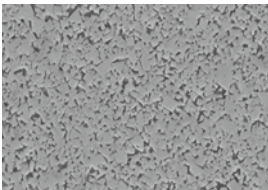
CTS25D completes our CTS portfolio with a relatively tough carbide. Thanks to the high binder content of 12.5% this cutting material minimizes the risk of breakouts on the cutting edges and guarantees uniform cutting edge wear. This grade is particularly suitable for difficult machining conditions, such as:

- ▲ Low cutting speeds
- ▲ Unstable cutting conditions such as the occurrence of vibrations
- ▲ Difficult to machine materials such as titanium or high temperature-resistant materials

Your benefits:

- ▲ High process reliability
- ▲ Cost savings through long tool life
- ▲ Versatile applications for different machines and materials

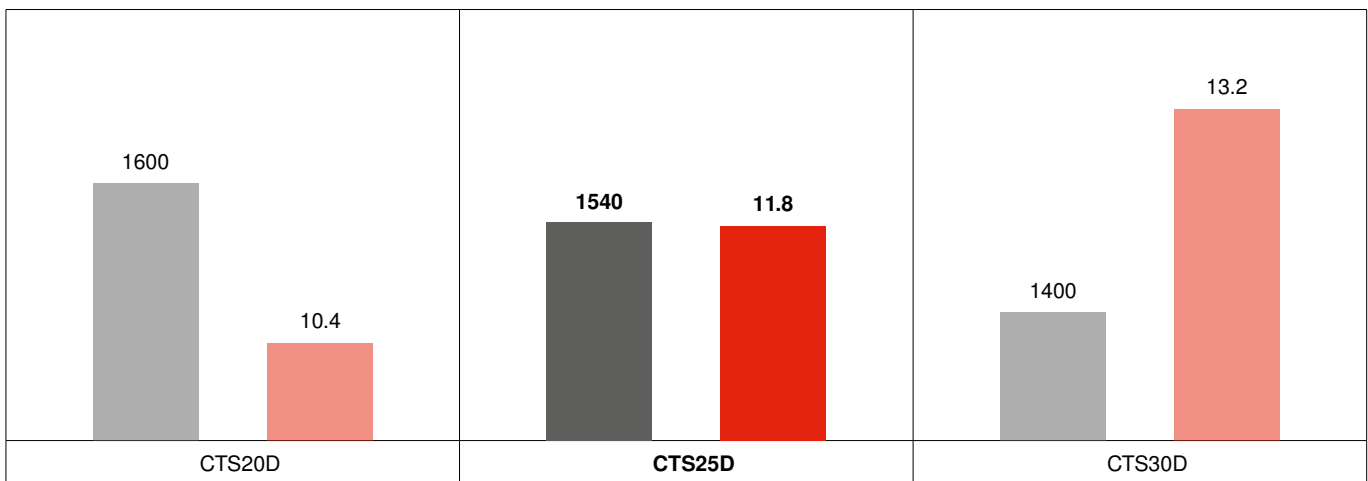
Physical and mechanical properties



Submicron

CERATIZIT grade code	ISO code	U.S. code	Binder [m %]	Density [g/cm ³]	Hardness		Transverse rupture strength		K _{IC} (Shetty) [MPa*m ^{1/2}]
					HV30	HRA	[MPa]	[P.S.I.]	
CTS25D	K20 – K40	C-2	12.5	14.13	1540	91.5	4300	623.700	11.8

Hardness and fracture toughness of CTS grades



■ Hardness [HV30] ■ Fracture toughness (Shetty)



**CTS30D:
FOR SPECIAL
REQUIREMENTS**

CTS30D: New submicron grain range for special requirements

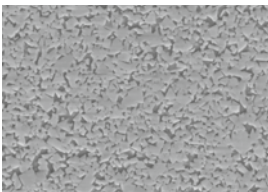
The toughest grade for difficult cutting conditions.

Our new submicron grain carbide grade with 15% cobalt content is suitable for specific niche applications such as threading tools and thanks to its toughness also for difficult machining conditions. CTS30D is distinguished by the highest cobalt content of our grades for metal cutting. With a hardness of 1400 HV30 this carbide represents a kind of gap closure between HSS and customary submicron grain grades.

Your benefits:

- ▲ High process reliability and repeatability thanks to minimal breakouts even in difficult cutting conditions
- ▲ Cost savings through long tool life

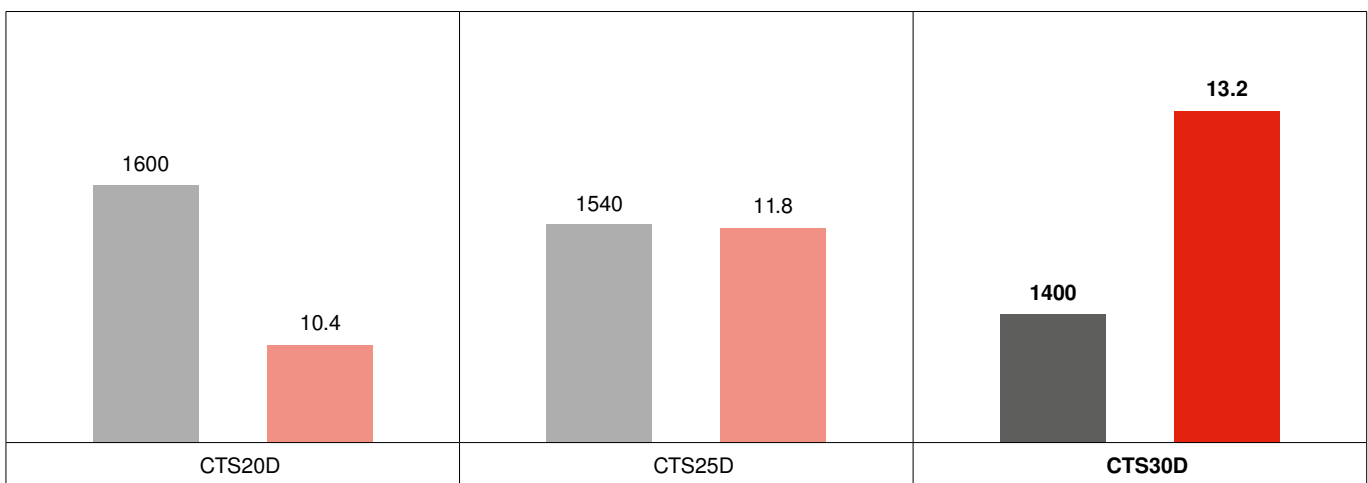
Physical and mechanical properties




Submicron

CERATIZIT grade code	ISO code	U.S. code	Binder [m %]	Density [g/cm ³]	Hardness		Transverse rupture strength		K _{IC} (Shetty) [MPa*m ^{1/2}]
					HV30	HRA	[MPa]	[P.S.I.]	
CTS30D	K30-K40	C-2	15.0	13.84	1400	90.4	4300	623.700	13.2

Hardness and fracture toughness of CTS grades



■ Hardness [HV30] ■ Fracture toughness (Shetty)

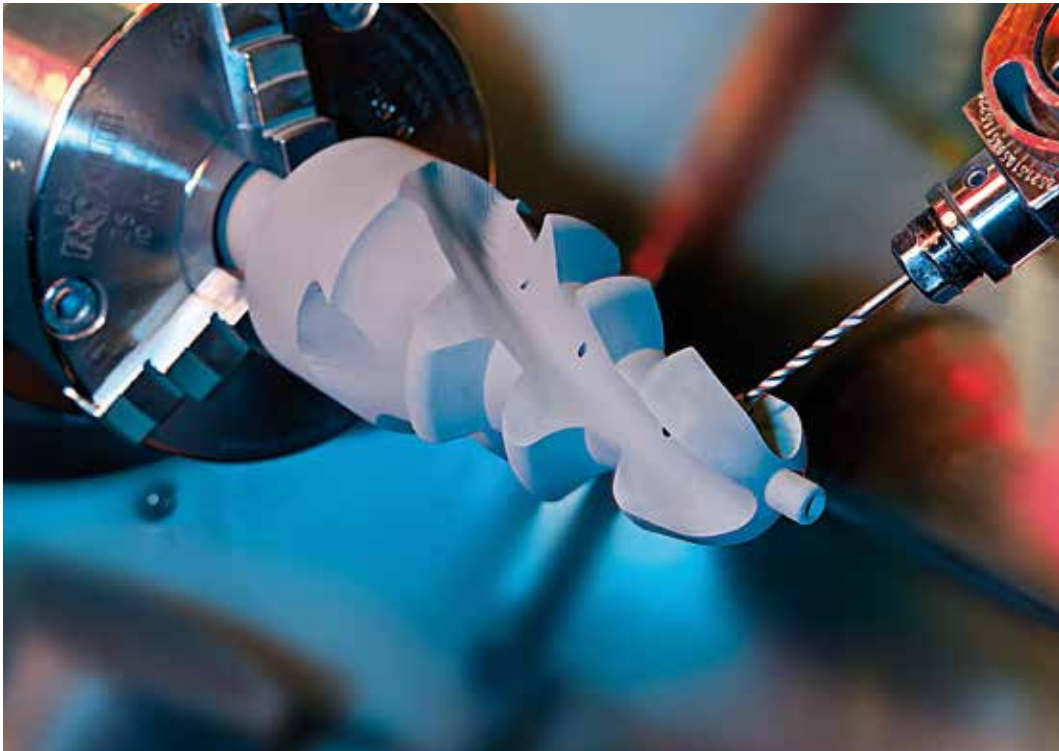


» WE DO NOT ONLY SELL YOU
A PRODUCT, BUT ARE HERE TO
SUPPORT YOU WITH OUR HIGHLY
SKILLED KNOWLEDGE. «

Always there for you

Highly skilled technical experts offer personal advice from the initial inquiry through to order processing and including providing answers to application questions or problems in tool production (such as with grinding and soldering).

We also use our research facilities to optimize tool design using the latest methods and examination procedures; from FEM simulation to damage analysis.



Decide for yourself – tailored blanks

Benefit from tailored blanks and semi-finished products for the production of rotary cutting tools such as solid carbide and PCD tools, replaceable tool head systems or tool shanks. Thanks to years of experience in machining green compact blanks and state-of-the-art manufacturing facilities, we can produce these specifically to your drawings. We produce even complex geometries precisely near net shape and deliver them in a very short time applying smart lean management techniques.



**CTF25E:
FOR PCD TOOLS
AND TOOL SHANKS**

CTF25E: Specialist for PCD tools and tool shanks

Optimum soldering properties and particularly fracture resistant.

The fine grain carbide CTF25E was developed specifically for the production of tool shanks and basic bodies for PCD tools. The coarser grain combined with a higher cobalt content results in optimum soldering properties and increases the fracture resistance. CTF25E remains stable even in unfavourable tool designs with slender shapes and critical transitions. Its high degree of toughness enables this carbide grade to withstand the highest machining forces even in tools with connecting threads.

Your benefits:

- ▲ Simple processing through optimum soldering properties
- ▲ Increased fracture resistance for optimized processes
- ▲ High stability even with demanding tool geometries

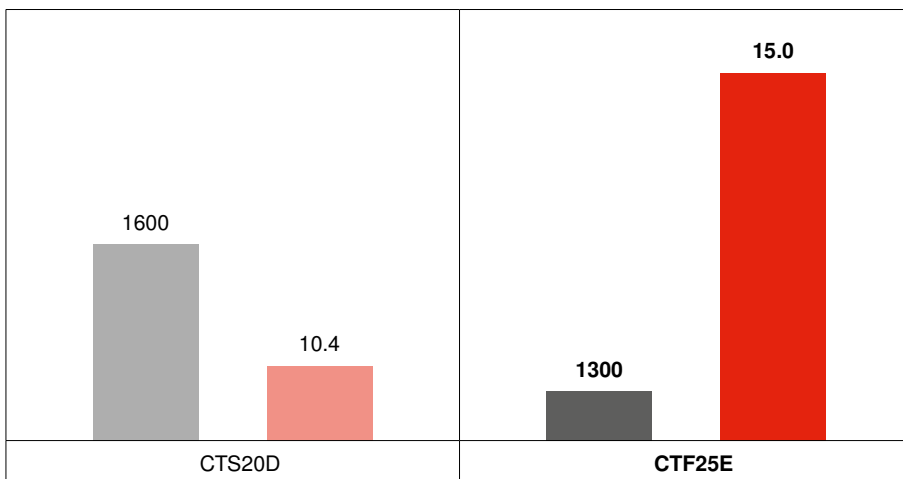
Physical and mechanical properties



Fine grain

CERATIZIT grade code	ISO code	U.S. code	Binder [m %]	Density [g/cm ³]	Hardness		Transverse rupture strength		K _{IC} (Shetty) [MPa*m ^{1/2}]
					HV30	HRA	[MPa]	[P.S.I.]	
CTF25E	K30-K40	C-2	12.5	14.15	1300	89.5	3500	507.600	15.0

Hardness and fracture toughness



■ Hardness [HV30] ■ Fracture toughness (Shetty)



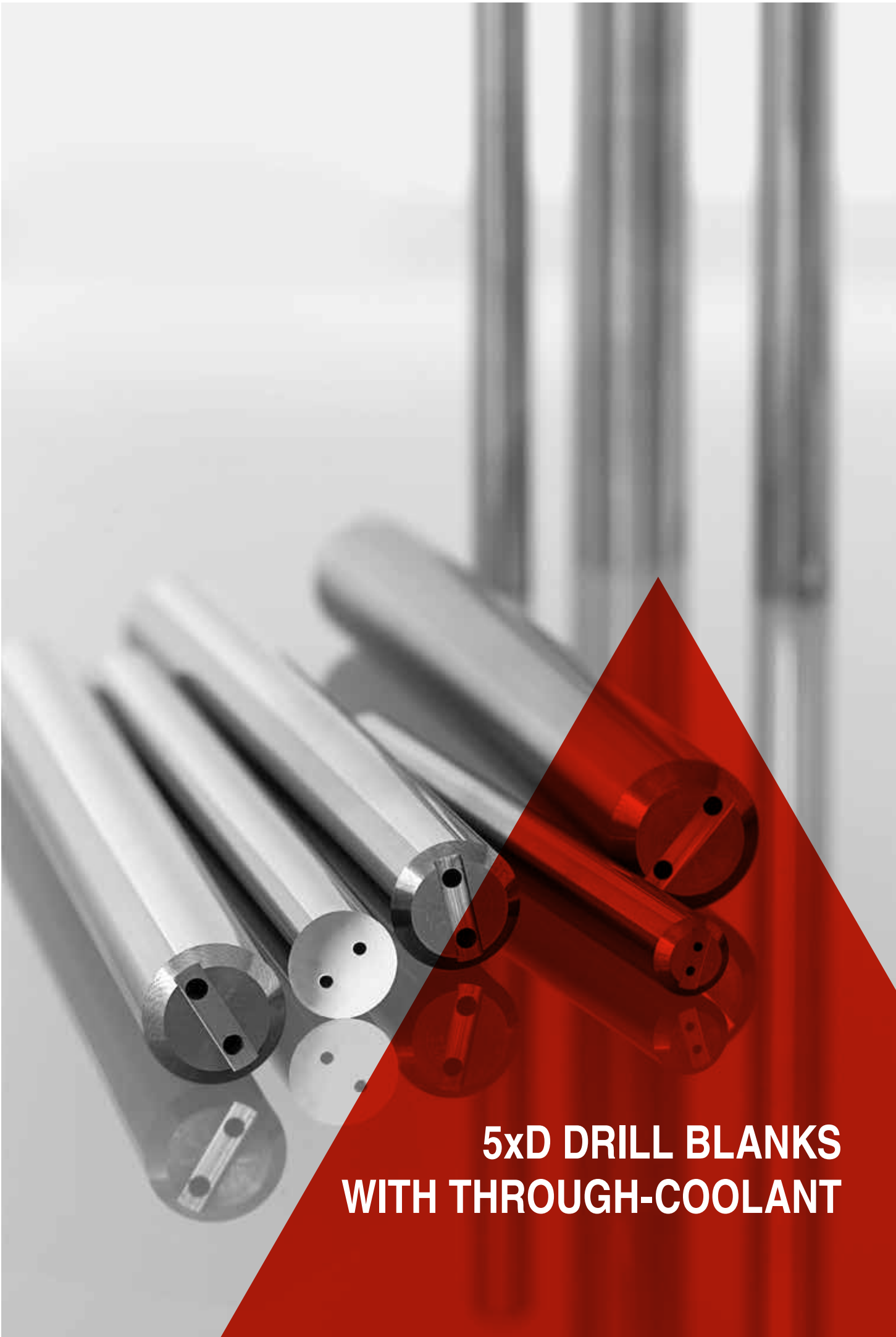
» WE ARE CONTINUALLY
DEVELOPING OUR CARBIDE
GRADES TO ENSURE THAT YOU
ARE READY FOR THE FUTURE. «

Ready for your next challenge

We are continually developing our carbide grades and complement the product portfolio to ensure that your products are always at the cutting edge of technology and become even more efficient. We perform not only basic research and modelling, but also optimize production processes to reduce process costs and ensure the highest quality and environmental compatibility.

Trust in an interdisciplinary team of materials scientists, chemists, mechanical engineers, design engineers as well as manufacturing, environmental and process engineers that cooperate closely with you, our project partners as well as universities and research institutions.





**5xD DRILL BLANKS
WITH THROUGH-COOLANT**

5xD drill blanks with through-coolant

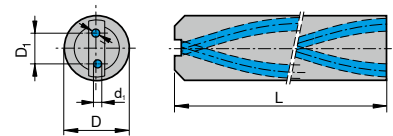
New stock item

Brand new to the stock range are our semi-finished products for a 5xD drill with internal cooling. In addition to the customary high geometric precision their special ground surface improves the extraction security of the tool shank. The end of the shank is designed in accordance with DIN 69090-3 and therefore conforms to the standard for cutting tools suitable for MQL.

Design:

- ▲ With helical coolant holes
- ▲ Ground matt finish to h5-tolerance
- ▲ MQL compliant shank design
- ▲ Outer diameter of 6-20 mm

Drilling blanks



xD factor	D [mm]	L [mm]	Type, description	Dia-tol.		c [mm]	D ₁ [mm]	d ₁ [mm]	Nominal pitch		CTS20D
				[mm]					[mm]	[°]	
5	6.00	67	46GB2 0600/1.6/0.5/18.0-067	+0/-0.005	h5	0.95	1.60	0.50	18.00	46.3	●
5	6.00	67	40GB2 0600/1.9/0.7/22.5-067	+0/-0.005	h5	0.95	1.90	0.70	22.50	40.0	●
5	6.00	75	33GB2 0600/2.2/0.9/29.0-075	+0/-0.005	h5	0.95	2.20	0.90	29.00	33.0	●
5	6.00	75	40GB2 0600/1.9/0.7/22.5-075	+0/-0.005	h5	0.95	1.90	0.70	22.50	40.0	●
5	6.00	82	30GB2 0600/2.7/0.8/32.7-083	+0/-0.005	h5	0.95	2.70	0.80	32.70	30.0	●
5	8.00	92	30GB2 0800/3.4/1/43.5-092	+0/-0.006	h5	1.25	3.40	1.00	43.50	30.0	●
5	10.00	104	30GB2 1000/4.8/1.3/54.4-104	+0/-0.006	h5	1.35	4.80	1.30	54.40	30.0	●
5	12.00	119	30GB2 1200/6.3/1.7/65.3-119	+0/-0.008	h5	1.75	6.30	1.70	65.30	30.0	●
5	14.00	125	30GB2 1400/6.7/1.8/76.2-125	+0/-0.008	h5	1.95	6.70	1.80	76.20	30.0	●
5	16.00	134	30GB2 1600/8.0/2.0/87.1-134	+0/-0.008	h5	2.45	8.00	2.00	87.10	30.0	●
5	18.00	144	30GB2 1800/9.0/2.3/98.0-144	+0/-0.008	h5	2.75	9.00	2.30	98.00	30.0	●
5	20.00	154	30GB2 2000/10.0/2.5/108.8-154	+0/-0.009	h5	3.25	10.00	2.50	108.80	30.0	●

● - stock item

Other grades, dimensions or engineering drawings upon request.



**PROGRAM UPGRADE
END MILL BLANKS**

More than 50 new dimensions for end mill blanks

Now even more choice for your end mills.

We have restructured and expanded our range of end mill blanks to include more than 50 sizes! This wide selection will surely include the ideal blank for any tool. The previously offered fixed lengths according to DIN 6527 K + L have been supplemented with an extensive stock range of additional sizes of the high performance grades CTS20D, TSF44 and TSF22.

All of the new sizes are honed to h5 tolerance creating the optimum conditions for the highest precision and performance of your tools.

Your benefits:

Time and cost savings offered by the wide choice of fixed lengths:

- ▲ Any desired dimension available quickly and directly
- ▲ Reduced machining work (no more complex machining of incompatible fixed lengths)
- ▲ No special production or additional costs necessary

Composition and features

CERATIZIT grade code	ISO code	U.S. code	Binder [m %]	Density [g/cm ³]	Hardness		Transverse rupture strength		K _{IC} (Shetty) [MPa*m ^{1/2}]
					HV30	HRA	[MPa]	[P.S.I.]	

Ultrafine grades

TSF22	K10 – K20	C-2	8.2	14.55	1930	93.7	4400	638.800	9.2
TSF44	K10 – K20	C-2	12.0	14.10	1730	92.7	4600	667.000	9.8

Submicron grain grades

CTS20D	K20 – K40	C-2	10.0	14.38	1600	91.9	4000	580.100	10.4
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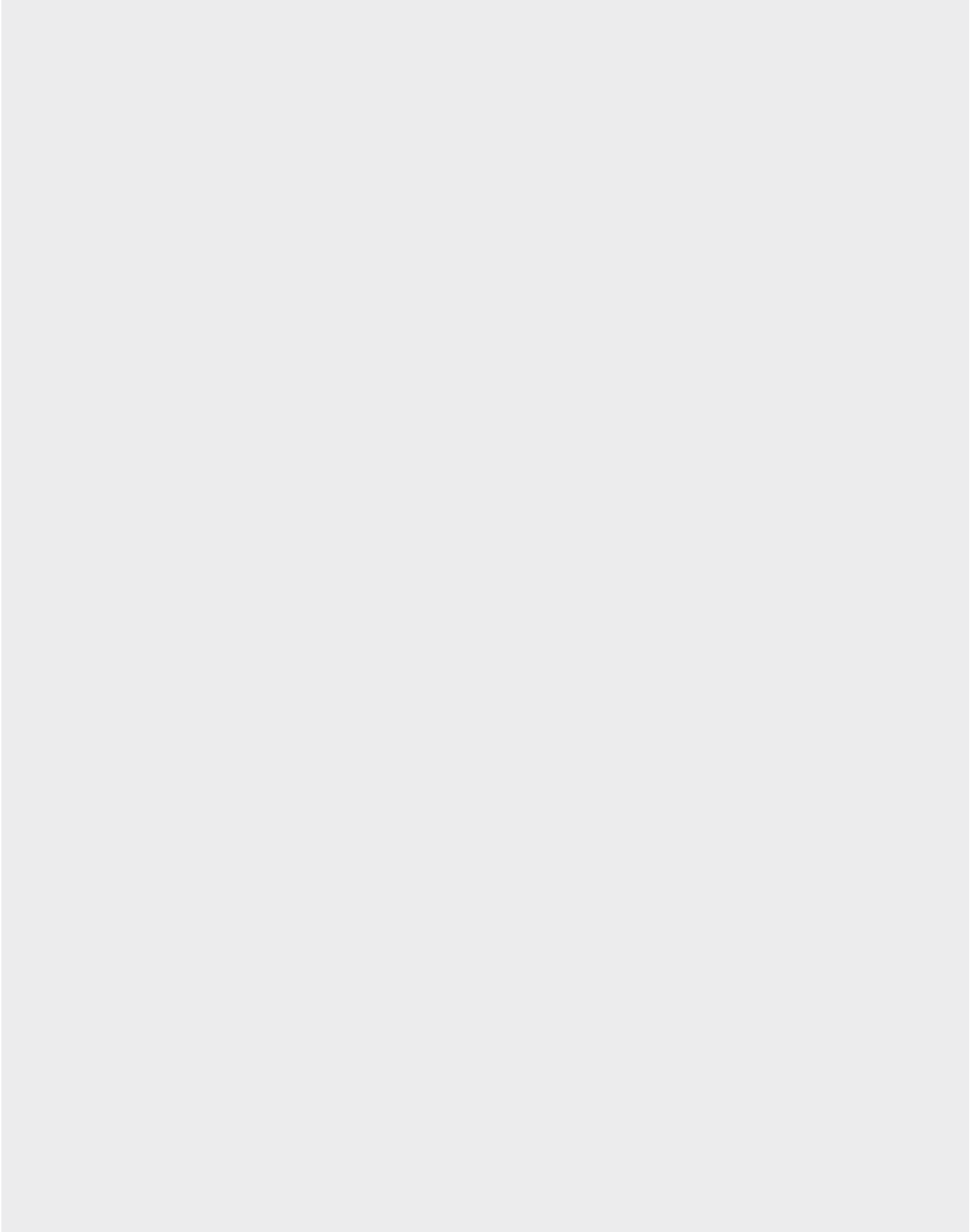


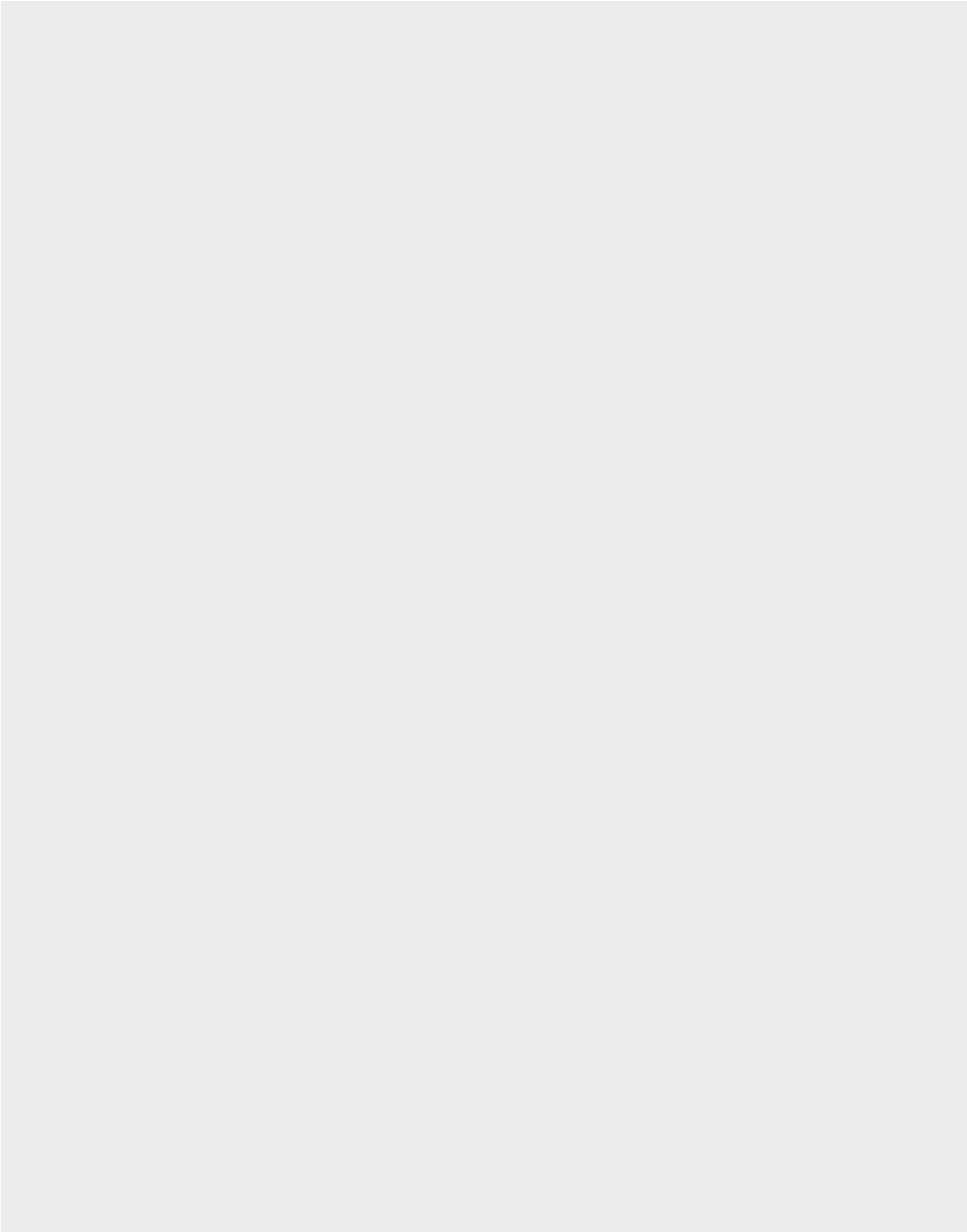
» SOPHISTICATED LOGISTICS
PROCESSES IS YOUR
GUARANTEE OF FAST AND
RELIABLE DELIVERY. «

Quickly and reliably in your hands

Rely on our extensive and flexible production capacities for storage products, custom-made products or large quantities. Our well-stocked warehouse always guarantees the fast and reliable execution of your order. Simply order stock products around the clock online via our e-Techstore and seek advice from our technically competent office and field staff. With more than 50 branches in Europe, America and Asia, we can be contacted at any time worldwide.







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