

High-pressure tools for synthesising diamond/PCD and PCBN



CERATIZIT is a high-tech engineering group specialised in tooling and hard material technologies.

Tooling the Future

www.cerazit.com



Sarah-Jane Breitenreiter
Customer Service Center

**Together towards
profitable growth:
we can give you the
decisive competitive
advantage.**

Carbide – the best for your production

Specialists in diamond synthesis are well aware of the requirements of ultra-hard materials. The massive pressures and high temperatures of the production process place enormous demands on every component. For more than

35 years, Hard Material Solutions by CERATIZIT has been supplying **high-pressure tools for a wide variety of applications** – and always with the Premium seal of approval symbolising our world-leading carbide solutions.

A material like no other

Extremely durable, highly pressure-resistant, reliably temperature-resistant: These are convincing arguments in favour of hard materials from CERATIZIT. Above average service life – even under extreme conditions – **guarantees best possible cost efficiency**. Impressive quality levels ensure lasting satisfaction and reliability.

Adapted to your production processes, individually designed for your application – quite simply: **Your solution precisely**. Be it for the synthesis of industrial diamonds or cubic boron nitride (CBN), for geological research, or for products that are essential to vehicle and aircraft construction. Even the extremes of oil drilling are just one of many challenges our products measure up to. You trust in premium – you get premium.

One partner, one source

In conversation with you, the experts from Hard Material Solutions by CERATIZIT find the solution that gives you **lasting and genuine competitive advantage**. Many years of experience in every industry, know-how along the entire process chain: Only CERATIZIT are

proficient in the **production of hard materials from the raw materials to the blank**. For best production results, maximum service life and highest customer satisfaction.





Advantages & Benefits

Advantages

Benefits

High-quality carbides: extremely fracture-resistant.



Long tool life, fewer interruptions to production, consistent performance over the long term.

Dimensional accuracy.



High finishing precision.

Resistant to compressive pressure.



Ideal for high-pressure processes.

Carbide cubes and pyramids are custom made in various sizes and geometries.



Available for every application: fully customised solutions.

Management of the entire process chain.



High product quality and process security, matching carbide grades.

Flexible production planning.



Short delivery times when required.

On-site technical support:
Field service and product managers with industry expertise.



Long-term partner for any challenge and innovation, support in the shortest possible time.

More than 50 branches worldwide.



Local contact.

Accurate metallurgical control.



Best carbide quality.

Quality control of finished parts.



3-dimensional measurement, ± 2 micron precision.

Penetrant crack testing according to:
ASTM-E.1220.10, ASTM-E.165.9,
ASTM-E.543.9, ASTM-E.433.71, DIN-EN.473
und DIN-ISO.3452.2.



Reliable high quality carbide.

Certified product and process quality according to DIN EN ISO 9001:2000 and ISO 14001.



Optimal solutions for your production, fast delivery times; leading reliability.

Customer-specific premium products

Processing puts extreme stresses on high-pressure tools. Components have to withstand very high pressures and temperatures. You can depend on our **specially controlled carbide grades**; a range of grades that consistently demonstrate peak performance and deliver reliability, security and efficiency.

This means premium quality for high-pressure processes and: Custom-fit solutions with metallurgical properties that are **geared precisely to your needs**. Leave nothing to chance – move over to Hard Material Solutions by CERATIZIT.

Partnership in action

In dialogue with you, we find the grade that is the basis for your premium product. The broad portfolio offers **tools for every high-pressure application**. Solutions are fine-tuned not only in terms of metallurgy; we can also produce

any geometry. **Just the way you want it**. We can also meet your surface finish requirements on request. Your goal, your requirements, your carbide.

Our grades

The following carbide grades are available for cubic anvil systems:

Grade code	Application	Binder [in %]	HV10	Hardness HV30	HRA	Transverse rupture strength [MPa]	Transverse rupture strength [P.S.I.]	Fracture toughness [MPa*m ^{1/2}]
Application group "9–11 % Co Submicron WC"								
CTS18D	Anvil	9	1610	1590	91.9	3800	551000	11
CTS20L (MG18)	Anvil	10	1680	1660	92.3	3700	537000	9.4
CTS22D	Anvil	11	1520	1500	91.2	3900	566000	12
Application group "11–13 % Co Fine/Medium WC"								
CTM22A	Anvil	11	1260	1250	88.9	2900	421000	13.5
CTF24E	Anvil	12	1330	1320	89.7	3000	435000	12

The following carbide grades are available for belt system:

Grade code	Application	Binder [in %]	HV10	Hardness HV30	HRA	Transverse rupture strength [MPa]	Transverse rupture strength [P.S.I.]	Fracture toughness [MPa*m ^{1/2}]
CTM22I	Die	11	1380	1360	90,1	2900	421000	13
CTS12X	Anvil	6	–	Core: 1700 skin: 1750	Core: 92.5 skin: 92.8	–	–	–
CTM22A	Die	11	1260	1250	88.9	2900	421000	13,5



Cubic anvil systems

The production of ultra-hard materials frequently uses cubic anvil systems. This production method makes **extreme demands on the pressure toughness** of built-in elements.

Consequently, the anvils have to be durable and fracture-resistant to work efficiently in high-pressure processes. **Carbide offers all of the**

material qualities that are necessary: Compressive strength is particularly important.

CERATIZIT supplies **anvils with a unit weight in excess of 100 kg**. The working surface can be supplied in a variety of different dimensions. Together, we discuss your requirements and develop: Your solution precisely.

Broad expertise – leading solution

With Hard Material Solutions by CERATIZIT, you can depend on the strict controls that are a matter of course in tool production. Flowing into every customer solution is **expertise from the raw materials to the blank**. A further aspect is the routine that comes with years of experience in various high-pressure processes. These competencies are combined for the optimal enrichment of your production.

The metallurgical composition is **specifically tailored to your exact needs** – which also

applies to the geometry. When it comes to tool grinding, we operate state-of-the-art work centres: Accuracy, close tolerances and certified manufacturing processes provide certainty throughout the process.

The surface finish of course includes the specific grinding direction: **You decide what you want** – CERATIZIT delivers. Controlled precision, customised fine details.





Carbide solutions for die systems

The die system is a proven technique among manufacturers of large-diameter polycrystalline diamonds: The tools are essential here, as they are exposed to enormous alternating loads. Which is no problem for Hard Material Solutions by CERATIZIT.

Carbide delivers on every aspect that is relevant to you. In qualitative terms, **only hard materials are used for ultra-hard materials** – and carbide is pure hard material. This is a sought-after material for all manufacturing processes, where the highest expectations begin with the choice of purchasing partner.

Durability. Performance. Passion.

Three words – one meaning: Partnership. A collaboration based on long experience: Be it in the sintering of tools for high-pressure processes; be it the **production of leading premium products**, which convince not least with maximum service life.

Eye-to-eye discussion for common knowledge about your best process: These attributes are at the heart of cooperation and are the essence of everyday business. Such as for your carbide solutions, which are always created with the **greatest possible durability in mind**. A tool must produce excellent results, not only today but also in the long term!

Transparent process – genuine limits

Of course there are limits, both metallurgical and technological – but Hard Material Solutions by CERATIZIT is familiar with them. And this is crucial, because the lifetime of your solution depends on so many different aspects. **The important thing is to find the right combination**. The hard-material solution that fits optimally into any die system and offers added value.

In many cases, CERATIZIT solutions work significantly longer, if not the longest. Even if different applications, requirements, grades and sintering processes ultimately affect life cycles in different ways, one thing is for sure: **You get the best possible result**. Premium, from trusted supplier to valued customer.

Demand the maximum – and deliver

Dimensional requirements and their stability are also essential for tools to work optimally in high-pressure applications: **Carbide is ideal, even for unusual implementations**. You specify your requirements and you receive solutions with dimensions that fit precisely – even for large-scale demands. Because from time to time, CERATIZIT delivers the largest tools in the world.

Incidentally, the quality features that we have outlined for cubic anvil systems apply in equal measure **to die systems**: These too are manufactured with the highest possible precision. A portfolio that leaves nothing to be desired.

Hard Material Solutions by CERATIZIT

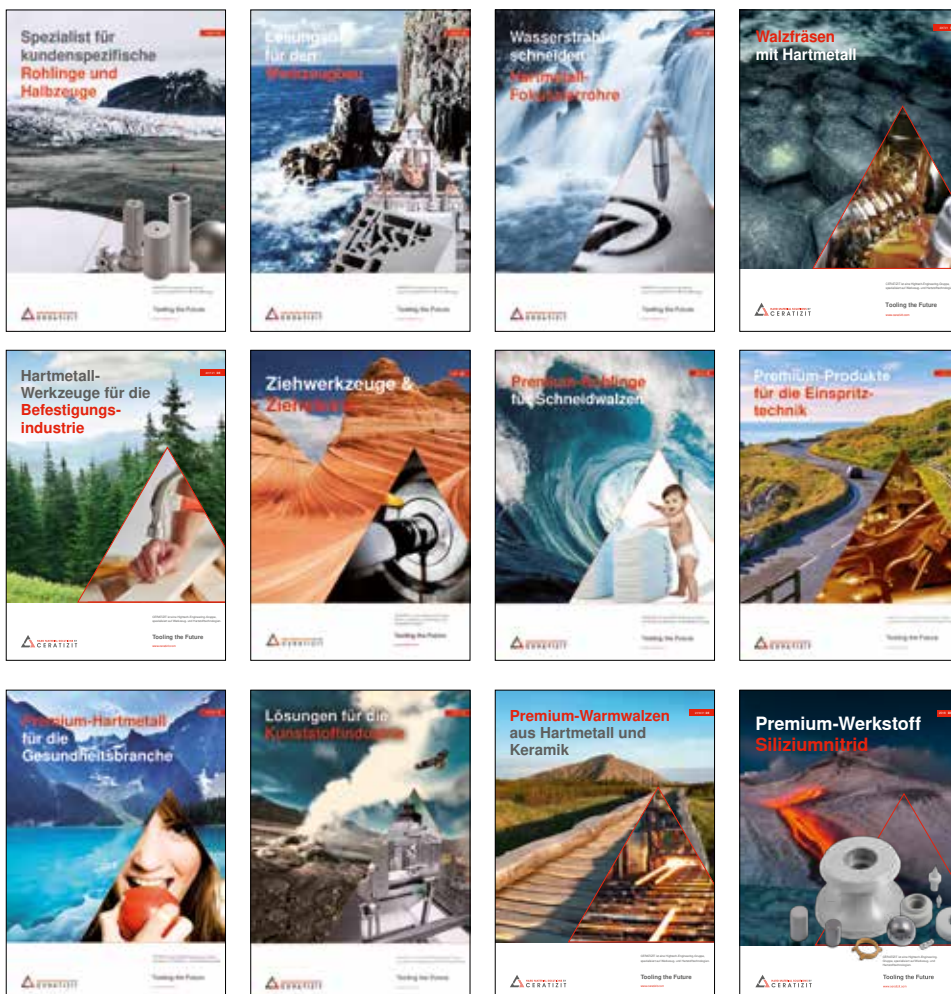
Wear protection for all applications and industries

▲ **Individual carbide solutions** for your application

▲ **Tools for metal forming**

▲ **High-performance components** for tool construction

Extract from our product portfolio



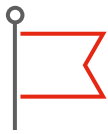
The CERATIZIT Group

For over **95 years**, CERATIZIT has been a **pioneer** developing exceptional hard material products for cutting tools and wear protection.

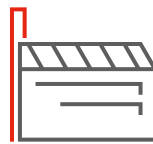
The privately owned company, based in Mamer, Luxembourg, develops and manufactures highly specialised carbide cutting tools, inserts and rods made of hard materials as well as wear parts.

The CERATIZIT Group is the **global market leader** in several wear part application areas and develops successful new types of cemented carbide, cermet and ceramic grades, which are used for instance in the wood and stone working industry.

Facts and figures



1 headquarters
Mamer, Luxembourg



34
production sites



> 70
sales subsidiaries



> 9,000
employees



> 100,000
different products



> 1.000
patents and utility models



> 200
employees in R&D



> 10
innovation awards



> 30%
of products developed
in the last 5 years

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