Solutions for the food industry

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

Tooling the Future

www.ceratizit.com
As we manage the entire process chain, we can always guarantee top quality and smooth collaboration.
Hard materials for maximum efficiency

If you work in the food industry or develop machines and systems for this sector, Hard Material Solutions by CERATIZIT is your partner of choice for tailor-made carbide solutions. Our portfolio offers a premium solution for every application, usually made of cemented carbide, the leading material when your focus is on wear resistance, toughness and long tool life.

Our carbide grades are certified to be entirely non-hazardous for use with food: this has been confirmed by the American Food and Drug Administration (FDA), a worldwide acknowledged authority monitoring food and other products. FDA-certified grades represent a clear advantage for your production as you enjoy safety at all times. Although they contain nickel and cobalt, the ablation rates of these materials are negligible thanks to the metallurgical properties of cemented carbide. Hygienic food combined with a customer-specific carbide solution – that is how it should be, and that is what you get from Hard Material Solutions by CERATIZIT.

As every single product is exactly tailored to the application and machine, it is in principle possible for any needs in the food industry to be met. Our products have already convinced customers in numerous application areas, for example cocoa beaters, paddles, nozzles, crushing machine components and milling segments for brewer’s grains, kneaders for extruders (screw and polygon elements), water-jet nozzles for the cutting of food and plungers for high-pressure pasteurisation – all methods of direct food processing.

In some other applications composite parts consisting of carbide and steel are preferable. Also possible are ceramic solutions. These are often used when high temperatures are important for your production or when chemical resistance is required.

Whichever hard material is the right one for you, your CERATIZIT contact will give you intensive advice regarding the material at any time. Just describe your situation, and we will help you find the best solution for your application. In fact, an individual solution comes about well before your component is made.
Advantages and benefits

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strong arguments</strong></td>
<td>Safety for your production — safety for consumers thanks to effective health protection.</td>
</tr>
<tr>
<td>Many grades are FDA-certified and therefore non-hazardous when used in combination with food.</td>
<td>Metallurgic premium quality: consistently high-quality performance of all grades, maximum hardness, highest possible toughness.</td>
</tr>
<tr>
<td>---</td>
<td>Best possible solution for stable production processes, maximum tool life.</td>
</tr>
<tr>
<td><strong>Best tool life</strong> (compared to solutions without cemented carbide).</td>
<td>Best tool life (compared to solutions without cemented carbide).</td>
</tr>
<tr>
<td><strong>Corrosion-resistant carbide grades</strong></td>
<td>Profitable and economical: less tool changing, reduced downtimes, increased productivity.</td>
</tr>
<tr>
<td>Depending on the application we recommend and offer carbide, carbide composite or ceramic solutions.</td>
<td>Corrosion-resistant carbide grades</td>
</tr>
<tr>
<td>Thanks to CERATIZIT you can manage the entire process chain from the raw material to the blank.</td>
<td>Aggressive solvents can be used for material cleaning without any problem (as with stainless steel).</td>
</tr>
<tr>
<td>Technical advice on site: sales representatives and product managers with technical expertise in the sector, application-related fulfilment of your requests.</td>
<td>Market-leading product quality precisely adapted to your needs, maximum process reliability and holistic know-how.</td>
</tr>
<tr>
<td>More than 70 company sites worldwide</td>
<td>Faultless manufacturing.</td>
</tr>
<tr>
<td>You can choose between a one-off order or an annual framework agreement, in the latter case we guarantee stock availability to a set level.</td>
<td>A contact person for every challenge and innovation; consultation you can trust.</td>
</tr>
<tr>
<td></td>
<td>There is always a contact person nearby.</td>
</tr>
<tr>
<td></td>
<td>Flexible partnership relations — also with regard to delivery time, maximum process efficiency.</td>
</tr>
</tbody>
</table>
Based on the application and material requirements, we offer you parts in solid carbide, carbide-steel composite parts or ceramic (silicon nitride). We are happy to help you with advice on which material is most suitable.

In the end your product will exactly match your needs. Whether you need blanks, semi-finished or ready-to-use products ground to a tolerance of a few micron – everything is possible, the decision is up to you. All kinds of quantities are welcome: from a single unit up to large quantities. You can always count on consistently high premium quality. In fact, only CERATIZIT manages the entire process chain from the raw material to the finished product. Your benefits: full control of the material, perfect product properties, maximum process reliability. Discover new possibilities for maximum economy with Hard Material Solutions by CERATIZIT.
Maximum possibilities

Here is a selection of various practical solutions which you can use as a reference. Obviously this is only a part of the entire range: together with our business partners we are always developing new products and applications. Just contact us and we will help you find the best possible solution for your challenge!

**Good with cocoa**
For cocoa processing you can order various cocoa crusher blades so that your milling processes work flawlessly.

**Large cocoa crushers** are used in cocoa shelling machines. When the shell is broken, the kernel is released and can be separated from the shell fragments by means of a sieving system. Hard Material Solutions by CERATIZIT offers all sizes and weights to meet your needs, and even close tolerances can be reliably observed. Enormous forces released during the processes are no problem for CERATIZIT crushers which are positioned with perfect precision. This avoids undesirable imbalances ensuring flawless processes as well as best production results.

Furthermore we offer rotor pins for milling and shredding. These pins are mainly responsible for reducing cocoa beans to the desired granular size, while rotor and stator pins guarantee optimal mixing.

Numerous types are available, varying not only in design (which is always worked out in keeping with the customer’s specifications) but also in terms of the mounting method. This depends largely on the function of the pins. Some have a classic screw fit, others are mounted using a press fit necessary in some cases to ensure stability and a tight seal (so as to separate the cooling medium and cocoa mass).

**Typical rotor pins are:**
- Solid carbide pin with stop
- Solid carbide pin with thread
- Carbide pin with brazed stop made of steel
- Carbide pin with brazed threaded bush made of steel
**Powerful coffee processing**
Our carbide solutions are also suitable for use in coffee production: we supply coffee milling disks for industrial espresso machines, as well as nozzles and chambers for the production of instant coffee (for instance, for spray drying and agglomeration).

**Milestones in milk production**
Where milk is homogenised, carbide and steel-carbide-composite components are never far away.

We can also supply steel bodies plated with carbide and homogenising pins. And our spray nozzles are used by manufacturers of milk powder.
Mixing of jam

Leading the butchery equipment market
When cutting or skinning meat, thin carbide blades are used – for instance in circular saws or as perforated dies in meat grinders; carbide guiderails for band saws used to divide large pieces also fall in this category.

Meat mincing calls for different, often complex components. These can of course be customised to requirements.
Flexible packaging solutions

In addition to direct food processing, we also offer solutions for the production of packaging. For every processing step we can supply the right tool blank, e.g.:

- Z-shaped bars or tool blanks for metal forming to produce drinks cans or food tins
- Knives for dividing crisps packets and other articles
Other products

When we consider food as a whole, we also need to take pet food into account. For instance, *producers of dog food need food mixers*. These are part of the standard range from Hard Material Solutions by CERATIZIT.

We can also supply *pressure rings for high-pressure processing* (HPP). For manufacturers of pasta or pellets for animal food we provide *perforated dies with high-precision blades*.

Companies producing *individual decanters to separate solid materials or to clarify liquids* can find components which are just as unique as their end products. Typical application fields are the processing of fruit and vegetables for juice, extraction of oils and fat and the filtering of wine and beer.

Our carbide experts are also always creating application-related *milling segments for brewer’s grains or kneaders used in extruders (screws and polygon elements)*.
Exceptional range

Our grade range offers specific solutions for all kinds of applications. These combine long tool life with economy. The FDA certification of numerous grades is your guarantee of food safety – a special quality seal offered by just one brand: Hard Material Solutions by CERATIZIT.

All grades listed here are approved by the FDA as non-hazardous when used with food.

CERATIZIT grades certified harmless by the FDA

<table>
<thead>
<tr>
<th>Grade name</th>
<th>FCN number</th>
<th>Composition</th>
<th>Binder classification</th>
<th>Grain size [µm]</th>
<th>HV10</th>
<th>HRA</th>
<th>Density [g/cm³]</th>
<th>Transverse rupture strength [MPa]</th>
<th>Fracture toughness [MPa*m¹/²]</th>
</tr>
</thead>
<tbody>
<tr>
<td>ph &gt;2</td>
<td>CTF00Q</td>
<td>578 - 585 WC - (TiTaNb)C</td>
<td>&lt;0.3 fine grain</td>
<td>0.8 - &lt;1.3</td>
<td>2100</td>
<td>2060</td>
<td>94.2</td>
<td>14.40</td>
<td>1600</td>
</tr>
<tr>
<td></td>
<td>CTU05R</td>
<td>586 - 591 WC - Ni</td>
<td>2.2 ultrafine</td>
<td>0.2 - &lt;0.5</td>
<td>2350</td>
<td>2250</td>
<td>95.2</td>
<td>15.20</td>
<td>2000</td>
</tr>
<tr>
<td></td>
<td>CTF16R</td>
<td>586 - 591 WC - Ni</td>
<td>8.0 fine grain</td>
<td>0.8 - &lt;1.3</td>
<td>1480</td>
<td>1460</td>
<td>90.9</td>
<td>14.80</td>
<td>2900</td>
</tr>
<tr>
<td></td>
<td>CTM16N</td>
<td>586 - 591 WC - Ni</td>
<td>8.0 medium</td>
<td>1.3 - &lt;2.5</td>
<td>1300</td>
<td>1290</td>
<td>89.4</td>
<td>14.85</td>
<td>2400</td>
</tr>
<tr>
<td></td>
<td>CTS17R</td>
<td>586 - 591 WC - Ni</td>
<td>8.5 submicron</td>
<td>0.5 - &lt;0.8</td>
<td>1600</td>
<td>1580</td>
<td>91.8</td>
<td>14.55</td>
<td>2800</td>
</tr>
<tr>
<td></td>
<td>CTU17R</td>
<td>586 - 591 WC - Ni</td>
<td>8.5 ultrafine</td>
<td>0.2 - &lt;0.5</td>
<td>1760</td>
<td>1730</td>
<td>92.7</td>
<td>14.55</td>
<td>2500</td>
</tr>
<tr>
<td></td>
<td>CTF21N</td>
<td>586 - 591 WC - Ni</td>
<td>10.5 fine grain</td>
<td>0.8 - &lt;1.3</td>
<td>1280</td>
<td>1270</td>
<td>89.2</td>
<td>14.50</td>
<td>2600</td>
</tr>
<tr>
<td>ph &gt;3</td>
<td>CTS12L</td>
<td>578 - 585 WC - Co</td>
<td>6.0 submicron</td>
<td>0.5 - &lt;0.8</td>
<td>1820</td>
<td>1790</td>
<td>93.0</td>
<td>14.80</td>
<td>3500</td>
</tr>
<tr>
<td></td>
<td>CTS20L</td>
<td>578 - 585 WC - Co</td>
<td>10.0 submicron</td>
<td>0.5 - &lt;0.8</td>
<td>1680</td>
<td>1660</td>
<td>92.3</td>
<td>14.45</td>
<td>3700</td>
</tr>
<tr>
<td></td>
<td>CTU05E</td>
<td>578 - 585 WC - Co</td>
<td>2.4 submicron</td>
<td>0.5 - &lt;0.8</td>
<td>2300</td>
<td>2200</td>
<td>95.2</td>
<td>15.25</td>
<td>3500</td>
</tr>
<tr>
<td>ph &gt;4</td>
<td>CTF11E</td>
<td>578 - 585 WC - Co</td>
<td>5.6 fine grain</td>
<td>0.8 - &lt;1.3</td>
<td>1760</td>
<td>1730</td>
<td>92.7</td>
<td>14.95</td>
<td>2150</td>
</tr>
<tr>
<td></td>
<td>CTF12E</td>
<td>578 - 585 WC - Co</td>
<td>6.0 fine grain</td>
<td>0.8 - &lt;1.3</td>
<td>1640</td>
<td>1620</td>
<td>92.1</td>
<td>14.95</td>
<td>2200</td>
</tr>
<tr>
<td></td>
<td>CTF12F</td>
<td>578 - 585 WC - Co</td>
<td>5.8 fine grain</td>
<td>0.8 - &lt;1.3</td>
<td>1730</td>
<td>1700</td>
<td>92.5</td>
<td>14.90</td>
<td>2500</td>
</tr>
<tr>
<td></td>
<td>CTF24E</td>
<td>578 - 585 WC - Co</td>
<td>12.0 fine grain</td>
<td>0.8 - &lt;1.3</td>
<td>1330</td>
<td>1320</td>
<td>89.7</td>
<td>14.30</td>
<td>3000</td>
</tr>
<tr>
<td></td>
<td>CTE30A</td>
<td>578 - 585 WC - Co</td>
<td>15.0 coarse grain</td>
<td>2.5 - &lt;6.0</td>
<td>970</td>
<td>960</td>
<td>85.6</td>
<td>14.05</td>
<td>2800</td>
</tr>
<tr>
<td>ph &gt;7</td>
<td>SNC1</td>
<td>575 - 577 Si₉N₆ - Al₂O₃ / Y₂O₃</td>
<td>9.0 ultrafine</td>
<td>0.2 - &lt;0.5</td>
<td>1550</td>
<td>1530</td>
<td>91.5</td>
<td>3.25</td>
<td>1100</td>
</tr>
<tr>
<td></td>
<td>SNC20</td>
<td>575 - 577 Si₉N₆ - Al₂O₃ / Y₂O₃</td>
<td>11.0 ultrafine</td>
<td>0.2 - &lt;0.5</td>
<td>1470</td>
<td>1450</td>
<td>90.8</td>
<td>3.24</td>
<td>850</td>
</tr>
<tr>
<td></td>
<td>SNCB5</td>
<td>575 - 577 Si₉N₆ - Al₂O₃ / Y₂O₃</td>
<td>12.5 ultrafine</td>
<td>0.2 - &lt;0.5</td>
<td>1500</td>
<td>1480</td>
<td>91.1</td>
<td>3.25</td>
<td>1000</td>
</tr>
</tbody>
</table>

www.ceratizit.com
Ceramic: the material of choice for high temperatures

In some cases ceramic is the ideal choice. CERATIZIT has been working with the manufacturing technology of this hard material for over 25 years, and uses an ultra-modern machine park for production.

You can order blanks as well as finish-ground components for applications where factors like very low density, chemical resistance and low thermal conductivity are crucial. Very high demands in relation to specific strengths and corrosion resistance are also easy to meet, while the resistance to thermal shock is excellent. As ceramic is not electroconductive, it is an ideal insulator.

Of course our silicon nitride grades are also approved by the FDA.

For food technology, we manufacture the following ceramic products amongst others:

- Extruder screws
- Dies
- Indexable knives
- Mixers
- Pumps
- Valves
Supreme quality always

As global leaders with over 95 years of experience in carbide production, we bring together the entire process expertise and manufacturing skills of the CERATIZIT Group under one roof.

▲ Highly skilled and trained specialists in a great variety of fields
▲ We are on top of things for every step of the production process.
▲ Our modern machine park is constantly being expanded and updated.

▲ Optimised production processes reduce process costs, and ensure the highest quality and environmental compatibility of our products.
▲ Independently checked and certified products.

We guarantee maximum quality and assured process repeatability by managing the entire process chain in-house:
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

Specialist for customised blanks and semi-finished products

Carbide tools for the fastening industry

Solutions for the tool and die industry

Premium hot rolls made of cemented carbide and ceramic

Premium material silicon nitride

Solutions for the plastic industry

Premium material silicon nitride

Rotary forging: Premium hammers and mandrels

Premium carbide for the health industry

Premium products for injection technology

High-pressure tools for synthesising diamond/PCD and PCBN

Solutions for the oil and gas industry

Individual carbide solutions for your application

Tools for metal forming

High-performance components for tool construction

www.ceratizit.com
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 successfully develops new types of cemented carbide, cermet and ceramic grades which are used for instance in the wood, metal and stone working industries.

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