Grinding tools from
KREBS & RIEDEL

Upgrade to precision grinding

KREBS
KREBS & RIEDEL

Innovative Grinding Technology since 1895

Tell us what you want to grind – we will supply the wheel.

Perfection for every process.

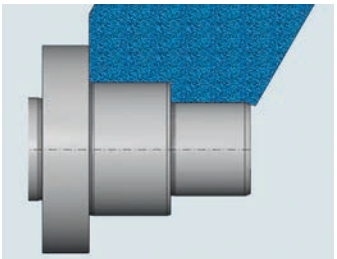
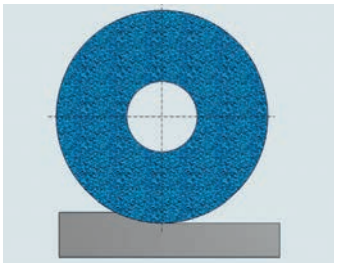
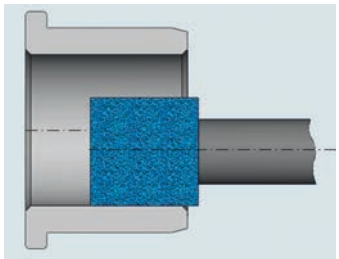
Every product demands its own particular process, and every process tends to have its own set of variables. We will supply you with precisely the wheels to match.

Cylindrical grinding, the most common process. It is used to machine rotationally symmetrical workpieces of varying sizes and materials, inside and outside. This may be anything from tiny parts for use in engines, all the way to enormous rollers, weighing tons, used in the paper industry. We can supply you with wheels in the dimensions, composition and hardness you require … and that produce ultra-precise results.

Surface grinding is used mainly in the manu-facturing of tools and moulds. Surfaces are machined plane parallel to the circumfe-rence of the wheel or its face. The growing diversity of materials involved demands effective, innovative and always lucrative solutions – all of which we have for you.

Creep feed or **deep grinding** usually produces a tool in one single procedure. We have the right tools to cope with large amounts of grinding performed in small infeed in-crements – in other words, large contact arcs between the workpiece and the grinding wheel. Highly porous and quick cutting, they make this process fast and profitable.

Profile grinding processes perimeters using profiled wheels. The workpiece, which could be a threaded or geared tool, defines the shape, structure and specifi-cations of the wheel. For example, we use grain sizes and bonds adapted to radii and profiles. We can pre-profile these quick-cutting, dresser-friendly wheels for you – which saves you time and expense when setting up your system.

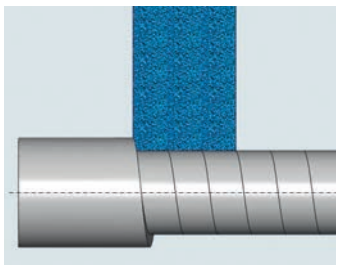

Roll grinding is a process that involves intensive levels of grinding. Different rollers made from very differ-ent materials and in different sizes always require the right wheel. What remains the same, however, is the defined surface quality that you will achieve using our tools. Our ceramic-bonded CBN wheels are often a more economical alternative for roll grinding.

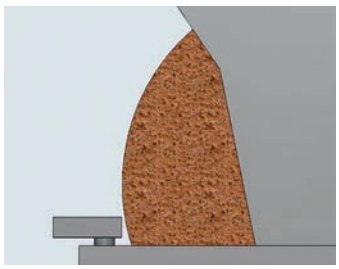
Abrasive cutting, an extremely powerful process for use on a wide range of materials and with a wide range of machinery. These very thin wheels, which may or may not be reinforced with fibres, can be used universally for wet and dry cutting. And they are always much more profitable than alternative processes such as sawing.

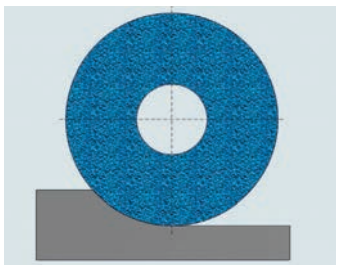
Rough grinding – the process for all things coarse. The machining speed is more important than the surface quality when it comes to deburring, grinding down and cleaning. For this application we can supply you with coarse, resin-bonded wheels – fibre reinforced if high machining speeds are involved. There's no burr our wheels can't cope with.

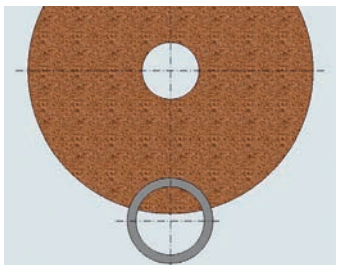
Tool grinding usually means cutting special steels into the right shape – accurately. For this purpose we can supply you with a wide range of suitable grinding cups, plates and bevelled wheels for the production of tools. Show us your tool and we will provide you with the ideal grinding solution.

Whatever you want to manufacture, and whatever process you want to use, we can make the perfect tool for it.









Conventional grinding tools
Diversity meets perfection.

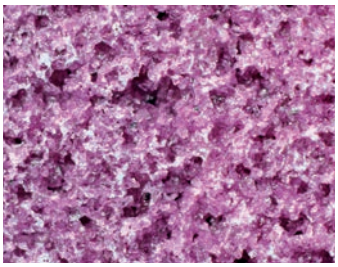
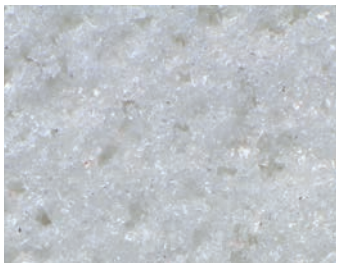
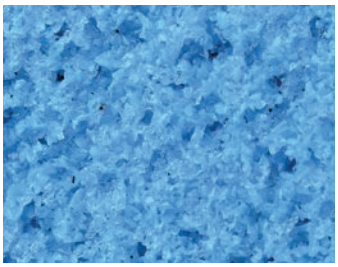
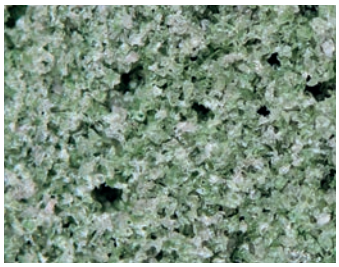
Grinding wheels in vitrified bond

Vitrified bond systems have largely prevailed in precision grinding. A major advantage of vitrified bonding is the controllable porosity. The appropriate microstructure is selected depending upon the size of the contact zone between the work piece and the grinding wheel.

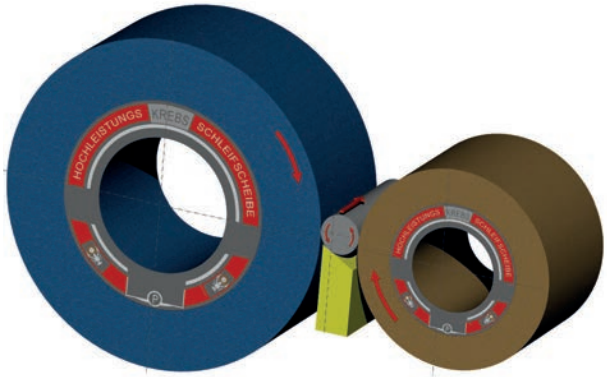
Generally speaking, the larger the contact zone, the more open and porous the grinding wheel needs to be. Highly porous grinding wheels are in particularly needed for productive deep and creep-feed grinding processes to transport the cutting fluid directly into the contact zone and to optimally remove the generated grinding chips and heat. A product of this group is for example the successful KREBS MULTO grinding wheels.

Features:

- Diameter 30 mm to 915 mm
- Grinding segments
- Granular size from F20 to F400
- Precise finishing using CNC technology
- Optimal process adjustment through:
  - » Customised grain types and combinations
  - » Modern bond systems
  - » Optimised pore space composition

Centerless grinding

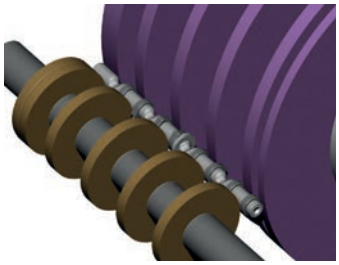


In contrast to external cylindrical grinding between centres, in centerless grinding the work piece rests on a work-rest blade. The work piece is driven and supported by a regulating wheel, which is usually rubber bonded. Centerless grinding is amongst the most complicated and difficult grinding processes.

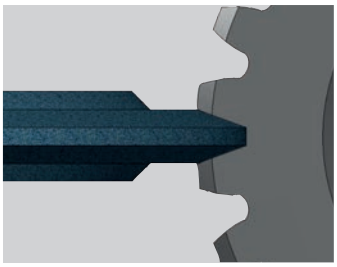
The extremely precise set-up of the machine and the careful selection of the grinding tool require great knowledge and experience. KREBS & RIEDEL provides economical solutions with vitrified and resin-bonded grinding wheels for both plunge and through-feed grinding.

Advantages:

- Free-standing workpiece
- Workpiece support linear
- Long, slim components can be sanded
- Fast workpiece change
- Predestined for mass production

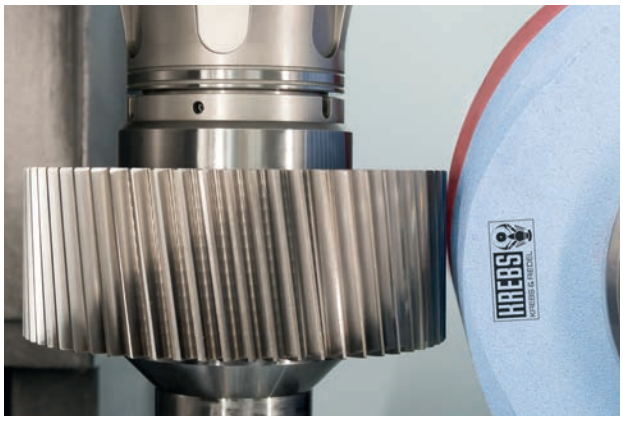



Gear Grinding
Precision – tooth for tooth.



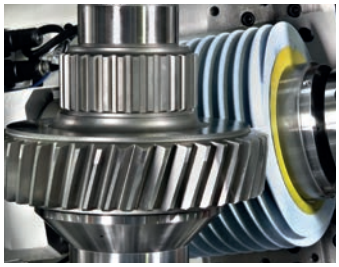
Gear Grinding

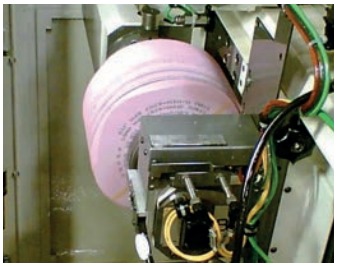
Gears are among the most important machine elements in the construction of transmissions, vehicles and machinery. The requirements placed on these products in terms of power transmission or running smoothness continue to rise steadily. Grinding is therefore one of the most important methods for fulfilling these high quality demands.

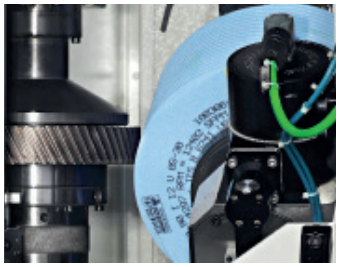


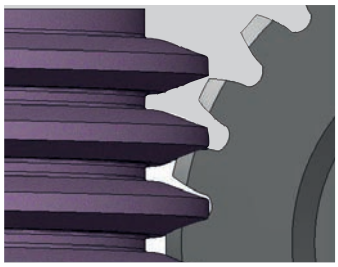
The grinding wheel dimensions are specified by the grinding machine systems being used or by the particular task. Working speeds lie between 40 – 63 m/s, on the newest machines even as high as 70 – 80 m/s.
White high-grade aluminium oxide, special aluminium oxide mixtures or sintered aluminium oxide mixtures are preferably used as the grinding media.

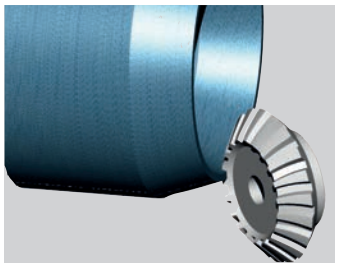
Most recently, the application of dressable vitrified CBN grinding wheels to gear grinding has also intensified. For this purpose, KREBS & RIEDEL can also offer you a product programme that we are continuously developing further and perfecting.

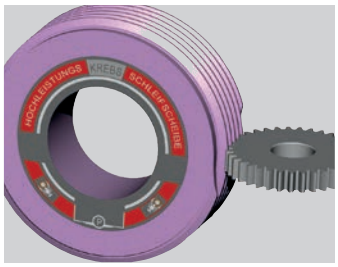


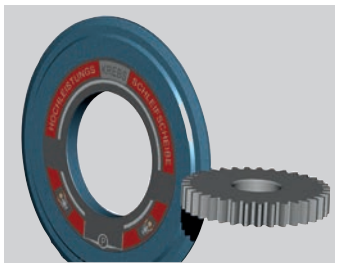


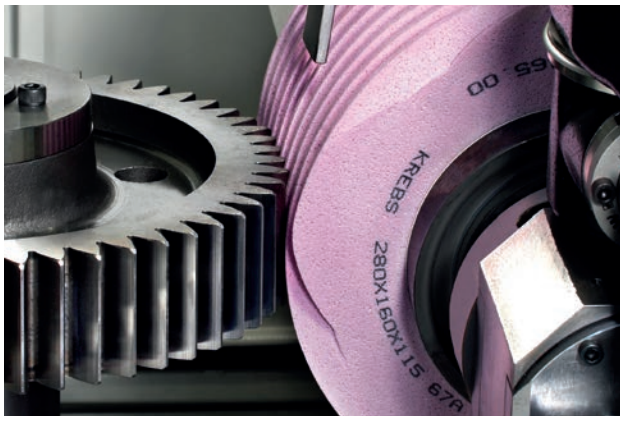










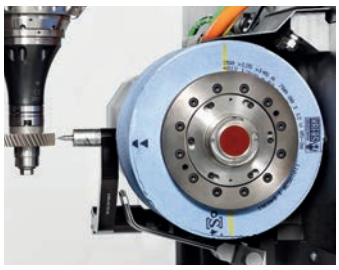


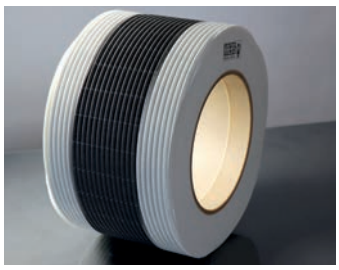
Depending on the process by which the tooth profile is generated, a differentiation is made between discontinuous and continuous generative grinding or profile grinding:

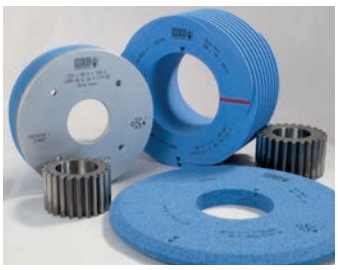
Discontinuous generative or profile grinding is characterised by the fact that complete tooth spaces, or in the case of older machines just the flanks of the teeth, are ground by means of shaped wheels that are chamfered on both sides. The kinematics of the machine are less complicated; the machining method is intended for medium-sized batches, medium-sized and large modules, and varying ranges.

In continuous generative or profile grinding, a worm grinding wheel and workpiece rotate synchronously with one another while the workpiece is simultaneously moved past the worm grinding wheel at several traverses. The requirements on the kinematics of the machine are demanding. The method is economical for the bulk production of small- and medium-sized modules.

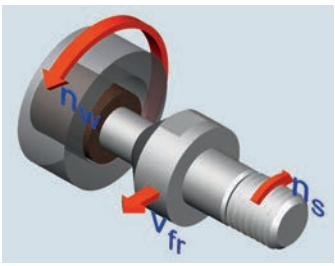
The grinding of spiral and bevel gears is a special process and is undertaken primarily with grinding rings on grinding machines by Klingelnberg and Gleason specially designed for this purpose.







Vitrified-bonded CBN and diamond tools
The ultimate in grinding.



The toughest abrasive in the world

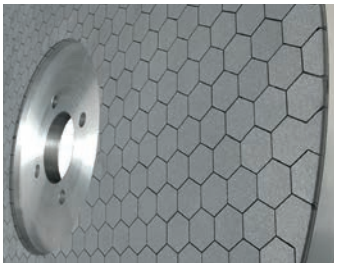
As always, the hardest materials in the world – CBN and diamond – offer the greatest precision when grinding extremely hard iron and steel alloys or hard, brittle materials, and offer the best stock removal rates and the longest wheel life.

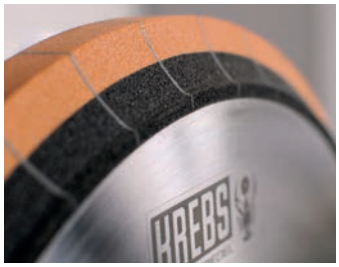
Cubic boron nitride, or CBN for short, is synthesized, similar to diamonds, from a hexagonal boron nitride at 50 to 90 kbar and 1,800 to 2,700°C. It is especially suitable for hard-to-machine or high-alloy hardened steels starting at 54 HRC, such as high-speed, tool or chrome steels, nickel-based alloys, powder metallurgical steels, or white cast iron.

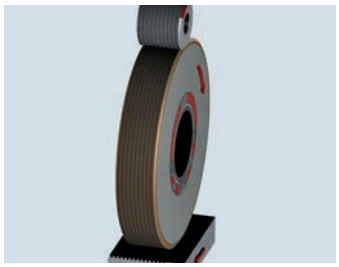
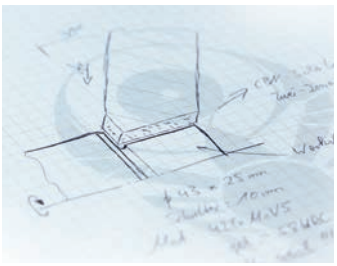
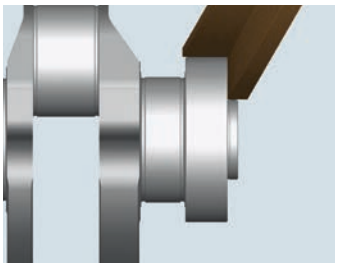
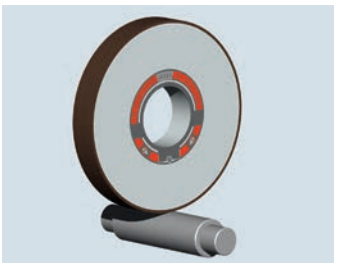
Diamonds are primarily used to machine brittle materials such as cemented carbide, ceramics, glass, granite, GFRP, semi-conductor materials, or wear coatings.

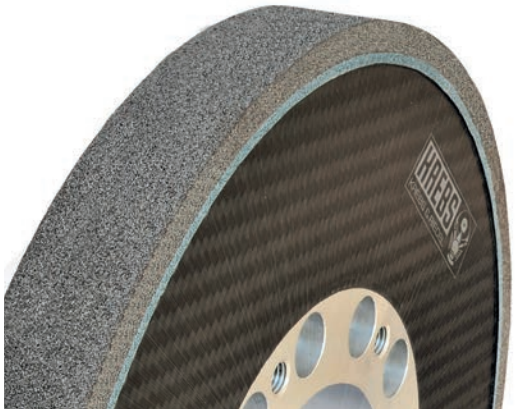
Features:

- Diameter 3 mm to 900 mm
- Operating speeds up to vc = 160m/s
- Granular size from 25 µm to 251 µm
- Process adjustment through:
  - » Various grain types
  - » Targeted introduction of porosity
  - » Tailored bond systems







High Composite

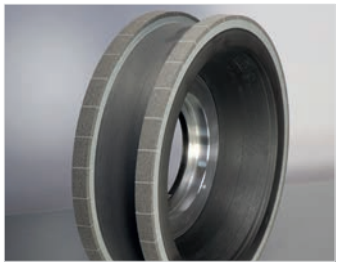
HI-COMP is a new wheel body variant for CBN and diamond abrasives. The high proportion of carbon fiber used to form the KREBS HI-COMP wheel hubs guarantees maximum strength with minimum weight. Depending on the process requirement different sizes are used and this ensures optimal and customized solutions to meet end users specific requirements.
Having been under development for over two years the HI-COMP wheel bodies are up to 75% lighter than comparable steel bodies. This not only guarantees easy handling for machine set-up personnel during installation but also dramatically decreases the load on the grinding spindle during grinding.

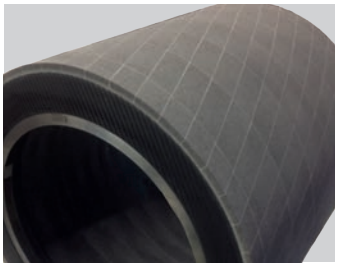
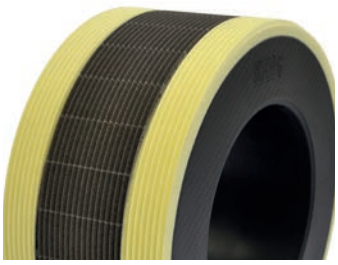
Advantages:

- Improved surface quality
- Increased part tolerances
- Reduced flaws
- Good grinding characteristics even under unstable conditions
- Improved performance of the grinding spindle
- Body can be recoated with abrasive after initial use

Application:

- Grinding zones with interruption of cut
- Grinding of smaller intricate parts
- Grinding processes with altering contact conditions
- Higher surface requirements (contact ratio Rmr)



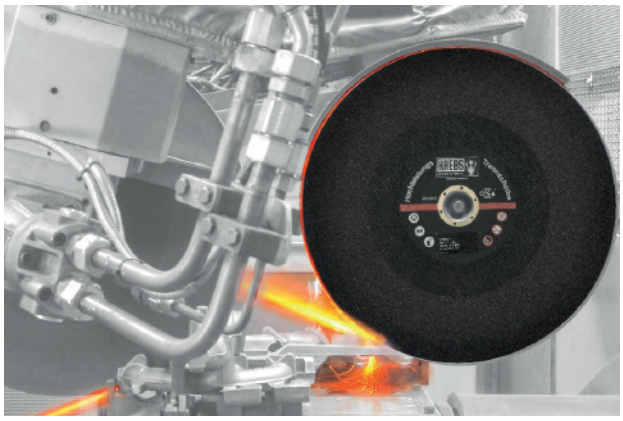
Grinding wheels in resinoid bond
Extensive product range

Cut-off wheels

The resinoid bond is a bond type well tailored to the grinding task. In resinoid bonded, resins are used as binders, into which fillers are mixed in addition to the abrasive grains. Resinoid-bonded grinding wheels are characterised by having a good cutting performance and cool grinding. Compared with vitrified bonds, resinoid bonds are known as soft, fast and cool grinding bonds. They have a very wide range of applications.

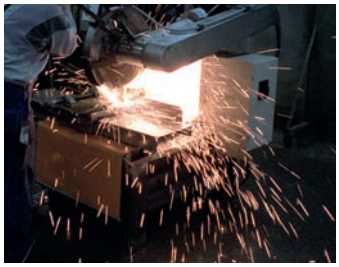
Depending upon the application, the bonds can be used for either dry or wet grinding. Based on the production methods and the low curing temperatures, grinding tools with resinoid bond are usually the least expensive among the different bond systems. Due to the low curing temperature, they can easily be used for all types of abrasives.

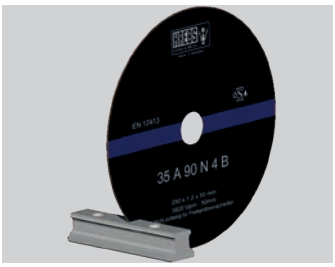
KREBS & RIEDEL offers high-performance cut-off wheels which include fiberglass reinforcing for extra strength and safety. These wheels can be produced with depressed or straight centers depending upon the application.

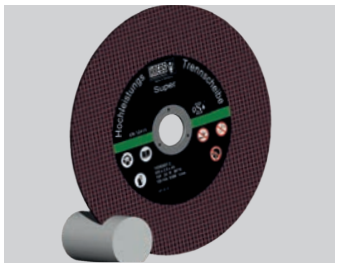


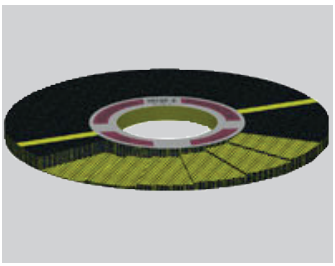
Features:

- Diameter 50 mm to 900 mm
- Granular size from F12 to F400
- Optimal process adjustment through:
  - » Customised grain types and combinations
  - » Modern synthetic resins
  - » Optimised filler selection









Rough grinding

Rough grinding wheels are commonly used in foundries and steel mill snagging operations. Almost all products produced in this sector of the metal working industry can be processed using a rough grinding wheel because of their high-removal rates.

KREBS & RIEDEL offers high performance rough grinding wheels without fiberglass reinforcement with a diameter up to 900mm and a working speed of 63 m/s. Rough grinding wheels with fiberglass reinforcement are available in diameters from 300mm to 600mm and with widths of 20mm up to 80mm and working speeds of 80m/s.

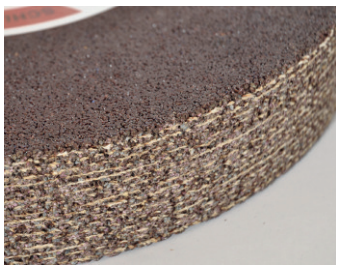
These grinding wheels are available with a variety of aluminum oxide, silicon carbide and zirconia alumina specifications.

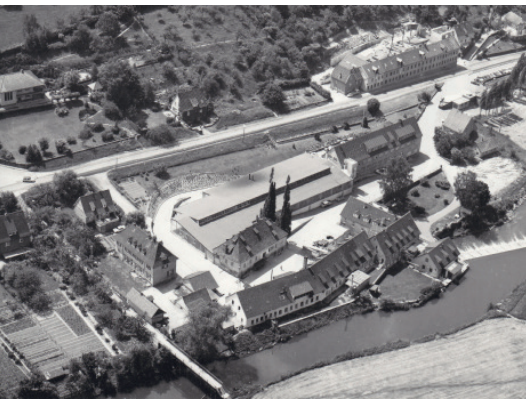
Advantages:

- High stock removal rate
- Longer tool life
- No burnmarks
- High cutting capacity per unit time, therefore short grinding times
- Cool cutting and energy-saving work

Application:

- On straight/ bi-conical hand machines
- On sanding blocks
- On pendulum grinding machines
- Grinding manipulators (ANDROMAT)





The right tool for every occasion.

We have been developing and producing aluminium-oxide- and silicon-carbide-based grinding wheels for more than 120 years, and CBN tools for more than 30 years.
This experience and vision forms the basis for our ongoing innovation. Our service is driven by our determination to provide you always with the best possible solution for your tasks.

Their sound knowledge of materials, processes and machinery enables our application technicians to advise and assist you with great precision, including in the planning phase. This they do using every means of communication that we and you possess, and at all times.

Unusual cases are a challenge that we particularly relish. If necessary, we will perform testing together with you until we have developed a solution that exactly meets your requirements.

We look forward to hearing from you.

KREBS & RIEDEL *Schleifscheibenfabrik GmbH & Co. KG*
Bremer Str. 44, 34385 Bad Karlshafen, Germany
Phone: +49 5672 184-0, Web: www.krebs-riedel.com
Mail: sales@krebs-riedel.com

Trading subsidiaries in China, Shanghai and India, Bangalore:
sales@krebs-riedel.cn.com, sales@krebs-riedel.in

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