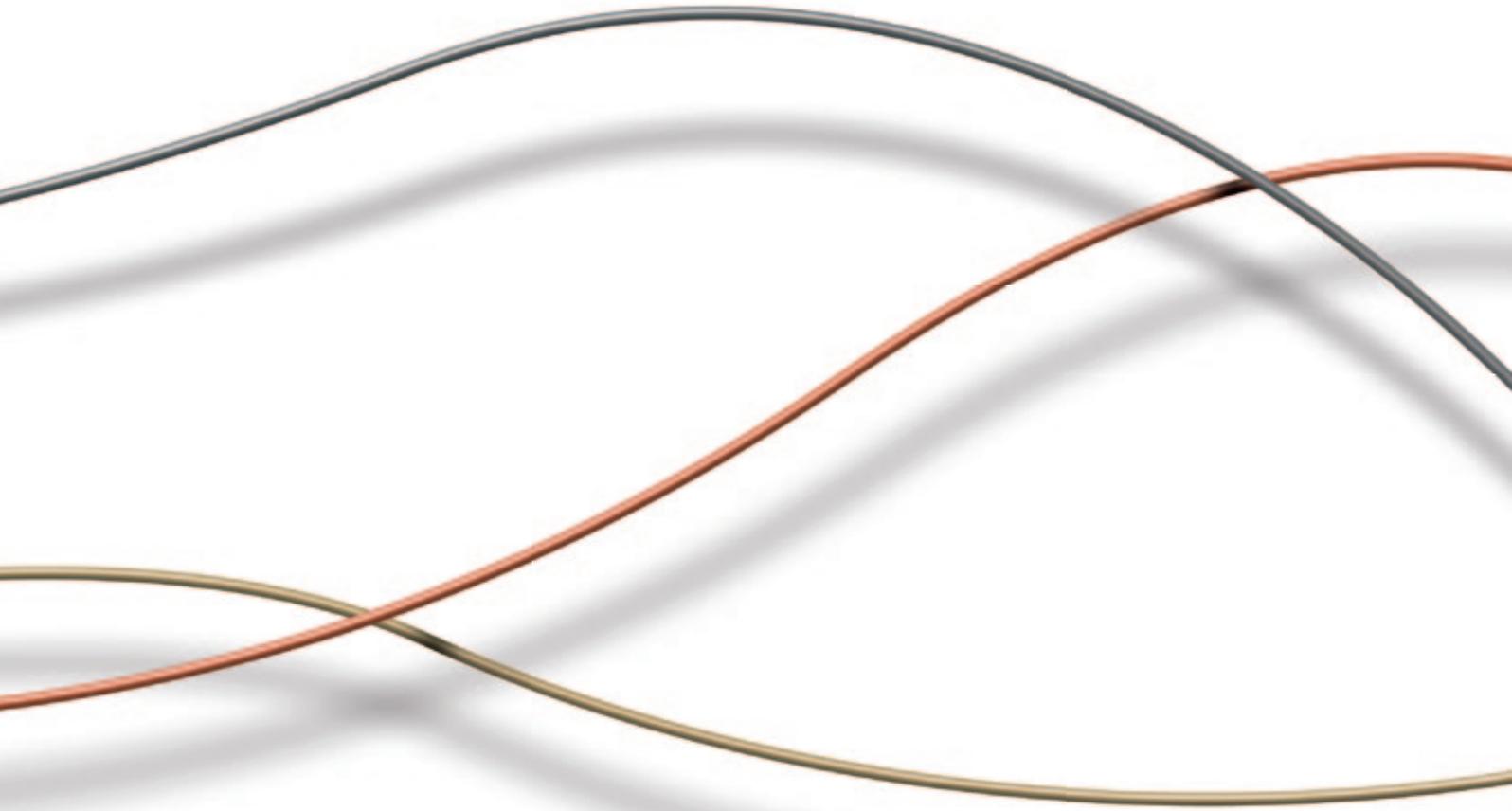


Berkenhoff GmbH
Company Profile



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With high-tech precision wire under the umbrella brand 'bedra', we at Berkenhoff GmbH stand for innovative product ideas, market-driven products, and first class services in all areas of our product range. We consistently engage with the complex challenges of the various industries, and develop intelligent product solutions for the individual requirements of our customers around the world. In this way, we drive the industries forwards, and are continuously setting new standards on the market.

We always want to represent a new class in all our product areas and services. As a customer-oriented market leader, we fulfil special product requirements in order to increase the customer advantage, and to guarantee long-term customer satisfaction. Excellent quality, continuous improvement and absolute reliability are our standard.

Your Berkenhoff team

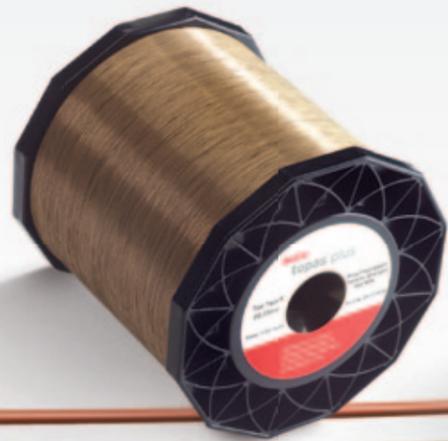
bedra – umbrella brand of Berkenhoff GmbH

WITH ITS UMBRELLA BRAND BEDRA, BERKENHOFF IS SYNONYMOUS WITH INNOVATIVE HIGH-TECH PRECISION WIRE FOR SPARK EROSION, WELDING AND BRAZING TECHNOLOGY, ELECTRONIC COMPONENTS AND SPECIAL APPLICATIONS. OUR CERTIFIED FINE WIRE SOLUTIONS MADE FROM NON-FERROUS METALS ARE PERFECTLY ADAPTED TO THE FOLLOWING BRANCHES OF TECHNOLOGY:

bedraedm

Spark erosion

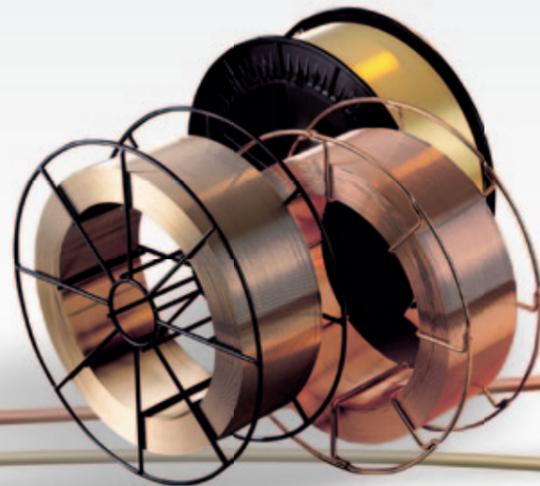
bedra wire, specially developed for spark erosion cutting in tool and mould engineering, is used in the manufacturing of complex mould and stamping tools, as well as in the direct treatment of complex precision parts. The patented functional coatings of the bedra EDM wire electrodes allow massive increases in the productivity of manufacturing processes, as well as making it possible to achieve the highest levels of precision and surface quality.



bedrawelding

Brazing and welding

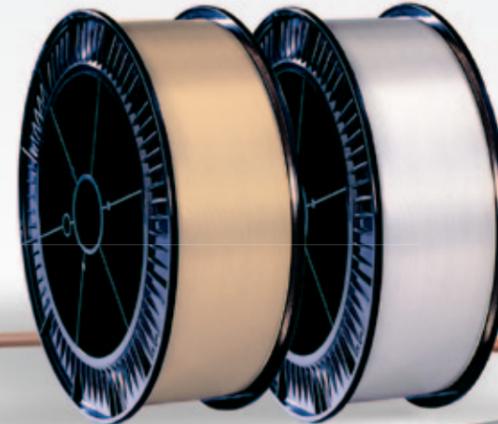
bedra brazing and welding wire from the bercoweld series stand for durable, material closure joints, and are characterised by excellent gap-bridging and high corrosion resistance. The bercoweld wire electrodes are used in various alloys and conditioning systems, particularly in the automotive industry, traffic engineering, plant engineering and civil engineering.



bedraelectronics

Electronics

Highest demands in terms of precision, reliability and longevity for high-quality miniaturised components: these are the requirements of bedra customers in the electronics industry. bedra is the leading manufacturer of electronic wire, and develops round, flat and square wire – plain or coated, knurled or grooved, based on the specifications of the individual customer.



bedraspecialties

Special applications

Individuality for special markets: wire solutions from bedra serve the widest variety of customer requirements. From fine wire for medical technology, through anchor wire in toothbrushes, optical wire for high-quality spectacle frames, all the way up to resistance and special wire for other application areas, we supply optimal wire solutions to a wide range of industries.



bedra

Made in Germany – for over 120 years



Berkenhoff

1889 Carl Berkenhoff founds the Berkenhoff company when he sets up a "fine wire drawing facility" in the Rehmühle at Herborn-Merkenbach (Hessen)

1893 Invention of the first multi wire drawing machine, with a series of four consecutive drawing operations (patented as "Reichspatent")

1923 The trading company is transformed into a corporation: Founding of Berkenhoff & Drebes AG

1965 Setting up a wire electroplating shop

1979 Introduction and patenting of the first coated EDM wire under the name cobracut® for the machinery supplier Agie

1981 Merger of the Merkenbach wire factory with the metal foundry and wire factory in Heuchelheim-Kinzenbach, forming what is now Berkenhoff GmbH

1990 Construction of new wire-drawing, annealing and electroplating halls

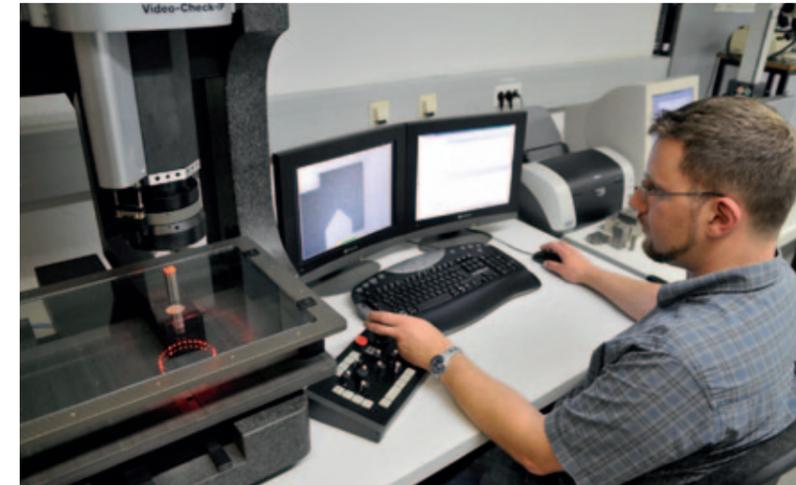
2000 Global market leadership for EDM wire

2006 Introduction of the patented topas®plus high-performance EDM wire

2008 Commissioning of the new wire-drawing centre for special wire in Kinzenbach

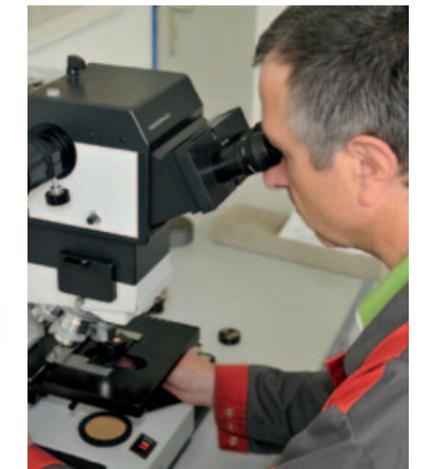
2010 Optimisation of the EDM wire manufacturing process at the Herborn-Merkenbach location, through the use of product group-oriented production cells

Berkenhoff today – innovation through research and development



Today, Berkenhoff GmbH operates two manufacturing facilities in Germany, and is active through its agents and distribution companies in over 80 countries. With bedra as its umbrella brand for high-tech fine wire, we shape the market with numerous patented innovations. This is how we understand our market promise to produce "intelligent wire".

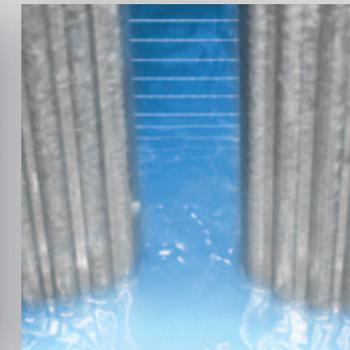
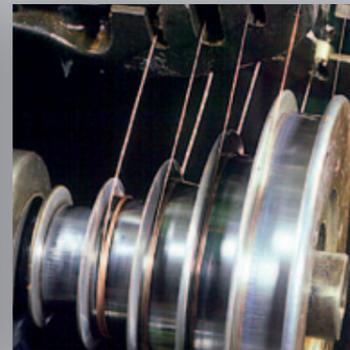
The centrepiece of our research and development programme is the Berkenhoff Competence Center (BCC) – Innovation and inventiveness are at home here. Brilliantly trained specialists and engineers, state-of-the-art machinery and intensive cooperation with industry and universities make it possible to achieve unique research results and short development times.



Through tight integration of marketing and sales, both recent market analysis and customer suggestions are incorporated into the development process. In this way, tailor-made and market-shaping product innovations are produced, ensuring the continuous advancement of the bedra brand in terms of quality, competence and performance.

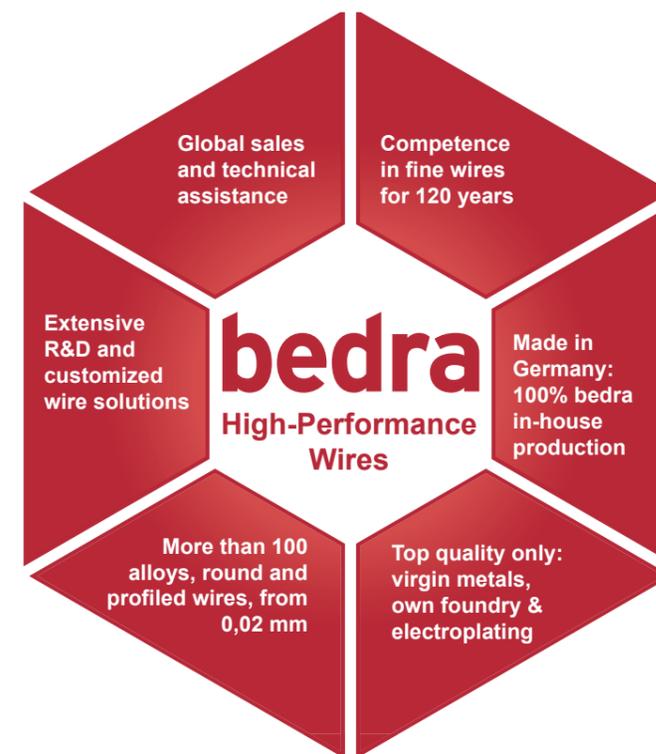
Quality by tradition, high-tech as a mission

NO OTHER MANUFACTURER OF FINE WIRE OFFERS THE ENTIRE PRODUCTION CHAIN FROM A SINGLE SOURCE: FROM CASTING, THROUGH ROLLING AND DRAWING, ANNEALING AND ELECTROPLATING, ALL THE WAY UP TO FINAL PACKAGING, EVERY PRODUCTION STAGE IS COMPLETED AT THE BERKENHOFF FACTORY IN GERMANY.



More than 30 million kilometres of fine wire in over 100 alloy variants leave our two plants every year. The exclusive use of new metals means the alloys in our products are absolutely pure, and allows genuinely continuous quality assurance. This independence ensures our flexibility, and allows us to respond to individual customer requirements. Furthermore, we are able to guarantee our customers consistently uniform quality and reliable processing at

the highest level, certified under DIN EN ISO 9001:2008. Environmental protection is understood at bedra as a task for the entire company. The precautions taken go beyond water, air and soil protection. With a multi-level network of ecological obligations, economic responsibility and technological care, our environmental management system is distinguished with a certificate under ISO 14001:2009.



Original bedra brand wire

The highest product performance, reliability and service have made the bedra brand a global market leader, as do the many other advantages of our fine wire. This unique brand quality is our standard, and the guarantee for the success of our customers.

bedra edm – spark erosion

SINCE THE BEGINNINGS OF SPARK EROSION CUTTING, BEDRA HAS BEEN DECISIVELY INVOLVED IN THE CONTINUING DEVELOPMENT OF TECHNOLOGIES AND MANUFACTURING PROCESSES IN TOOL AND MOULD ENGINEERING. THE PATENTED PRODUCT COBRACUT® WAS DEVELOPED IN 1979 AS THE FIRST ELECTROPLATED EDM WIRE. THE FUNCTIONAL COATINGS DEVELOPED BY BEDRA FOR WIRE ELECTRODES ALLOW ON THE ONE HAND ENORMOUS INCREASES IN CUTTING PERFORMANCE – AND HENCE IN PRODUCTIVITY. ON THE OTHER HAND, THIS ALSO ALLOWS THE HIGHEST DEGREE OF PRECISION AND SURFACE QUALITY TO BE ACHIEVED REPRODUCIBLY.



Coated EDM wire

Coated wire electrodes set standards in terms of cutting performance, precision, speed, and process reliability. This clever alternative to plain wire allows significant increases in productivity in mould and tool engineering.

- **topas**®plus: the universal high-performance wire
- **cobracut**®: for Agie machines
- **broncocut**®: for Charmilles machines
- **megacut**®: for Japanese machines

Plain wire/ brass wire

Our range of innovative wire electrodes also covers plain brass wires for all standard applications. These are naturally subject to the same stringent quality standards as for coated products, and hence allow extremely reliable work results.

- **bercocut**®: the reliable brass wire for all standard applications
- **megacut**®pro: special plain wire for Japanese machines

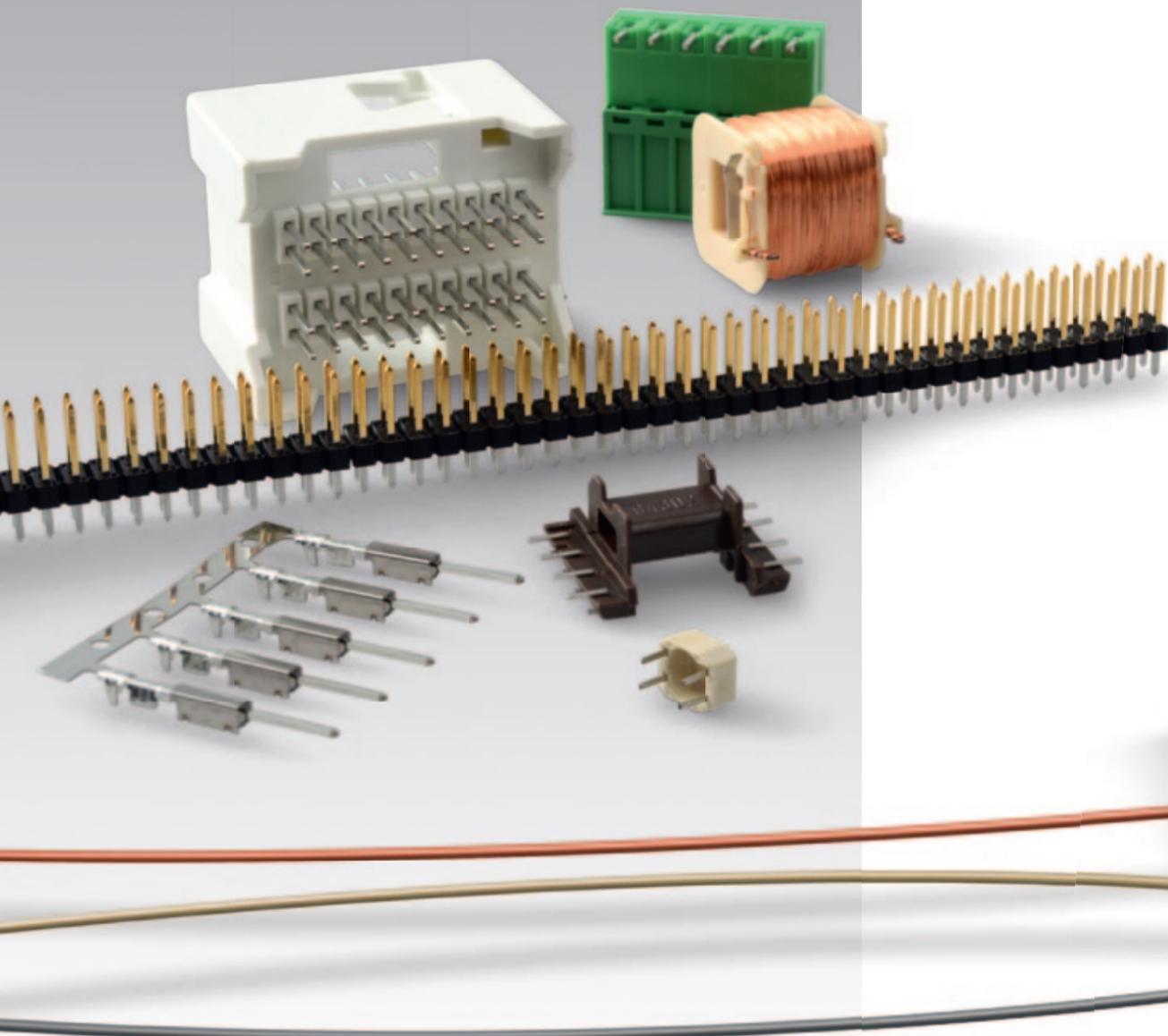
Microerosion wire

bedra fine wires for microerosion processes fulfil the highest demands on precision and process reliability. Highest tensile strength meets minimal tolerances at diameters smaller than a human hair.

- **microcut**®: for the most sophisticated precision applications in microerosion processes

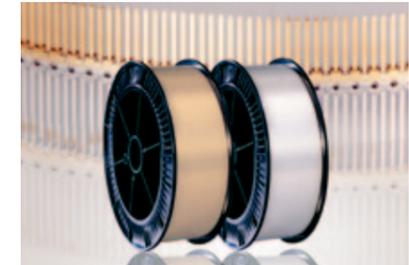
bedra electronics – electronics

AS A LEADING MANUFACTURER OF ELECTRONIC WIRE, BEDRA IS A SPECIALIST FOR CUSTOMER-SPECIFIC WIRE SOLUTIONS IN A WIDE RANGE OF ALLOYS AND WIRE GEOMETRIES, WHETHER AS RECTANGULAR, SQUARE OR OCTAGONAL WIRE, FLAT AND ROUND, SMOOTH OR KNURLED. ELECTRONIC WIRE IS COATED IN MULTIPLE LAYERS IN OUR OWN ELECTROPLATING SYSTEMS.



Quality is a matter of precision

The highest demands on materials and processing technology are reliably fulfilled. The focus is on narrowest tolerances in terms of dimensions, diagonals, and edge radius, as well as precise knurling, precision, and surface coating with various electroplating options.



The bedra electronic wire range offers a variety of application options in passive and electro-mechanical components within such sectors as the automotive industry, aerospace industry, telecommunications, information technology, industrial technology, and the entertainment industry.

With over 100 alloy variants from the following families, we cover an extensive range of requirements in terms of electrical and mechanical properties:

- Tin-bronze alloys
- Brass alloys
- Nickel-silver alloys
- Copper materials
- Superconducting alloys
- Special alloys



bedra welding – brazing and welding

UNDER THE BRAND NAME BERCOWELD®, BEDRA DEVELOPS WIRE ELECTRODES MADE FROM COPPER AND COPPER ALLOYS, ESPECIALLY FOR WELDING AND BRAZING. BERCOWELD® WIRE ELECTRODES CAN BE USED IN AN EXTREMELY WIDE RANGE OF APPLICATIONS, AND ARE SUITABLE E.G. FOR MIG/MAG BRAZING OR WELDING, WIG WELDING, LASER AND PLASMA BRAZING. THE PRODUCTS ARE USED AMONGST OTHER THINGS IN RAIL VEHICLES AND IN PLANT ENGINEERING, WITH THE FOCUS ON THE AUTOMOTIVE INDUSTRY. EVERY MAJOR AUTOMOTIVE MANUFACTURER IN THE WORLD RELIES ON BERCOWELD® WIRE ELECTRODES FROM BEDRA.



bercoweld® – for a reliable connection



bercoweld® wire is characterised above all by material closure joints, excellent gap-bridging properties, and high corrosion resistance. In this manner, welding and brazing processes are optimised. Considerable savings in terms of costs and energy can be achieved particularly when joining galvanised sheets, as the subsequent machining and zinc-plating of the weld seam is no longer necessary, and corrosion protection is nevertheless guaranteed.



The bercoweld® range consists of more than 20 alloys in the following material families:

- Low alloyed copper alloys
- Tin-bronze alloys
- Aluminium-bronze alloys
- Copper-nickel alloys
- Special alloys



bercoweld® products are available in all standard formats from the smallest batch size upwards, and also in special alloys.

bedra box

With bercoweld® from our innovative bedra box, you can achieve an even higher productivity. The high filling volume and the continuous wire dispensing mean time-consuming changing of individual spools is no longer necessary. This significantly reduces downtime. The bedra box is an example of Berkenhoff's development motto: "From practical applications – for practical applications".



bedra

bedra specialties – special wire

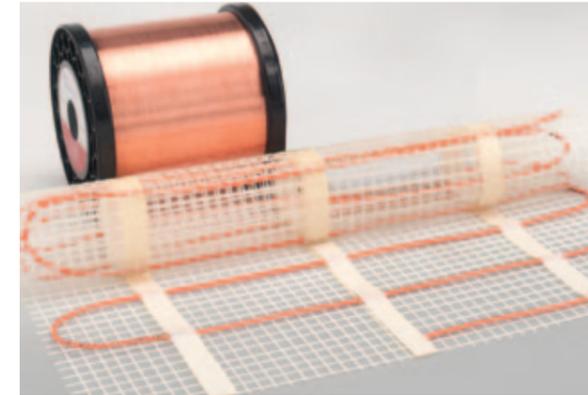
BEDRA SPECIAL WIRE HAS SUCCESSFULLY ESTABLISHED ITSELF IN MANY MARKETS. MANY PRODUCTS FROM THE BEDRA SPECIALITIES RANGE CAN THUS BE FOUND E.G. AS ANCHOR WIRE IN TOOTH BRUSHES, RESISTANCE WIRE IN CAR-SEAT HEATING SYSTEMS, OR OPTICAL WIRE IN SPECTACLE FRAMES.

Anchor wire



The patented bedra anchor wire is tailor-made to perfectly meet the individual requirement profiles, and is available ungrooved and grooved on one or both sides. This wire is used for anchoring bristles in high-quality toothbrushes and fine brushes. Particularly noteworthy is the high degree of security against the bristle elements being pulled out.

Resistance wire



Resistance alloys are primarily used for converting electrical into thermal energy. bedra resistance wire can be used in many different applications, and can therefore be found in many different product areas, e.g. heating blankets, floor heating systems, and even electric welding fittings. The different wire types differ from each other in terms of the respective application purposes to which their temperature ranges, mechanical requirements, and diameter ranges are adapted.

Under the bercotherm® brand, we manufacture resistance wire made from various alloys. Through intelligent selection of alloys, higher conductivity, and increased mechanical strength, bercotherm® resistance wire offers great potential for cost optimisation in further processing.

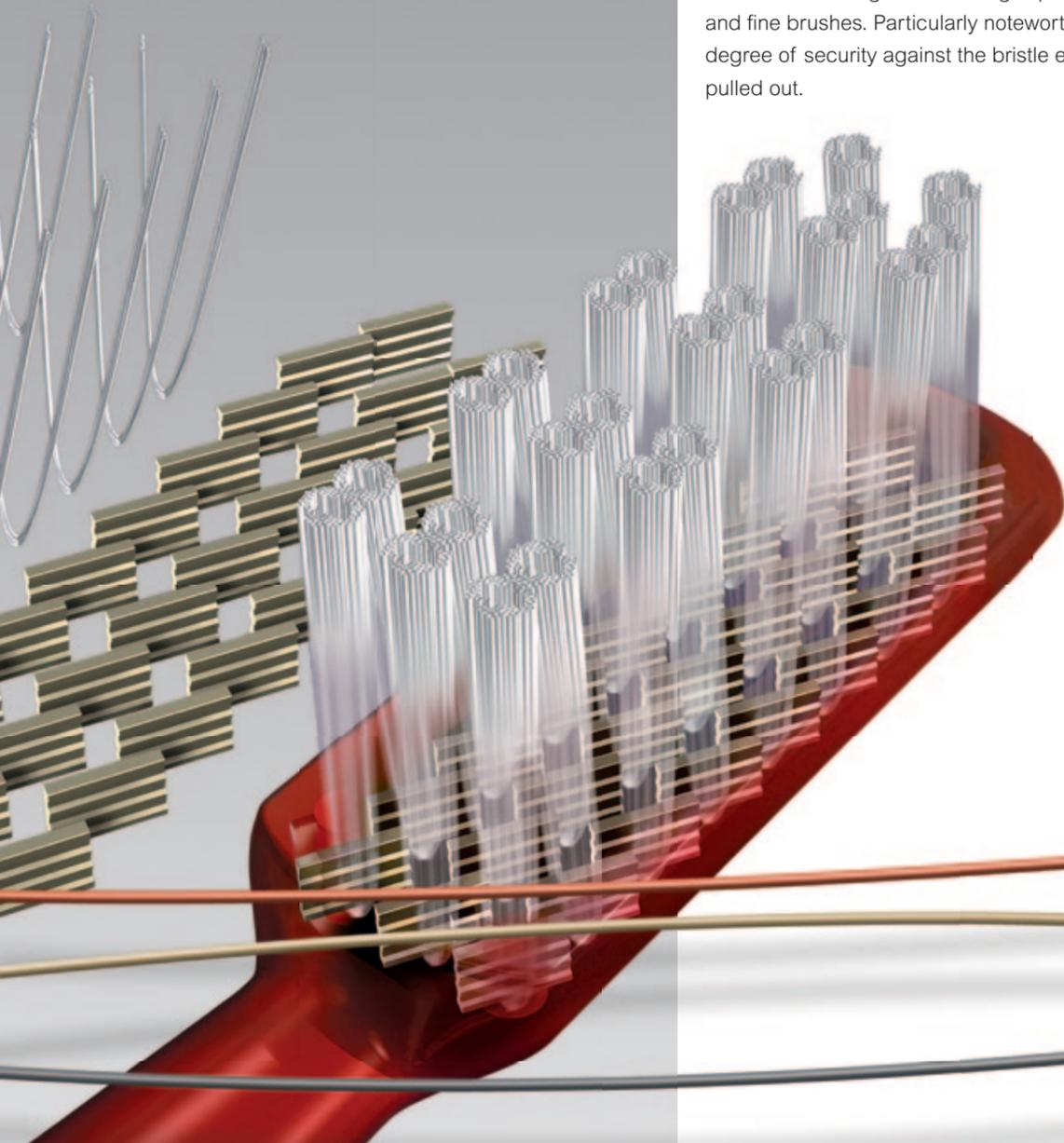
Optical wire



With our special product line, we guarantee the particular quality claims of customers in the optical wire segment. Many renowned spectacle manufacturers rely on bedra optical wire, which is characterised by the absolute purity of the alloys. Furthermore, state-of-the-art production facilities achieve flawless surface quality and the highest possible degree of diameter accuracy.

Special products

The individual special products, such as redraw, jewellery, metal weaving and spring wires, as well as wire for medical applications, round out bedra's product range. We are very happy to accommodate the special requests of our customers.



bedra

Sales and service worldwide

BERKENHOFF GMBH, WITH TWO FACTORIES IN HESSEN, IS THE WORLD'S LARGEST COMPANY FOR PRECISION WIRE. EVERY DAY, WE ARE WORKING TO ENSURE THAT OUR CUSTOMERS AROUND THE WORLD BECOME EVEN MORE SUCCESSFUL.

With a subsidiary in the USA, representatives around the world, and numerous competent sales and service partners in the respective countries, we keep close to the market and ensure smooth supplies of products and communication in the national languages of our customers.

In order to live up to our principle of customer benefit-orientation, we make use of individual customer support and advisory services, including a sample service and technical consulting. If required, our technical service can also offer onsite support.

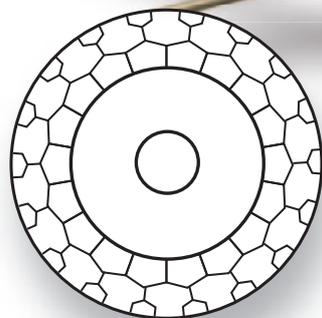
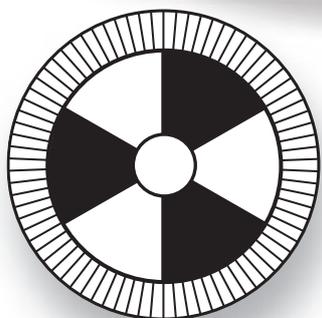
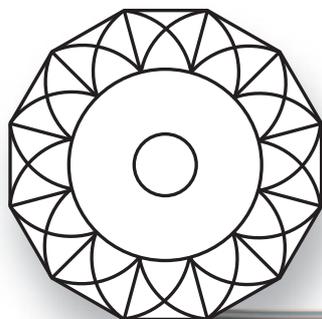
Competence "made by bedra"

Competence is the basis for success. For this reason, our bedra Competence Center not only performs research and development, but also focuses on training courses, provision of information and qualifications. At the Herborn location we offer regular seminars, product training courses and practice-oriented user workshops for our sales partners, end users and employees. Our own EDM application laboratory is equipped with up-to-date spark erosion machines, allowing realistic practical experience. Specialist lectures and groups of experts with industrial customers complete our range of services.



As a responsible employer, we invest a lot of time in careful recruiting and sustainable personnel development.

Alongside training places in the industrial/technical and commercial areas, we also offer interesting entry-level opportunities for recent graduates and interns. Here, we also provide training that goes beyond our own requirements, and hence ensure a continuous supply of young talents.



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