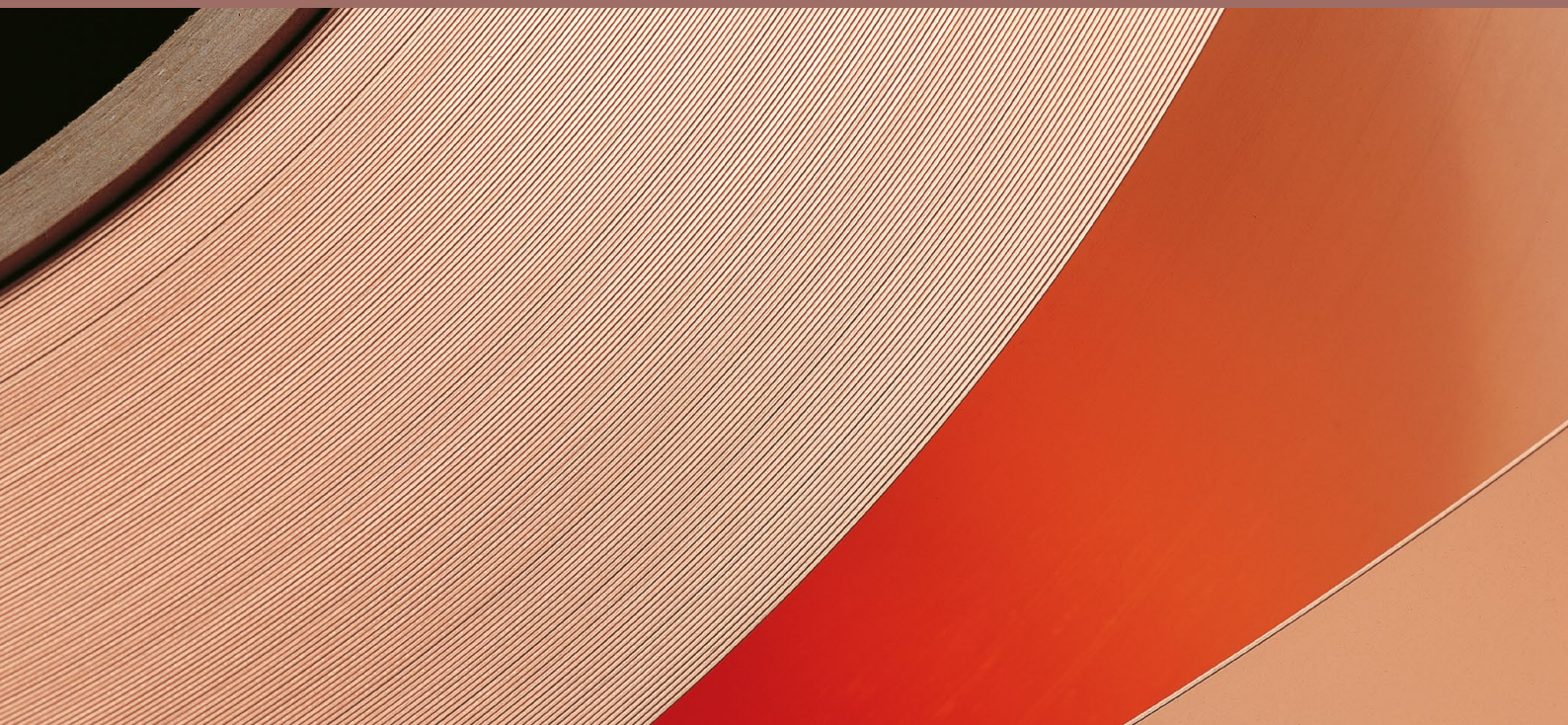
KME

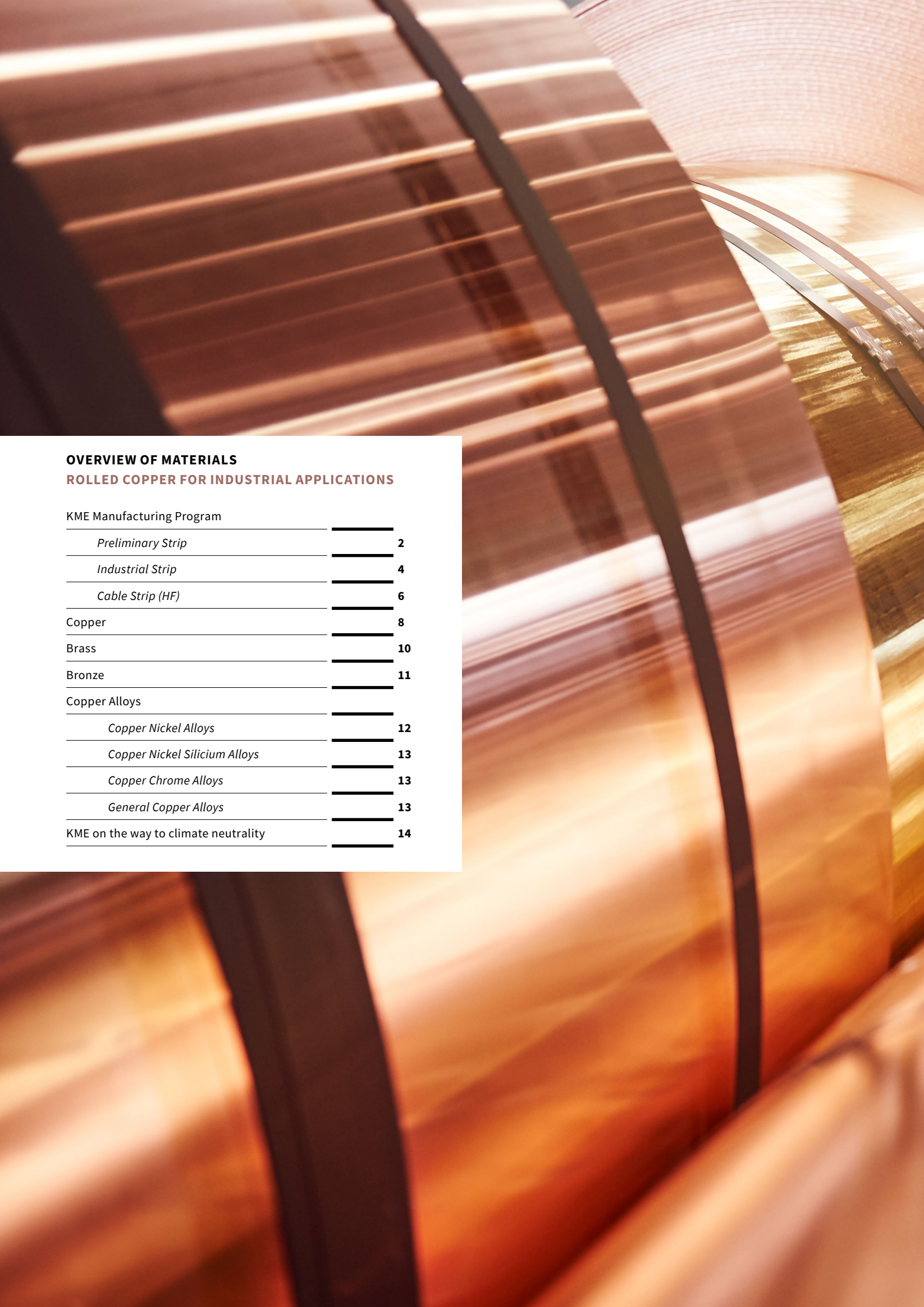
ENGINEERING
COPPER
SOLUTIONS

COPPER MATERIALS

ROLLED COPPER FOR INDUSTRIAL APPLICATIONS

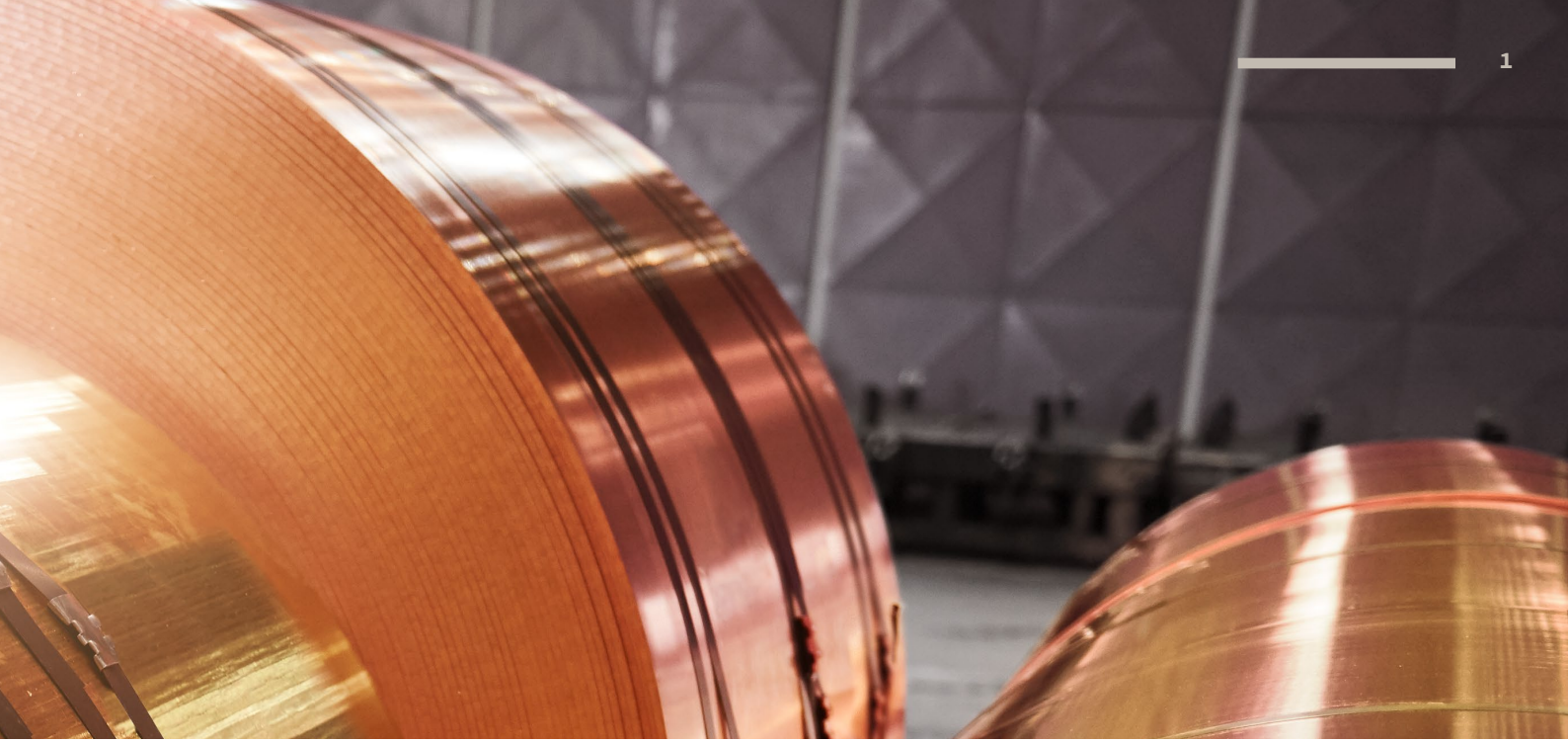
KME Germany GmbH
COPPER DIVISION
[EN]





OVERVIEW OF MATERIALS

ROLLED COPPER FOR INDUSTRIAL APPLICATIONS



COPPER AND COPPER ALLOY STRIPS

KME supplies preliminary strip, industrial strip, cable and HF cable strip in a wide range of dimensions. We manufacture all of our strip products using advanced production facilities in a huge range of different copper and copper-alloy materials.

Our rolling mills are supplied by our own foundries. Our strengths lie in a rich range of high perfomance alloys, for demanding applications like, automotive, e-mobility or smart home applications. **KME** supplies preliminary strip as well as a wide range of finished strip including industrial strip, transformer strip, cable and HF cable strip, roofing strip and strip sheets.

All strip products are manufactured at KME‘s three main sites on technically well-established equipment. For example, the Conti-M® works at the Hettstedt site with a unique cast-rolling technology works without interruption by transferring metal melted from cathodes into a solid state via a twin-belt casting machine (Hazelett). From there it goes directly into the hot-rolling mill and continues on to become milled, hot-rolled strip. The Conti-M® process bypasses the conventional step of hot-rolling slabs, working instead continuously from liquid to solid state, thus tying up the first part of the process chain in an innovative way.

By choosing **KME** pre-rolled and finished strip, you are opting for high-quality products with clean, bright-rolled or milled surfaces that not only comply with all the main standards, but in some cases go even further.

PRELIMINARY STRIP

START WITH THE VERY BEST. PRELIMINARY STRIP FROM KME.

Preliminary rolled strip can be used in any industry and for numerous types of production. Our years of experience and the latest production technologies enable us to fulfil the most stringent quality demands. Preliminary rolling strip is the primary material for industrial, transformer and cable sheathing strip as well as strips and panels for architecture.

TYPICAL AREAS OF USE

- Power Engineering
- Industrial, transformer and cable sheathing strip
- Building

PACKAGING/DELIVERY

All **KME** products come in specially made, standard-compliant, secure packaging. This guarantees retention of shape, ensuring that a product's properties are preserved to the utmost after leaving the factory. Sea-freight packaging is something else we offer as standard. We can assess individual requirements provided they can be presented technically, and offer them for an extra charge.

INDUSTRIAL STRIP

WE GIVE IT OUR ALL. INDUSTRY NEEDS IT.

High-quality industrial strip made of different types of coppers and the copper materials bronze and brass as well as the high performance **STOL®** line of alloys, has excellent processing properties. It is very easy to punch, bend, deep-draw, mill, galvanise, fire-tin or weld, and is therefore used in various industrial sectors.

Many of the outstanding properties that copper and copper alloys possess are of great importance to our customers. Apart from the exceptional property combinations such as high stability, excellent electrical conductivity, superb bending properties and high relaxation resistance, these criteria also relate to processing in the highly complex production plants of our customers. It is here that straightness, evenness, cross-curvature and sag play a major role. These properties are not always included in standard products. If required we can adapt our products to your specifications.

We offer copper and copper alloy strips, bright and with high-quality tinning from one source according to your specifications. Please ask about our wide range of extremely high-performance **STOL®** materials for particularly challenging tasks.

TYPICAL FIELDS OF APPLICATION

- Automotive
- E-Mobility
- Electrical industry
- Electrical engineering
- Power supply
- Smart-Home applications

PACKAGING/DELIVERY

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CABLE STRIP (HF)

WE'RE ROLLING OUT THE FUTURE – AS BROADLY AS POSSIBLE.

Copper possesses especially high electrical and thermal conductivity. It also has unusually good corrosion resistance. That's why it is used increasingly in complex urban, rural and maritime infrastructural projects. Global connectivity is bringing the fields of telecommunications, high-frequency technology and power transmission closely together.

It is crucial to eliminate periodical thickness fluctuations when making high-frequency cables. Specialised rolling and passing sequences on our rolling mills and a maintenance management system on our production facilities which is tailored to the production of high-frequency strips enable us to make extremely precise strips at lengths of up to 6,500 metres. Computerised FFT analysis on the finished strip helps us guarantee strips with the very best transmission properties

TYPICAL AREAS OF USE

- Electrical engineering
- Power engineering
- IT
- Construction

PACKAGING/DELIVERY

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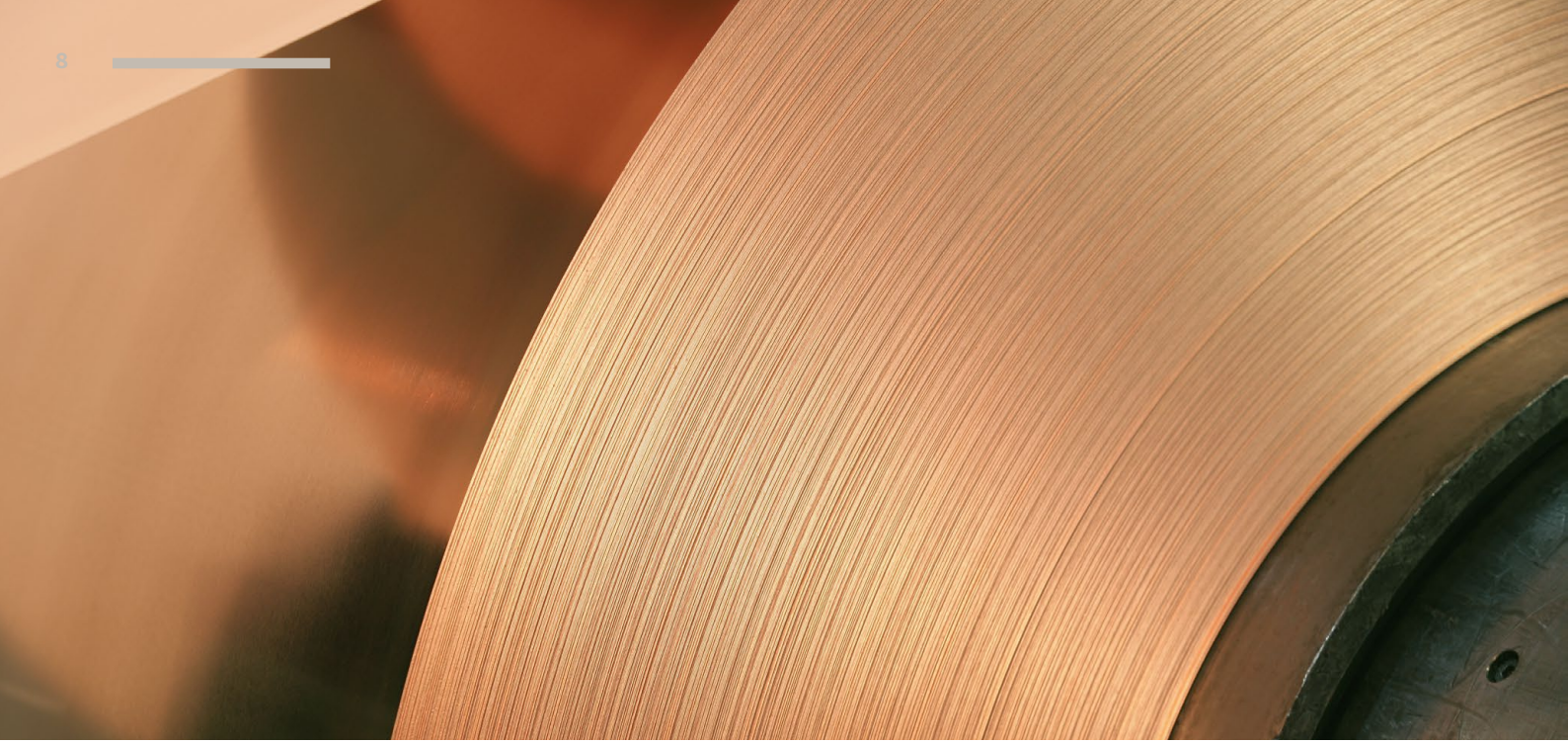


COPPER

KME Rolled **STRIPS**

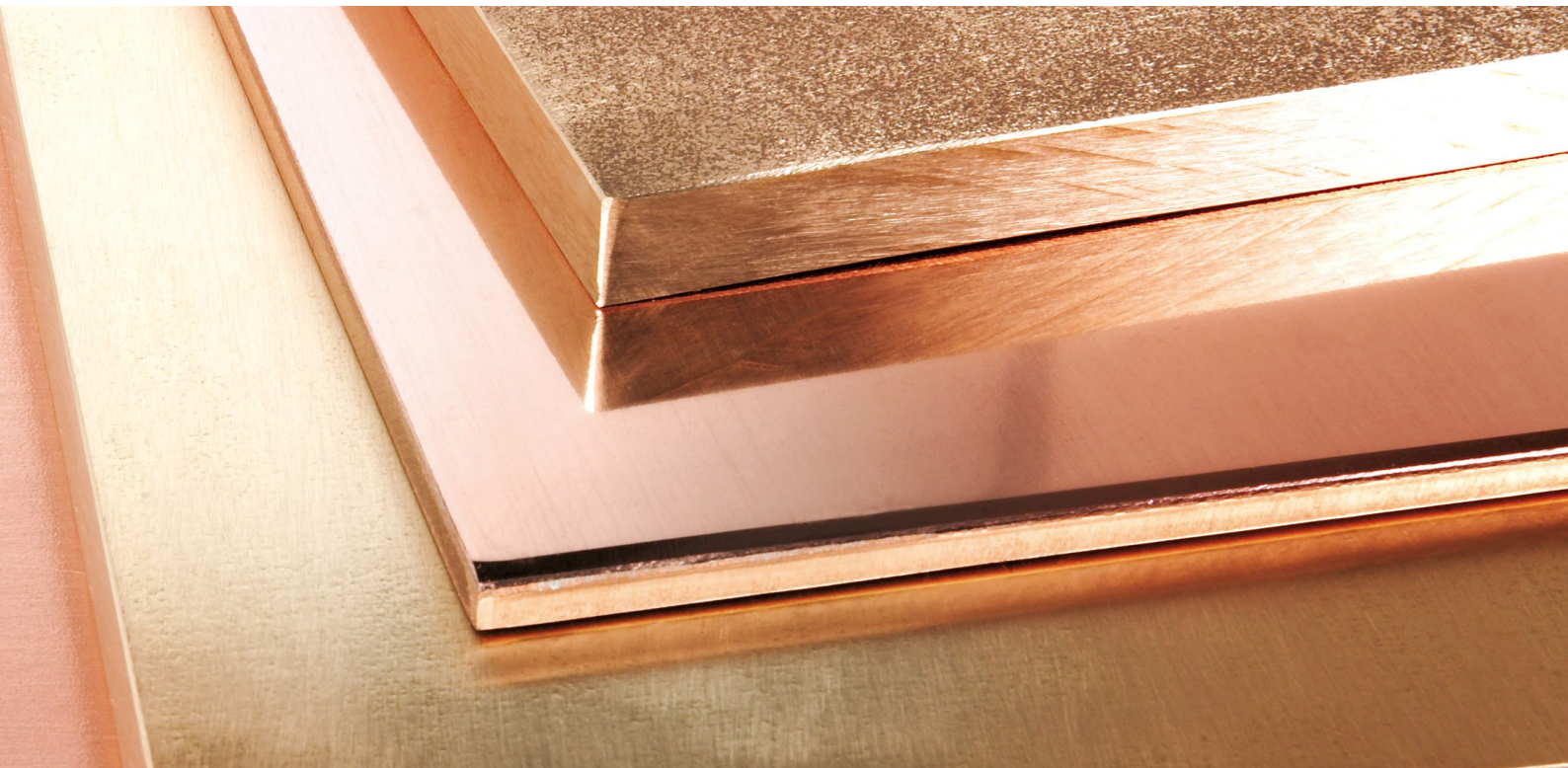
KME Alloy	CEN	ASTM	Applications
Cu-ETP	CW004A	C11000	Oxygen-containing copper with high electrical conductivity (> 58.0 MS/m), no resistance to hydrogen, no requirements for weldability and solderability. Application: cable tape for heavy current, deep-sea, special cables, electrical engineering, electronics.
Cu-HCP	CW021A	C10300	Deoxidized copper with low residual phosphorus content and limited electrical conductivity (> 57 MS/m), with good weldability, brazing and hydrogen resistance. Application: Cable tape for power, deep-sea, special cables, electrical engineering, electronics.
Cu-PHC	CW020A	C10300	Deoxidized copper with low residual phosphorus content and high electrical conductivity (> 58.0 MS/m), good formability, good weldability and solderability as well as hydrogen resistance. Application: Cable tape for power, deep-sea, special cables, electrical engineering, electronics.
Cu-DLP	CW023A	C12000	Deoxidized copper with reduced residual phosphorus content (P 0.005 to 0.013 %), without electrical requirements Conductivity, hydrogen resistant, good weldability and solderability. Application: Foundry technology.
Cu-DHP	CW024A	C12200	Deoxidized copper with limited residual phosphorus content, very good weldability and brazing properties, hydrogen resistance and without requirements for electrical conductivity. Application: Roofing, solar technology, heat exchangers.

KME Alloy	CEN	ASTM	Applications
Cu-OF	CW008A	C10200	Oxygen-free copper with high purity and high electrical conductivity (> 58.0 MS/m), high demands on the hydrogen resistance, good weldability and solderability. Application: Cable tapes.
Cu-OFE*	CW009A	C10100	Oxygen-free copper with very high purity, very high electrical conductivity (> 58.58 MS/m) and very good resistance to hydrogen. Application: Electrical engineering, electronics, vacuum technology.

* For production reasons, KME currently guarantees an oxygen and phosphorus content of </= 5ppm for Cu-OFE, contrary to the standard. All other requirements of the standard are met.

BRASS

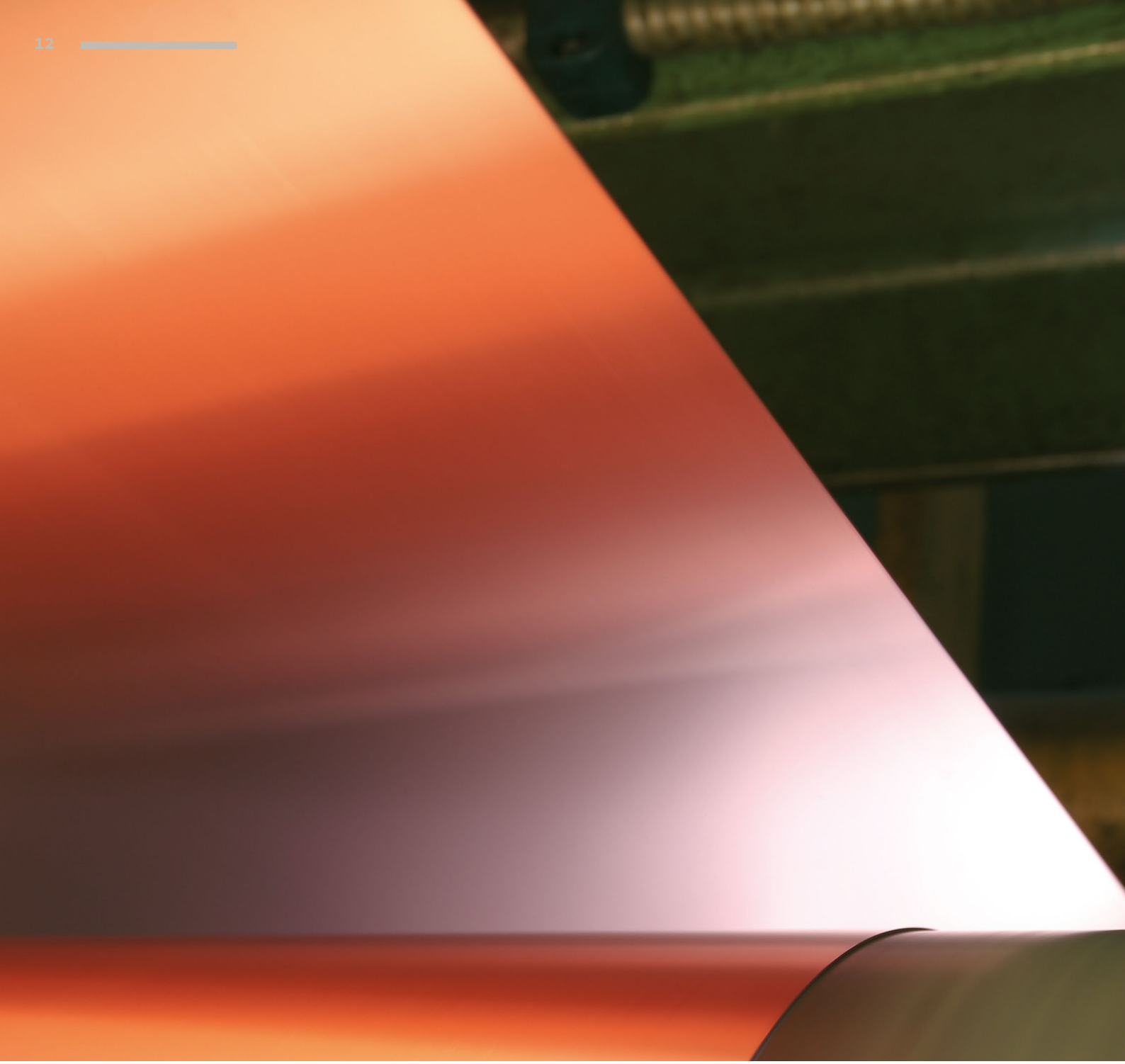
KME Alloy	CEN	ASTM	Applications
CuZn10	CW501L	C22000	CuZn10 has very good cold forming properties and is well suited for e.g. coinage, beating, embossing. This alloy has a higher strength as pure copper. It has good welding and brazing properties as well as a good corrosion resistant and is not fragile to stress corrosion and dezincification. CuZn10 is principally used in jewellery, metal goods, watch industry and in electronic industry for installation parts.
CuZn15	CW502L	C23000	CuZn15 has very good cold forming properties and is well suited for e.g. coinage, beating, embossing. This alloy has a higher strength as pure copper. It has good welding and brazing properties as well as a good corrosion resistant and is not fragile to stress corrosion and dezincification. CuZn15 is principally used in jewellery, metal goods, watch industry and in electronic industry for installation parts.
CuZn30	CW505L	C26000	CuZn30, as well as CuZn28 and CuZn33 is combining excellent cold forming properties with good mechanical strength. CuZn30 has good hot forming properties and excellent soldering and brazing properties. Due to the outstanding deep drawing properties CuZn30 and the other two mentioned alloys are called “deep-draw” or “cartridge” brass.
CuZn33	CW506L	C26800	CuZn33, as well as CuZn28 and CuZn30 is combining excellent cold forming properties with good mechanical strength. CuZn30 has good hot forming properties and excellent soldering and brazing properties. Due to the outstanding deep drawing properties CuZn33 and the other two mentioned alloys are called “deep-draw” or “cartridge” brass.
CuZn36	CW507L	C27000	CuZn36 is the major brass alloy for the cold forming process. Even though brasses with lower Zinc content have better cold forming properties, CuZn36 is the most used alloy. Reasons for this are on the one hand economical due to lower price of Zinc compared to Copper, on the other hand the forming properties of this alloy meet the demand of many applications.
CuZn37	CW508L	C27200	CuZn37 is the major brass alloy for the cold forming process. Even though brasses with lower Zinc content have better cold forming properties, CuZn37 is the most used alloy. Reasons for this are on the one hand economical due to lower price of Zinc compared to Copper, on the other hand the forming properties of this alloy meet the demand of many applications.



BRONZE

KME Rolled **STRIPS**

KME Alloy	CEN	ASTM	Applications
CuSn0.04			CuSn0.04 provides an excellent combination of strength, excellent formability and hardness. It has a good electrical conductivity and corrosion resistance. Soldering and brazing properties are excellent.
CuSn0.09			CuSn0.09 is an in-house developed alloy and is specifically used for radiator fin applications. The alloy has excellent thermal properties. Hot and cold formability is very good (which makes it ideal for engine cooling applications where heat transfer is critical). The tin addition improves mechanical properties even more than our alloy CuSn0.04 and, as such, contributes to a sturdy final product.
STOL® 81 CuSn0.15	CW117C	C14415*	CuSn0,15 is a low Tin (Sn) special alloy that combines low cost with highest conductivity. The total cost for finish products are often equal to brass due to excellent conditions for stamping scrap. Typical applications are male connectors and fuse boxes.
STOL® 80 CuSn0.20		C14410	STOL® 80 is a low Tin (Sn) special alloy that combines low cost with highest conductivity. The total cost for finish products are often equal to brass due to excellent conditions for stamping scrap. Typical applications are male connectors and fuse boxes.
CuSn4	CW450K	C51100	CuSn4 provides an excellent combination of strength, excellent formability and hardness. It has a good electrical conductivity and corrosion resistance. Soldering and brazing properties are excellent.
CuSn5	CW451K	C51000	CuSn5 provides an excellent combination of strength, excellent formability and hardness. It has a good electrical conductivity and corrosion resistance. Soldering and brazing properties are excellent.
CuSn6	CW452K	C51900	CuSn6 offers an excellent combination of strength, cold formability and hardness. It is wear resistant, has good corrosion resistance and good soldering properties. Due to its high strength and good spring properties combined with good machining properties, it is used for all types of metallic contacts.
CuSn8	CW453K	C52100	Compared to bronzes with a lower tin content, CuSn8 offer better corrosion resistance, combined with higher strength and good sliding properties. It is wear resistant, has excellent spring properties, good cold forming and soldering properties.



COPPER ALLOYS

KME Rolled **STRIPS**

KME Alloy	CEN	ASTM	Applications
COPPER NICKEL			
CuNi10Fe1Mn	–	C70620	For many decades, copper-nickel alloy CuNi10Fe1Mn has extensively been used as a piping material for seawater systems in shipbuilding, offshore, and desalination industries. Attractive characteristics of this alloy combine excellent resistance to uniform corrosion, remarkable resistance to localised corrosion in chlorinated seawater, and higher erosion resistance than other copper alloys and steel. Furthermore, CuNi10Fe1Mn is resistant to biofouling providing various economic benefit.

COPPER ALLOYS

KME Alloy	CEN	ASTM	Applications
COPPER NICKEL SILICIUM			
STOL® 76M	–	C19005	STOL® 76M is an optimized CuNiSi alloy that can be hardened by cold forming and by precipitation of NiSi-phases during a heat treatment. It has excellent bendability, excellent hot and cold forming properties, a high strength and a good corrosion resistance.
STOL® 76	–	C19010	STOL® 76 is a CuNiSi alloy that can be hardened by cold forming and by precipitation of NiSi-phases during a heat treatment. It has excellent bendability, excellent hot and cold forming properties, a high strength and a good corrosion resistance.
CuNi3SiMg	–	C70250	CuNi3Si is an optimized CuNiSi alloy that can be hardened by cold forming and by precipitation of NiSi-phases during a heat treatment. It has excellent bendability, excellent hot and cold forming properties, a high strength and a good corrosion resistance.
STOL® 94	–	C70315	STOL® 94 is a CuNiSi alloy which is available in cold worked and precipitation hardened tempers. It combines maximum strength with excellent bendability, good electrical conductivity, excellent resistance against relaxation.
COPPER CHROME			
STOL® 75	–	C18070	STOL® 75 is a CuCrSiTi alloy that can be hardened by cold forming and by precipitation during a heat treatment. This alloy provides a good combination of high electrical conductivity, good strength, good bendability, excellent hot and cold forming properties and a good corrosion resistance.
STOL® 95	–	C18160	STOL® 95 is a CuCrZr alloy that can be hardened by cold forming and by precipitation of CuCrZr - phases during a heat treatment. It has good bendability, excellent hot and cold forming properties, a high strength and a good corrosion resistance.
GENERAL COPPER ALLOYS			
CuTeSn	–	C14530	CuTe0.02Sn0.02 is a solid solution strengthened copper alloy (tellurium and tin additions). The Zutphen produced thin gauge strip is primarily used for radiator fin applications. The alloy has excellent thermal properties. Hot and cold formability is good (which makes it ideal for engine cooling applications where heat transfer is critical). The addition of tellurium and tin improves mechanical properties and increases the anneal resistancy.
STOL® 78 CuMg	–	C18665	STOL® 78 is a high Magnesium (Mg) alloyed material with excellent formability at medium strength and good conductivity. Typical applications are automotive, electrical and electronic connectors, relays, current carrying springs and junction boxes.
STOL® 194 CuFe2P	CW 107 C	C19400	STOL®194 is a medium strength alloy, with fine Fe precipitations. It combines high conductivity with medium strength and good relaxation properties.
CuSn2Zn10		C42500	C42500 has excellent cold forming properties, good conductivity combined with high strength and hardness. Corrosion resistance, especially against seawater and industrial atmosphere is good and stress corrosion cracking susceptibility is low. Spring properties are good, so it is used for applications like spring, connectors, contacts.
CuSn3Zn9	CW454K	C42500	CuSn3Zn9 has excellent cold forming properties, good conductivity combined with high strength and hardness. Corrosion resistance, especially against seawater and industrial atmosphere is good and stress corrosion cracking susceptibility is low. Spring properties are good, so it is used for applications like spring, connectors, contacts.

* slight deviation in chemical composition

KME - ON THE WAY TO CLIMATE NEUTRALITY

KME makes a significant contribution to climate protection with sustainable corporate measures. The transformation of production methods and associated operational processes is in focus of the targeted development towards climate neutrality.

Copper is the basis of all entrepreneurial activities of **KME**. The handling of this sustainable material is a commitment to ecologically sensible action. Due to its outstanding technical and environmentally friendly properties, copper is indispensable for the energy transition and the generally envisaged transformation to climate neutrality. Above all, its unlimited recyclability makes the material particularly climate-friendly.

STATE OF DEVELOPMENT

ENERGY MANAGEMENT

With its certified energy management according to ISO 50001, KME makes an important industrial contribution to the conservation of resources.

COPPER RECYCLING

Numerous pioneering measures for the use of innovative recycling technologies as well as for closing material cycles, increasing the recycling rate and recovering heat have already been implemented. Results and benefits far exceed the industry standard. Today, we already rely on a very high recycling rate of over 70% in our foundries.

KME ECOLOGICAL COPPER

KME offers the market a material with a particularly climate-friendly CO_2 balance, which is ensured by the use of exclusively secondary raw materials (100% copper scrap). We thus avoid the use of new metals, which are highly energy-intensive in production.

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COPPER
SOLUTIONS

Further information

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