



mkM
we live copper

Tubes HETCOOL®



OUR ASPIRATION

Cool. Cooler. HETCOOL®.

Copper can cope with cold effortlessly. When other materials begin to become brittle or porous, copper keeps on going and can withstand temperatures as low as -269°C without deforming. Copper is an outstanding low temperature material used especially often for refrigeration and air conditioning and for medical gas supply. Copper is the material of choice for most refrigerants; the exceptions are defined in law and must be observed. Copper also retains its resilience when the thermometer rises: temperatures of up to +250 degrees are no problem for the red metal.

Copper's bacteriostatic properties – it reduces germs and is antibacterial – are the reason why hospitals and medical facilities rely so heavily on it. It is used in piping systems (where Legionnaires' disease is especially feared) as well as door runners, door handles and other frequently used handles.

Our HETCOOL® quality copper tubes have made us a long-standing partner to industrial companies as well as air conditioning and refrigeration businesses. MKM is a long-established company based in Germany and we have the ability, knowledge and materials to fulfil the demanding specifications of these sectors.

From our own alloy foundry – with its range of over fifty alloys – all the way to the semi-finished product, we do everything in-house. That allows us to keep our material cycle closed (including single-variety recycling), and to offer our customers everything from a single source – including quick coordination because of the short distances involved.

More than a century of experience in manufacturing and processing copper allows us to offer many ways of advising and supporting you when you design your products.

TUBES

Refrigerant. Wrapped nice and warmly at MKM.

MKM supplies seamless copper tubes for refrigeration and air conditioning. All HETCOOL® tubes are clearly inscribed so that they can be traced back to their manufacturer at any time.

HETCOOL® tubes don't just fulfil EN 12735-1 for pipes carrying refrigerant, they are also able to meet the demands of medical gas supply systems as defined in EN 13348. The use of medical gases is one of the features of modern medicine and medical technology. Products of exceptional quality are essential for the safe operation of such systems and for utilising these treatment methods. HETCOOL® tubes fulfil the technical requirements for transporting these gases.

Delivery

Standard sizes are available straight off our warehouse shelves. All HETCOOL® products come in specially made, standard-compliant, secure packaging. Our packaging guarantees retention of shape, ensuring that a product's properties are preserved to the utmost after leaving the factory. Plastic sealing plugs or caps at either end ensure that the inside of the tube remains clean and sterile. Sea-freight packaging is something else we offer as standard. We can gladly advise you on any particular requirements you may have.



HETCOOL® – always well packed



HETCOOL® rings unpacked

By opting for MKM tubes you are choosing:

- technically grease-free, clean surfaces
- a corrosion-resistant material
- diffusion resistance
- products that react neutrally to the media flowing through them
- easy handling / connection / installation
- long service life and a high degree of operational safety
- maximum diversity of products and dimensions
- a product manufactured and tested using tolerances based on general industrial standards or customer standards
- a high level of support and advice during the selection process
- decades of experience involving standard and specialised requirements
- a durable, vibrant, versatile and maintenance-free material
- a material that is light and flexible to process
- a recyclable, ecologically and economically competitive material
- integrated production – from the bolt to the finished tube – all from a single source
- more than a century of experience across the entire spectrum of copper production and processing
- a highly qualified workforce
- integrated production
- flexible machinery that is constantly being upgraded
- comprehensive advice and support for:
 - product development
 - surface qualities
 - new material qualities and alloys
 - optimising the use of materials (diameters and cross-sections)
 - developing new applications
 - improving business and technological processes
- product- and order-specific packaging

Our HETCOOL® tubes are double-inscribed with EN 12735-1 / EN 13348 and perfectly fulfil the requirements of those standards.

Product range

Standard version	
Bars	Tubes in bars hard/soft Dimensions in inches Ø: 1/4" to 2-1/8", wall thickness: 0.711 mm to 2.032 mm Lengths 3/5/6 m Packed in boxes/crates Tube ends sealed and inscribed
Rings	Tubes in rings, soft Dimensions in inches Ø: 1/4" to 7/8", wall thickness: 0.711 mm to 1.067 mm Ring lengths: 15/25/35/50 m Tube ends sealed and inscribed Packed in boxes, stacked on pallets
Metric dimensions	
Bars	Tubes in bars hard/soft 6 x 1 mm to 108 x 2.5 mm, Lengths 5 m Packed in boxes/crates Tube ends sealed and inscribed
Rings	Tubes in rings, soft 6 x 1 mm to 22 x 1 mm, Ring lengths: 25/35/50 m Packed in boxes Tube ends sealed and inscribed

Tubes for refrigeration, air conditioning, medical gases and vacuum systems are double-inscribed.



TECHNICAL SPECIFICATIONS

Facts and figures

HETCOOL® tubes in straight lengths, supplied 'hard' (R290)					
External diameter x wall thickness mm	Weight per metre kg/m	Tubes/crate pieces	Metres/crate m	Permitted operating pressure ¹⁾ bar	Packed in wooden crates Net kg
1/2" 12,700 x 0,813	0,269	410	2050	68	550
5/8" 15,875 x 0,889	0,373	300	1500	59	560
3/4" 19,050 x 1,016	0,514	215	1075	56	550
7/8" 22,225 x 1,070	0,633	175	875	51	550
1 1/8" 28,575 x 1,140	0,874	125	625	42	550
1 3/8" 34,925 x 1,400	1,312	85	425	42	560
1 5/8" 41,275 x 1,520	1,689	65	325	38	550
2 1/8" 53,975 x 2,030	2,948	38	190	39	560

HETCOOL® tubes in rings, supplied 'soft' (R220)				
External diameter x wall thickness mm	Weight per metre kg/m	Ring length m	Rings/pallet m	Permitted operating pressure ¹⁾ bar
1/4" 6,350 x 0,760	0,119	15/30/50	4320/4320/2100	136
5/16" 7,938 x 0,760	0,153	15/30/50	1620/1620/1500	106
3/8" 9,525 x 0,813	0,198	15/30/50	1620/1620/1500	93
1/2" 12,700 x 0,813	0,270	15/30/50	1080/1080/900	68
5/8" 15,875 x 0,914	0,382	15/30/50	540/540/600	61
3/4" 19,050 x 0,914	0,463	15/30	450/720/*	50
7/8" 22,225 x 1,016	0,602	15/30	360/360/*	48

¹⁾ Permitted operating pressure calculated as $R_m = 200N/mm^2$ and $S = 4$.

* available on request

HETCOOL® tubes in straight lengths, supplied 'hard' (R290)					
External diameter x wall thickness mm	Weight per metre kg/m	Metres/box m	Tubes/box Stück	Permitted operating pressure ¹⁾ bar	Dimensions of box mm
6 x 1,0	0,140	200	40	200	80 x 35 x 5015
8 x 1,0	0,196	100	20	143	50 x 40 x 5015
10 x 1,0	0,252	75	15	111	60 x 40 x 5015
12 x 1,0	0,307	50	10	91	70 x 30 x 5015
15 x 1,0	0,391	50	10	71	85 x 35 x 5015
18 x 1,0	0,475	50	10	59	100 x 40 x 5015
22 x 1,0	0,587	50	10	48	120 x 50 x 5015
28 x 1,5	1,111	50	10	57	150 x 60 x 5015
28 x 1,0	0,755	50	10	37	150 x 60 x 5015
35 x 1,5	1,404	25	5	45	110 x 70 x 5015
42 x 1,5	1,698	25	5	37	135 x 80 x 5015
54 x 2,0	2,906	20	4	38	112 x 112 x 5015
64 x 2,0	3,470	10	2	32	132 x 68 x 5015
67,1 x 2,0	4,150	5	1	27	80 x 80 x 5015
88,9 x 2,0	4,860	5	1	23	93 x 93 x 5015
108 x 2,5	7,380	5	1	24	112 x 112 x 5015

HETCOOL® tubes in rings, supplied 'soft' (R220), ring length 25 m					
External diameter x wall thickness mm	Weight per metre kg/m	Metres/box m	Rings/box Stück	Permitted operating pressure ¹⁾ bar	Wooden pallet dimensions mm
6 x 1,0	0,140	1250	50	200	750 x 750
8 x 1,0	0,196	875	35	143	750 x 750
10 x 1,0	0,252	750	30	111	750 x 750
12 x 1,0	0,307	625	25	91	750 x 750
15 x 1,0	0,391	375	10	71	750 x 750
18 x 1,0	0,475	375	10	59	750 x 750
22 x 1,0	0,587	250	10	48	750 x 750

¹⁾ Permitted operating pressure calculated as $R_m = 200\text{N/mm}^2$ and $S = 4$.

Product areas



STRIP

MKM supplies preliminary strip, industrial strip, transformer strip, cable and HF cable strip and roofing strip. We manufacture all of our strip products using our Conti-M® technology which we developed inhouse, using continuous casting technology to achieve a uninterrupted 24/7 process.



SHEETS, PLATES AND DISCS

MKM offers sheets, plates and discs in a wide range of dimensions. Our rolling mill is supplied by our own foundries. Our strengths lie in a rich range of more than fifty alloys. We can also produce plates and discs to customer specific drawings on request.



WIRE

MKM supplies the entire spectrum of wire rod, from thick, medium and fine wire to stranded wire and wire rope. Our fully integrated Contirod® technology allows us to offer copper wire products and alloy wire products (plain and tinned) with a wide range of finishes.



TUBES

MKM supplies tubes of different lengths, diameters and thicknesses. Our HETCU® (installation tubing) and HETCOOL® (refrigeration, air conditioning and medical technology) product families are extremely well established in the market. Consistent quality management from our own continuous casting plant, right through to the tube drawing process guarantees seamless tubing with outstanding quality.



BARS

MKM is one of Europe's leading producers of copper bars and profiles. Our production range encompasses a wide range of sizes in various grades of copper. We also produce customised profiles based on technical drawings.



CUSTOM SOLUTIONS

MKM develops solutions tailored entirely to its customers' requirements. With the technical means and many years of experience, we regularly find unconventional solutions.

We can manufacture any of our products in compliance with the relevant DIN standards, internationally established standards and custom requirements. All of our packaging is appropriate to the products it contains.

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