

Forging Expert in High Coppers



Applications





A Wide Range

GM Copper Alloys creates custom precision seam welding discs, spot welding electrodes, wire welding electrodes, butt welding electrodes, die casting pistons/plungers (cold chamber), bearings & amp; bushings, flanges, double flange bearings, full half bearings, shafts, moulds and special machined parts that can be shipped on a global basis and in full accordance with most international standards.

We also provide semi-finished products which can be cut according to the required sizes for fast delivery in various alloys and sizes.

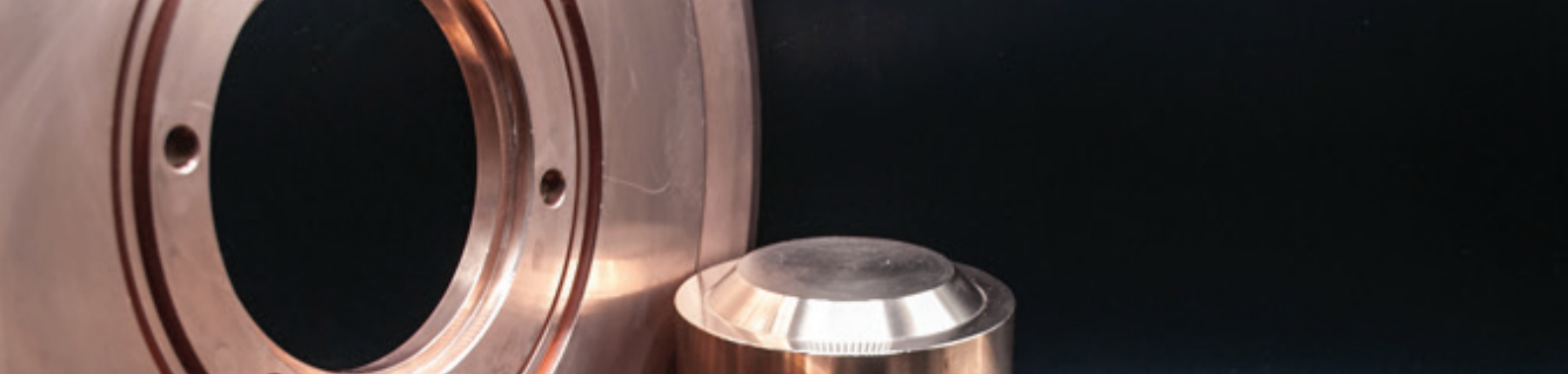
Resistance Welding Industry

High Pressure Die Casting Industry

Main Markets

Moulds & Dies Industry

Aluminium Bronze Components Industry



Special Alloys Components

GM Copper Alloys produces semi-finished and finished products. All products forged according to exacting specifications.

We also provide semi-finished products which can be cut according to the required sizes for fast delivery in various alloys and sizes.



Processing Sizes in Metric

Round Bars, Rings, Discs, Wheels:	dia 40 to 700 mm.
Square Bars:	20×20 to 180×180 mm.
Flat Bars:	10×20 to 150×400 mm.
Plate (Edge Thickness):	> 10 mm.
Max Length Per Item:	1.000 mm.
Max Processing Weight Per Item:	270 kg



Die Casting

Die casting is a metal casting process that is characterized by forcing molten metal under high pressure into a mold cavity. The mold cavity is created using two hardened tool steel dies which have been machined into shape and work similarly to an injection mold during the process.

Alloys Required

CuNiSiCr , CuCoNiBe, CuBe2,CuNiBe

Available Sizes

from dia 40 mm and above high pressure die casting (cold chamber) pistons and plunger tips in semi finished or finished forms according to drawing.

Mould & Dies

Injection moulding is a manufacturing process for producing parts by injecting material into a mould. Injection moulding can be performed with a host of materials mainly including metals, Material for the part is fed into a heated barrel, mixed, and forced into a mould cavity, where it cools and hardens to the configuration of the cavity.

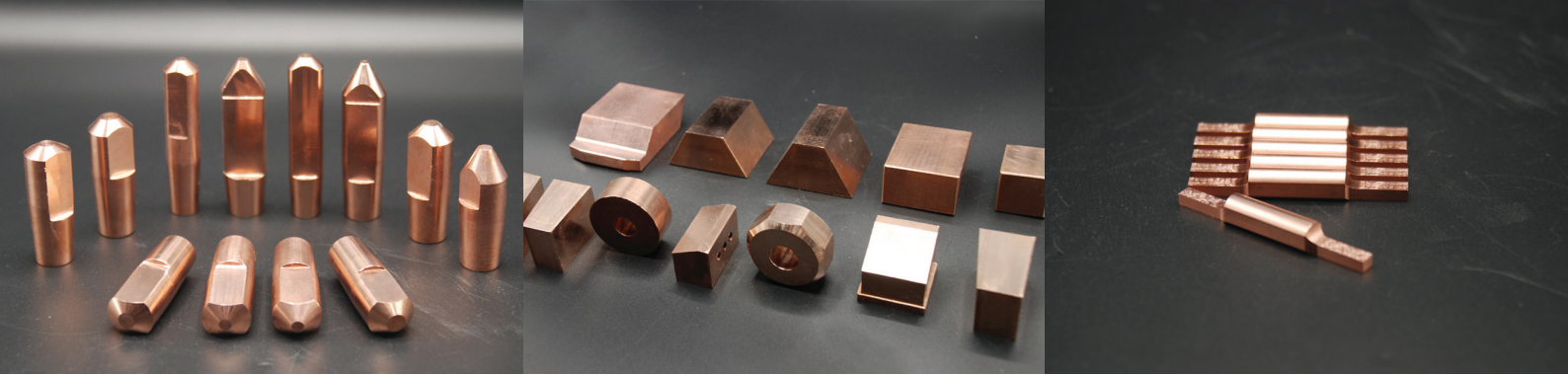
The attributes of copper alloys that make them attractive to the mold industry are high thermal conductivity, ease of machining by a variety of processes, and corrosion resistance to water, cooling fluids and the plastics being injected.

Alloys Required

CuNiSiCr , CuCoNiBe, CuBe2

Available Sizes

Cast or forged copper alloys into various shapes upon request



Resistance Welding

Butt Welding Electrodes, Parts And Blocks

Butt welding is a process where two pieces of metal to be joined are in the same plane. These types of welds require only some kind of preparation and are used with thin sheet metals that can be welded with a single pass.

Alloys Required

CuCrZr, CuCoNiBe, CuCoBe, CuBe2

Available Sizes

various electrode blocks cut to size or finished according to drawing.

Mesh Welding (Cross Wire)

Cross Wire Welding is a process for joining bars or wires in cross joints by directly applying opposing forces with usually flat electrodes. The current and the heat generation are localized at the contact points of the crossed bars or wires. Cross wire welding is widely used in construction and electrical industry as well as for manufacturing of metal wire nets and shopping trolleys etc.

Alloys Required

CuCrZr, CuCoNiBe, CuCoBe, CuBe2

Available Sizes

various electrode blocks cut to size or finished according to drawing.

We do serve all mesh electrodes blocks trowalised and polished.

Spot Welding Electrodes

Resistance spot welding is a process in which contacting metal surface points are joined by the heat obtained from resistance to electric current. It is a subset of electric resistance welding.

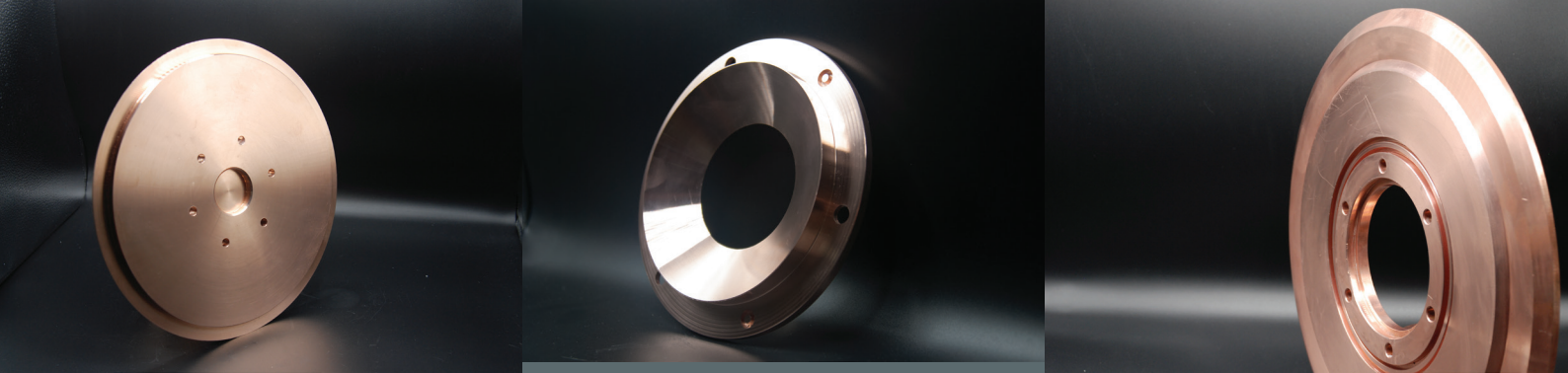
Work-pieces are held together under pressure exerted by electrodes. The process uses two shaped copper alloy electrodes to concentrate welding current into a small "spot" and to simultaneously clamp the sheets together. Forcing a large current through the spot will melt the metal and form the weld. The attractive feature of spot welding is that a lot of energy can be delivered to the spot in a very short time.

Alloys Required

CuNiSiCr, CuCoNiBe, CuBe2, CuCrZr

Available Sizes

Finished forms according to drawing



Seam Welding Electrodes

Seam welding produces an extremely durable weld because the joint is forged due to the heat and pressure applied. A properly welded joint formed by resistance welding can easily be stronger than the material from which it is formed.

The electrode wheels apply a constant force to the work pieces and rotate at a controlled speed. Seam welding equipment is normally fixed and the components being welded are manipulated between the wheels.

Seam Welding Wheels

Alloys Required

CuCoNiBe, CuCrZr, CuCoBe

Available Sizes

up to 460 mm wheels/discs in semi-finished or finished forms according to drawing

Contact Shafts & Housings

Alloys Required

CuCoNiBe, CuCrZr, CuCoBe
(according to the disc required)

Available Sizes

finished forms according to drawing

High Conductivity Copper Properties

		CuCoNiBe	CuNiBe	CuBe2	CuCo2Be	CuNiSiCr	CuCrZr	CuCr
Mechanical	Hardness	220 - 260 HB	235 - 260 HB	340 - 380 HB	220 - 260 HB	200 - 220 HB	130 - 160 HB	120 - 135 HB
	Tensile Strength	700 - 900 N/mm2	720 - 830 N/mm2	1100 - 1300 N/mm2	700 - 900 N/mm2	660 - 690 N/mm2	420 - 470 N/mm2	>465 N/mm2
	Yield Strength	490 - 550 N/mm2	620 - 740 N/mm2	1000 N/mm2	490 - 550 N/mm2	500 - 520 N/mm2	330 - 370 N/mm2	450 N/mm2
	Elongation (L=5D)	> 8 %	min. 10 %	4 - 5 %	> 8 %	13 %	18%	>18 %
Physical	Electrical Conductivity	min. 44 % IACS	45 % IACS	min. 22 % IACS	min. 44 % IACS	min. 44 % IACS	min. 78 % IACS	76-80 % IACS
	Thermal Conductivity	200 - 220 W/mK	250 W/mK	106 W/mK	200 - 220 W/mK	210 W/mK	320 W/mK	320 W/mK
	Density	8.75 g/cm3	8.9 g/cm3	8.3 g/cm3	8.75 g/cm3	8.7 g/cm3	8.9 g/cm3	8.9 g/cm3
Chemical (in % of weight)	Cr	n/a	n/a	n/a	n/a	0,4	1	> 0,8
	Zr	n/a	n/a	n/a	n/a	n/a	0,1	n/a
	Co	1,1	n/a	max 0,25	2,5	n/a	n/a	n/a
	Ni	1,1	2	max 0,25	0,3	2,5	n/a	n/a
	Be	0,5	0,5	2	0,5	n/a	n/a	n/a
	Si	n/a	n/a	n/a	n/a	0,7	n/a	n/a
	P	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Others	max. 0.2	max. 0.2	max. 0.2	max. 0.2	max. 0.2	max. 0.2	max. 0.2
	Cu	balance	balance	balance	balance	balance	balance	balance
Material Number (DIN)	2.1285	2.0850	2.1247	*2.1285	2.0855	2.1293	2.1291	
International Standards	R.W.M.A Class III	R.W.M.A Class III	R.W.M.A Class IV	R.W.M.A Class III	R.W.M.A Class III	R.W.M.A Class II	R.W.M.A Class II	
UNS	C17500	C17510	C17200	*C17500	C18000	C18150	C18200	

Forms of Delivery Round Forged • Flat, Square Forged • Forged Plates • Ring Discs • Cut From Forged • Round Bar / Plate • Cut From Premachined Round Bar / Plate

Aluminium Bronze Applications

Aluminium bronze is a type of bronze in which aluminium is the main alloying metal added to copper, Aluminium bronzes are most valued for their higher strength and corrosion resistance as compared to other bronze alloys. These alloys are tarnish-resistant and show low rates of corrosion in atmospheric conditions, low oxidation rates at high temperatures, and low reactivity with sulfurous compounds and other exhaust products of combustion. They are resistance to corrosion results from the aluminium in the alloys, which reacts with atmospheric oxygen to form a thin, tough surface layer of alumina (aluminium oxide) which acts as a barrier to corrosion of the copper-rich alloy.

Alloys Required

CuAl10F3Mn
CuAl10Ni5Fe4
CuAl14Fe4Mn2

Available Sizes

- Wear and guide plates
- Aircraft landing gear bearings
- Wiper dies and mandrels
- Bearing and bushings
- Valve seat and guides
- Gibs and slides
- Worm wheels and gears

Aluminium Bronzes Properties

		CuAl10F3Mn	CuAl14Fe4Mn2	CuAl10Ni5Fe4
Mechanical	Hardness	140 - 180 HB	360 - 400 HB	200 - 240 HB
	Tensile Strength	650 - 750 N/mm ²	550 - 700 N/mm ²	750 - 950 N/mm ²
	Yield Strength	350 - 380 N/mm ²	500 - 600 N/mm ²	500 - 700
	Elongation (L=5D)	> 14 %	N/A	> 4 %
Physical	Electrical Conductivity	12 % IACS	8 % IACS	8 % IACS
	Thermal Conductivity	> 63 W/mK	50 W/mK	42 W/mK
	Density	7,45 g/cm ³	7,25 g/cm ³	7,45 g/cm ³
Chemical	Al	2,5	14	10
	Fe	0,3	4	4,8
	Mn	0,5	1,5	1,5
	Ni	n/a	n/a	5
	Others	max. 1	max. 1	max. 0.2
	Cu	balance	balance	balance
in % of weight				
	UNS	C62400	C95900	C63000

Forms of delivery: Round Forged • Flat, Square Forged • Forged Plates • Ring • Discs • Cut From Forged • Round Bar / Plate • Cut From Premachined Round Bar / Plate



Copper Nickel Applications

Copper Nickel is an alloy of copper that contains nickel and strengthening elements, such as iron and manganese. It is highly resistant to corrosion by salt water, and used for piping, heat exchangers and condensers in seawater systems, as well as for marine hardware. It is also used for the propellers, propeller shafts, and hulls of high-quality boats. Other uses include military equipment and chemical, petrochemical, and electrical industries.

Alloys Required

CuNi10FeMn
CuNi30Mn1Fe

Available Sizes

- Propeller sleeves
- Flanges
- Sleeves
- Condensers
- Flanges
- Heat exchange components
- Process equipment making

Copper Nickel Properties

		CuNi10FeMn	CuNi30Mn1Fe
Mechanical	Hardness	70 HB	75 HB
	Tensile Strength	310 N/mm ²	370 N/mm ²
	Yield Strength	164 N/mm ²	138 N/mm ²
	Elongation (L=5D)	30 %	50 %
Physical	Electrical Conductivity	90 % IACS	51 % IACS
	Thermal Conductivity	50 W/mK	29 W/mK
	Density	8.90 g/cm ³	8.90 g/cm ³
Chemical	Ni	9 - 11 %	29 - 33 %
	Fe	1 - 2 %	0.4 - 1 %
	Mn	0.5 - 1 %	0.5 - 1.5 %
	Cu	Balance	Balance
in % of weight			
	UNS	UNS C 70600 DIN 2.0872	UNS C 71500 DIN 2.088

Forms of delivery: Round Forged • Forged Plates • Ring • Discs



By phone

Türkiye (Turkish):

+90 (262) 503 02 12 **

International (English):

+90 (262) 503 40 42 *

Mon. – Thurs. 9:00 - 18:00 (GMT+3)

Friday 9:00 - 15:00 (GMT+3)

* Charges vary depending on service provider and country/region

** Callers from abroad, please use the international number

By mail

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