



lebronze alloys



Discover our welding solutions

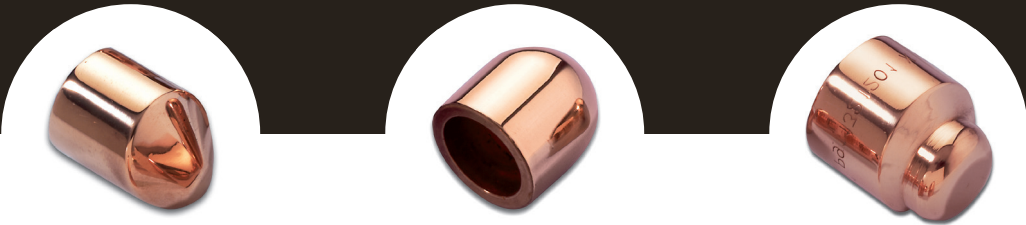
► Electrodes and materials

Recognized experience and innovation

For over 50 years, Lebronze alloys has been an international reference in the Automotive industry for resistance welding products. Being a major partner to almost all car builders involves important duties: not only manufacturing high quality alloys and electrodes but also by being a pioneer in innovation.

Our group has always been committed to a process of continuous improvement. This allied with a Research & Development programme launched in partnership with specific automotive manufacturers led to the set up of a dedicated and exclusive patented manufacturing process for the electrodes.

The welding performance of our revolutionary electrodes offers improvements in comparison with the highest standards available within this sector.



Our solutions tailored to cover all your needs

Our 4 solutions are an ideal range of welding products, from coated or uncoated AHSS steel to aluminum sheet welding.

- **CuZr electrodes:**
The market standard for copper-zirconium (C15000), chrome-free welding caps
 - **Powerode[®], the universal high-performance electrode:**
The premium solution (C18148-C18150) for welding of steel sheets with very high purity
- **Powerode[®], the universal electrode:**
The CuCrZr (C18148-C18150) market standard solution with high purity
 - **Alrode[®], the breakthrough welding solution for aluminum and steel:**
The premium innovative solution (C18147) for welding of steel sheets and aluminum sheets with very high purity

Comparison of Lebronze alloys welding solutions				
Technical Advantages	CuZr Electrode	Powerode [®]	Powerode+ [®]	Alrode [®]
Avoid sticking effect	•	•	•	•
Avoid mushrooming	•	•	•	•
Higher resistance to softening	•	•	•	•
Better pressure resistance		•	•	•
Higher conductivity			•	•
Last longer			•	•
Optimal properties for welding steel and aluminum				•

Measurements made in laboratory conditions. Non contractual.

A fully integrated manufacturing process:

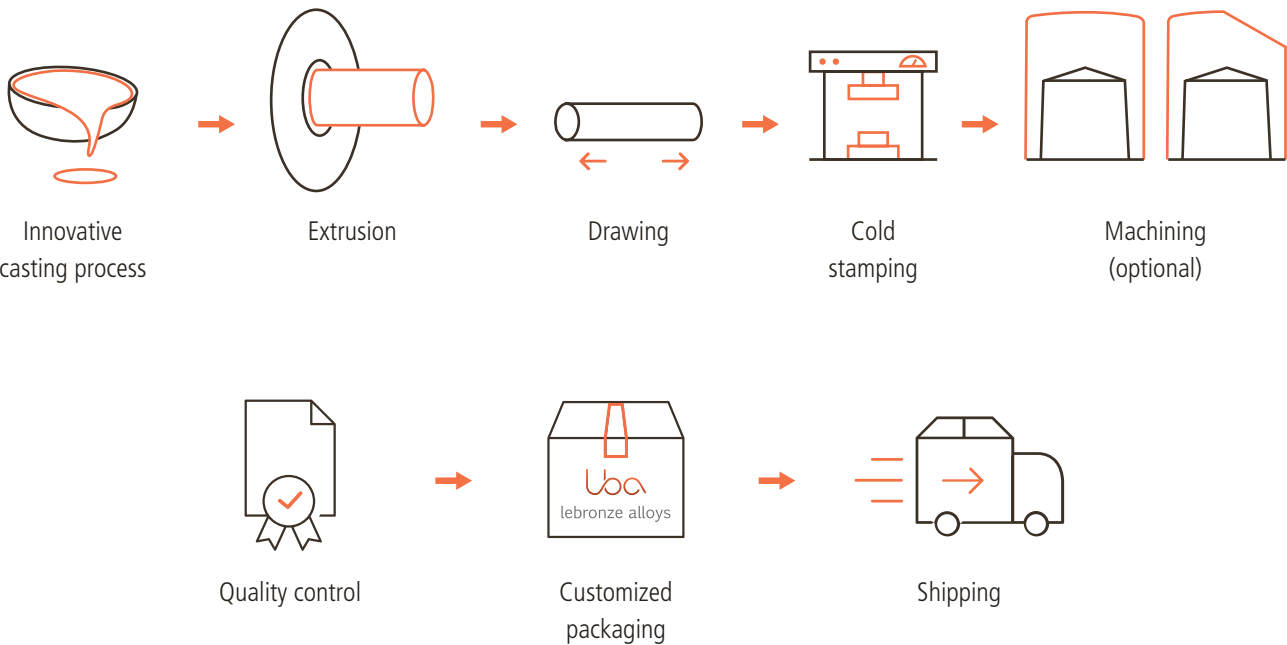
From alloy smelting to finished and customized products



Being the only integrated manufacturer, Lebronze alloys has an indisputable advantage: we manufacture our own alloys to produce electrodes.

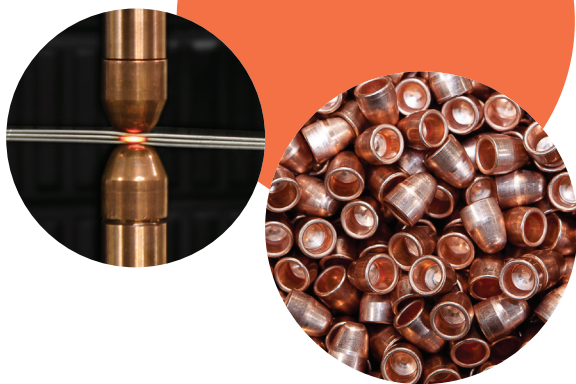
Our internal processes include casting, cold working stage, machining and non-destructive testing.

Being fully integrated ensures reactivity and complete traceability.



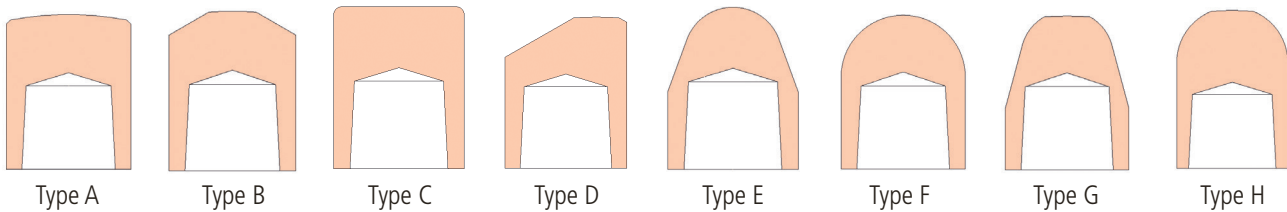
All our products are manufactured 100% in our own dedicated facilities and are permanently controlled by our experienced Engineering and Quality Assurance staff. This uniqueness guarantees complete traceability and thus perfect control of quality and improves the reliability of our supply chain.





Large range of welding electrodes

Lebronze alloys manufactures a large range of male and female spot welding electrodes.



Alloy	Standards Nearest international standards	Nominal composition %										Physical properties								Conditions TER = Quenched, cold worked and aged TR = Quenched and aged T= Quenched	Mechanical properties					
		Cu	Cr	Zr	Co	Be	Ni	Fe	P	Si	Others	Density	Electrical conductivity %IACS	Electrical resistivity at 20 °C, $\mu\Omega\cdot\text{cm}$	Thermal conductivity 20° to 200 °C W/mK	Coefficient of expansion 20° to 200° C x 10 ⁻⁶ K ⁻¹	Relative magnetic permeability	Young's modulus kN/mm ²	Tensile strength		Yield strength 0.2% offset or 0.5% E.U.L.	Elongation 5.65 %S	Hardness			
																			Mpa ≥ ; * = Mpa ≤					ksi ≥ ; * = Mpa ≤		
ALRODE CuCrZr	ASTM : C18147	remainder	0,15 to 0,35	0,02 to 0,05					≤0,02		≤0,04	8,9	≥ 88	≤1,96	320	17,5	1,01	120	Cold formed Electrodes 13 ≤Ø≤20 mm - 0,5 in.≤Ø≤ 0,8 in.						150	
POWERODE™/ POWERODE®+ CuCr1Zr	ASTM : C18148-C18150 MIL 19311 RWMA class 2 SAE CA 184 BS 2874 CC 102 EN 12163, EN 12165, EN 12420, EN 12167 CW106C, CW105C DIN 17666 WN 2.1293 DIN 17672 DIN 44759 NFA 82100 ISO 5182 A2/3 ISO 1336	remainder	0,5 to 0,8	0,03 to 0,10			≤ 0,01	0,004 to 0,02	≤0,04	8,9	≥80% /≥85%(*)	≤2,3	320	17,5	1,01	120	Cold formed Electrodes 13 ≤Ø≤20 mm - 0,5 in.≤Ø≤ 0,8 in.						160			
																	Machined Electrodes 10 ≤Ø≤40 mm - 0,40 in. ≤Ø≤ 1,57 in.						150			
																	Round rod 10 ≤ Ø ≤ 25,4 mm - 0,40 in.≤ Ø ≤ 1 in. Square, flat, hexagone, thickness 10 ≤ Ø ≤ 25,4 mm - 0,40 in.≤ Ø ≤ 1 in. TER condition						480 70 420 61 18 150			

(1) for Powerode+® only

Large range of welding products

Lebronze alloys also manufactures round bars, flat bars, plates, welding wheels, and any kind of engineered products.

- Rods and hollows from 8 to 380 mm OD
- Flats, squares and plates from 10 mm thickness
- Seam welding wheels up to 900 mm OD
- Stamped and machined connectors for welding guns



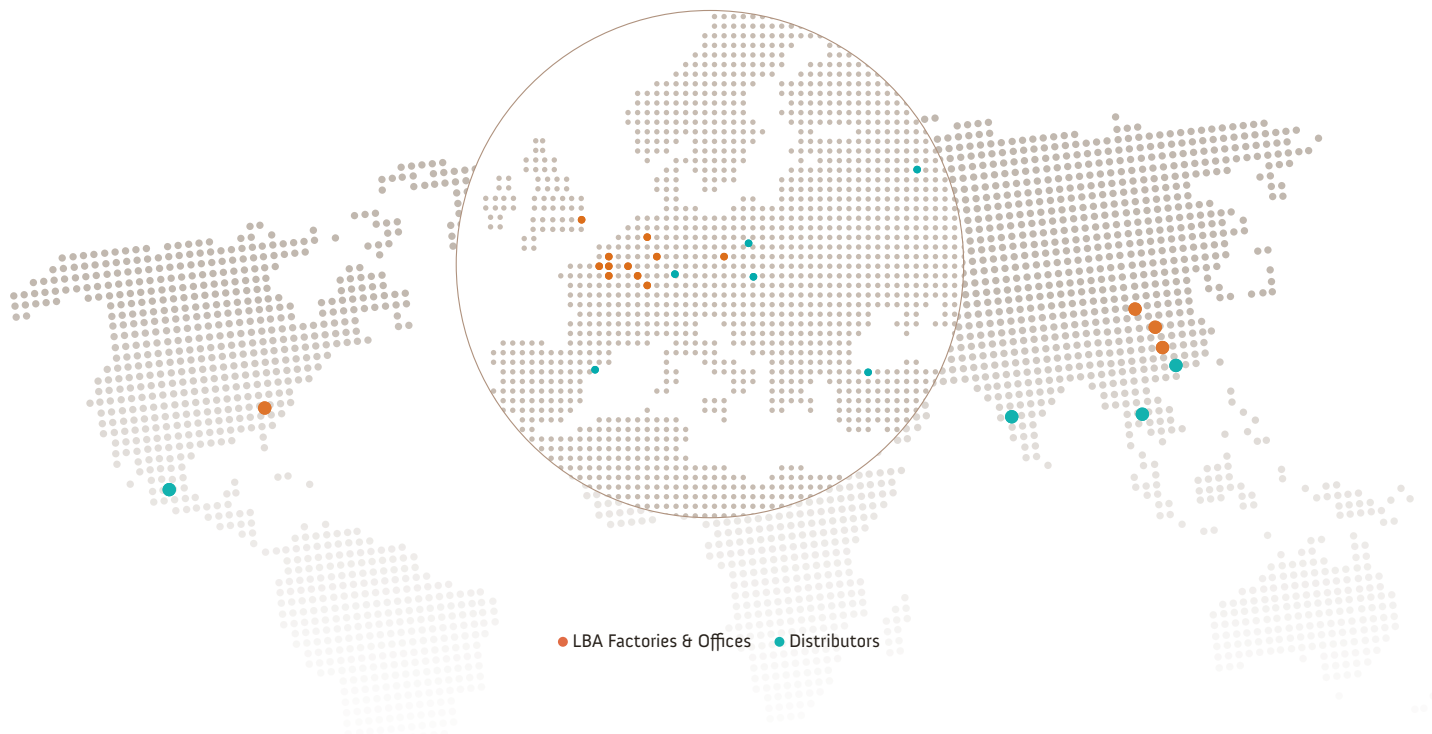
Alloy	Standards Nearest international standards	Nominal composition %										Physical properties							Conditions TER = Quenched, cold worked and aged TR = Quenched and aged T= Quenched	Mechanical properties						
																				Tensile strength		Yield strength 0.2% offset or 0.5% E.U.L.	Elongation 5.65 %S	Hardness		
		Mpa ≥ ; * = Mpa ≤	ksi ≥ ; * = Mpa ≤	Mpa ≥	ksi ≥	% ≥	HB																			
CRM16 CuCr1Zr	ASTM: C18100-C18150 MIL 19311 RWMA class 2 SAE CA 184 BS 2874 CC 102 EN 12163, EN 12165, EN 12420, EN 12167 CW106C, CW105C DIN 17666 WN 2.1293 DIN 17672 DIN 44759 NFA 82100 ISO 5182 A2/3 ISO 1336	remainder	0,4 to 1	0,03 to 0,15			≤ 0,08			≤0,2	8,9	≥ 75	≤2,3	320	17,5	1,01	120		Round rod 26 ≤ Ø ≤ 45 mm - 1. in. < Ø ≤ 1,80 in. Square, flat, hexagone, thickness 26 to 60 mm - 1,02 in.to 2,4 in. TER condition	480	70	420	61	18	140	
																			Round rod 45 < Ø ≤ 80 mm - 1,80 in. < Ø ≤ 3,15 in. Temper TER	440	64	360	52	18	140	
																			Round rod 20 ≤ Ø ≤ 350 mm - 0,80 in. ≤ Ø ≤ 13,8 in. Square, flat of equivalent section TR condition	350	51	240	35	20	120	
																			Plate 16 ≤ thickness ≤ 250 mm - 0,60 ≤ thickness ≤ 10 in. TR condition	380	55	280	41	20	120	
																			Plate 4 ≤ thickness ≤ 10 mm - 0,16 ≤ thickness ≤ 0,40 TER condition	400	58	350	51	10	125	
CRM16E CuCr1Zr	ASTM: C18100-C18150 MIL 19311 RWMA class 2 SAE CA 184 BS 2874 CC 102 EN 12163, EN 12165, EN 12420, EN 12167 CW106C, CW105C DIN 17666 WN 2.1293 DIN 17672 DIN 44759 NFA 82100 ISO 5182 A2/3 ISO 1336	remainder	0,4 to 1	0,03 to 0,25			≤ 0,08			≤0,2	8,9	≥ 75	≤2,3	320	17	1,01	120		Discs and rings TR condition	380	55	280	41	15	130	
ZR16X CuZr	ASTM: C15000 RWMA class 1 DIN 17666 wn 2.1580 DIN 17672 ISO 5182 A2/4 EN 12163, EN 12167, EN 12420 CW120C	remainder		0,15							8,9	≥ 85	≤2,05	320	17	1,01	110		TER condition	320	46	280	41	18	120	
CB4 CuCo2Be	BS 2874 CC 112 DIN 17666 wn 2.1285 DIN 17672- DIN 44759 ISO 1187- NFA 82100 ASTM B441- B534- B 870: C 17500 MIL 46087- RWMA class 3 SAE CA 184	remainder			2,2	0,5					8,9	≥ 43	≤4	200	17,5	1,01	130		Section< 1000 mm ² - < 1,550 in. ² TR or TER condition	700	101	650	94	10	240	
																			Section ≥ 1000 mm ² - ≥ 1,550 in. ² TR condition	700	101	550	80	15	220	
CBE2 CuBe2	ASTM B196: C 17200 AMS 4533 : C17200 AMS 4535 : C17200 RWMA class 4 QQC 530 DIN 17666, DIN 17672 wn 2.1247 NFL 14709 EN 12163 CW 101C	remainder			>0,2	1,8 to 2					8,3	28	6	110	17	1,01	130		Discs 200 ≤ Ø ≤ 400 mm 7,9 in. ≤ Ø ≤ 15,7 in. Plate 25 ≤ thickness ≤ 250 1 in. ≤ thickness ≤ 10 in.	1050	152	850	123	2	320	
																			Rods 19,05 ≤ Ø < 50,8 mm, 0,75 in. ≤ Ø < 2 in. TER condition	1240	180	1061	154	3	360	
																			Rods 50,8 ≤ Ø ≤ 76,2 mm, 2 in. ≤ Ø ≤ 3 in. TER condition	1210	175	1040	151	4	360	
																			Rods 19,05 ≤ Ø ≤ 150 mm, 0,75 in. ≤ Ø ≤ 5,9 in. TR condition	1150	167	965	140	4	340	
																			Rods 19,05 ≤ Ø ≤ 150 mm, 0,75 in. ≤ Ø ≤ 5,9 in. T condition	570	83			35	150	
																			Rings TR condition	1050	152	850	123	2	320	
N55 CuNi2Si	DIN 17666 wn 2.0855 DIN 17672 w 2.0855 DIN 44759 cl A3.2 NFL 14-701 ISO 1187 EN 12163, EN 12167, EN 12420, EN 12165 CW111C DTD 498- RWMA class 3	remainder				2,3	0,6				8,8	38	4,5	180	16	1,01	130		Section ≤ 1000 mm ² - ≤ 1,55 in. TER temper	650	94	590	86	10	≥195	
																			1000 <section ≤ 2800 mm2 - 1,55 in. ² <section ≤ 4,3 in. ² TR temper	650	94	500	72	10	≥195	
																			2800 <section ≤ 60 000 mm ² - 4,3 in. ² <section ≤ 93 in. ² TR temper	590	86	440	64	8	≥190	
																			Section> 60 000 mm2 - section > 93 in. ² TR temper	490	71	340	49	8	≥160	
N56 CuNi2Si	RWMA class 3: C18000	remainder	0,6				2,3	0,6			8,8	≥ 45	≤ 3,83	180	16	1,01	130		Rods 3,175 ≤ Ø ≤ 25,4 mm - 0,125 in. ≤ Ø ≤ 1 in.	655	95	590	86	9	≥195	
																			Rods 25,4 ≤ Ø ≤ 50,8 mm - 1 in. ≤ Ø ≤ 2 in.	650	94	500	72	9	≥195	
																			Rods 50,8 ≤ Ø ≤ 114,3 mm - 2 in. ≤ Ø ≤ 4,5 in.	610	88	500	72	9	≥195	
																			Rods 114,3 ≤ Ø ≤ 381 mm - 4,5 in. ≤ Ø ≤ 15 in.	610	88	345	50	9	≥195	
																			Square, rectangle Section ≥ 500 mm ² section ≥ 0,77 in. ² . Thickness ≤ 25 mm - thickness ≤ 1 in.	655	95	590	86	9	≥195	
																			Square, rectangle Thickness> 25 mm - thickness > 1 in.	610	88	345	50	9	≥195	
																			Forged Plate 19 ≤ thickness ≤ 25 mm - 0,75 in. ≤ thickness ≤ 1 in.	650	94	345	50	9	≥195	
																			Forged plate 25 ≤ thickness ≤ 51 mm - 1 in. ≤ thickness ≤ 2 in.	620	90	345	50	9	≥195	
																			Forged plate thickness> 51 mm - thickness > 2 in.	610	88	345	50	9	≥195	
NB4 CuNi2Be	RWMA class 3 , ASTM B 441 and B534 C17510 alloy DIN 17666 WN 2,0850 DIN 17672 EN 12163 CW110C						0,4	2			8,9	≥ 45	≤ 3,83	230					130	ROD TR (TF00, AT) Outer diameter : 12,7 - 304,8 mm (0,5» - 12»)	690	100	520	75	9	230
																			130	ROD TER (TH04, HT) Outer diameter : 12,7 - 50,8 mm (0,5» - 2»)	760	110	660	95	9	240
																			80	ROD T (TB00, A) Outer diameter : 12,7 - 304,8 mm (0,5» - 12»)	240	35	70	10	20	≤95
																			80	ROD TE (TD04, H) Outer diameter : 12,7 - 50,8 mm (0,5» - 2»)	450	65	320	45	15	120
																			130	PLATE TR (TF00, AT) Width: 305 - 686 mm (12» - 27») Thickness: minimum 19,05 (3/4») Maximum section: 70 000 mm2 (108 in2)	690	100	550	80	10	230
																			80	PLATE T (TB00, A) Width: 305 - 686 mm (12» - 27») Thickness: minimum 19,05 (3/4») Maximum section: 70 000 mm2 (108 in2)	240	35	170	25	20	≤90

Lba lebronze alloys

A worldwide distribution network

Lebronze alloys works with many exclusive partner distributors to offer our full range of welding solutions around the world: we can help you find the most convenient one for you.

Visit "LBA Worldwide" on our website to search among our worldwide distribution network.



Lebronze alloys was born from the integration of companies specialized in the production of copper alloys, copper, nickel alloys, aluminum, special steel, stainless steel, titanium and super alloys.

Thanks to its multidisciplinary know-how, the Group provides innovative solutions to all major industries such as Automotive, Aerospace, Oil & Gas, Energy, Off-highway Mining and Railways, but is also present in sectors that manufacture personal equipment.

Our 14 production sites and 1150 employees master a unique range of metal processing technologies: continuous and semi-continuous casting, sand casting, chill casting (manual, mechanized, robotic), centrifugal casting, extrusion, ring rolling, hot and cold rolling, drawing, free forging, forging, die stamping, stamping, heat treatment, cold stamping, machining, non-destructive tests, etc.

Offering a solution that is suited and optimized to the needs of each industry is our Group's commitment.

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