

FORTEBRAZE

Brazing Alloys and Fluxes for
HVAC and Refrigeration Industry



► About Sentes-BIR

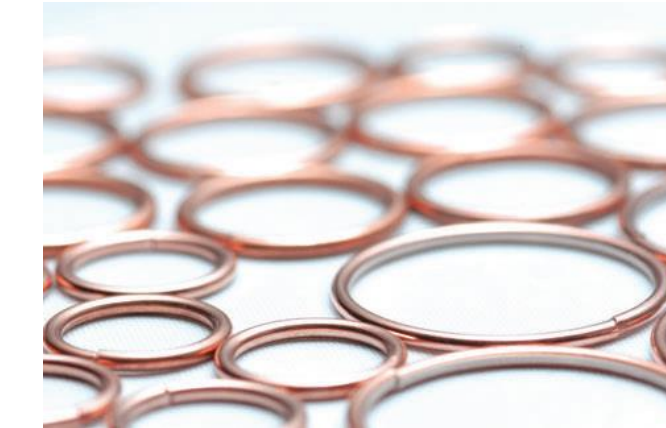
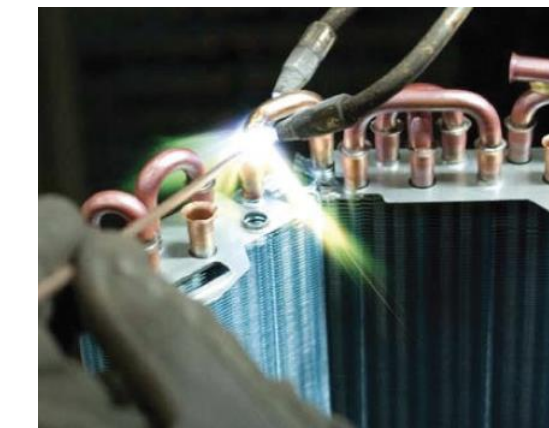
- Sentes-BIR is manufacturer of Advanced Materials
- Located in Izmir;
 - 2 Production locations: Kemalpaşa, Torbalı
- Export > 60%
- 120 Employee
- Certification
 - ISO 9001
 - IATF 16949
 - ISO 13485
 - AS/EN 9100 (planned for 2022)



Product Groups

- ▶ **Brazing alloys and fluxes**

Silver, Copper, Aluminium based alloys for brazing applications and deoxidisers



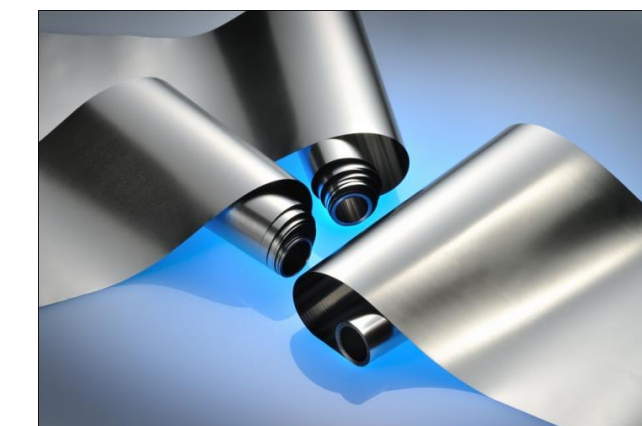
- ▶ **Brazing pastes**

Nickel and copper based brazing pastes for high temperature furnace brazing applications



- ▶ **Brazing foils**

Rapid solidification technology for manufacturing amorphous ribbons used in brazing



- ▶ **Thermal Spray and Additive Manufacturing Powders**

Nickel and Cobalt-based powders for thermal spray applications, like flame spray, fusewelding, HVOF, PTA and laser cladding and Additive Manufacturing



Cadmium-free Brazing Alloys

Product Code	Standards				Composition %				Melting Range °C
	ISO 17672	EN 1044	AWS 5.8	DIN 8513	Ag	Cu	Zn	Other	
6025	Ag 125	AG 108	BAg-37	L-Ag25Sn	25	40	33	2 Sn	680-760
6030	Ag 130	AG 107	-	L-Ag30Sn	30	36	32	2 Sn	650-750
6034	Ag 134	AG 106	-	L-Ag34Sn	34	36	27.5	2.5 Sn	630-730
6038	Ag 138	-	BAg-34	-	38	32	28	2 Sn	650-720
6040	Ag 140	AG 105	BAg-2	L-Ag40Sn	40	30	28	2 Sn	640-700
6045	Ag 145	AG 104	-	L-Ag45Sn	45	27	25.5	2.5 Sn	640-680
6055	Ag 155	AG 103	BAg-7	L-Ag55Sn	55	21	22	2 Sn	620-660
6056	Ag 156	AG 102	-	-	56	22	17	5 Sn	620-660



Cooper-Phos Brazing Alloys Brazing Alloys

Product Code	Standards				Composition %				Melting Range °C
	ISO 17672	EN 1044	AWS 5.8	DIN 8513	Ag	Cu	Zn	Other	
2005	CuP 178		BCuP-1	-		94	5		710-925
2006	CuP 179	CP 203	-	L-CuP6		93.8	6.2		710-890
2007	CuP 180	CP 202	BCuP-2	L-CuP7		93	7		710-820
2008	CuP 182	CP 201	-	L-CuP8		92	8		710-770
2077	CuP 386	CP 302	-	-		86.2	6,8	7	650-700
2076	-	-	-	-		89.6	6.2	4.2	650-700
3002	CuP 279	CP 105	-	L-Ag2P	2	91.5	6.5		645-825
3002 LP	-	-	-	-	2	93.5	4.5		650-850
3022	CuP 280	-	BCuP-6	-	2	91	7		645-790
3005	CuP 281	CP 104	BCuP-3	L-Ag5P	5	89	6		645-815
3055	CuP 282	-	BCuP-7	-	5	88	7		645-770
3015	CuP 284	CP 102	BCuP-5	L-Ag15P	15	80	5		645-800
3018	CuP 286	CP 101	-	-	18	75	7		645
3666	-	-	-	-	6	81	6.5	6.5	600-640



ZnAl Alloys for Joining Aluminium

Product Code	Standards				Composition %		Melting Range °C
	ISO 17672	EN 1044	AWS 5.8	DIN 8513	Al	Zn	
10002	-	-	-	-	2	98	385-400
10004	-	-	-	-	4	96	385-400
10015	-	-	-	-	15	85	380-450



Silver Brazing Fluxes

Product Code	Standards			Form	Chemical Composition	Application
	DIN 8511	EN 1045	AWS A5.31			
045	F-SH1	FH10	FB3-F	powder	Complex Fluorides and Boron components	Brazing of Steel, Copper and Copper alloys and Silver alloys
055	F-SH1	FH10	FB3-F	powder		
056	F-SH1	FH10	FB3-F	paste		

Cesium Fluxes for Zn-Al brazing

Product Code	Standards			Form	Chemical Composition	Application
	DIN 8511	EN 1045	AWS A5.31			
040	-	-	-	powder	Non-hygroscopic florides	Aluminium and alloys. Joining Aluminium to Copper.
041	-	-	-	paste		



FORTE**BRAZE**

Brazing Alloys and Fluxes

HVAC and Refrigeration Applications

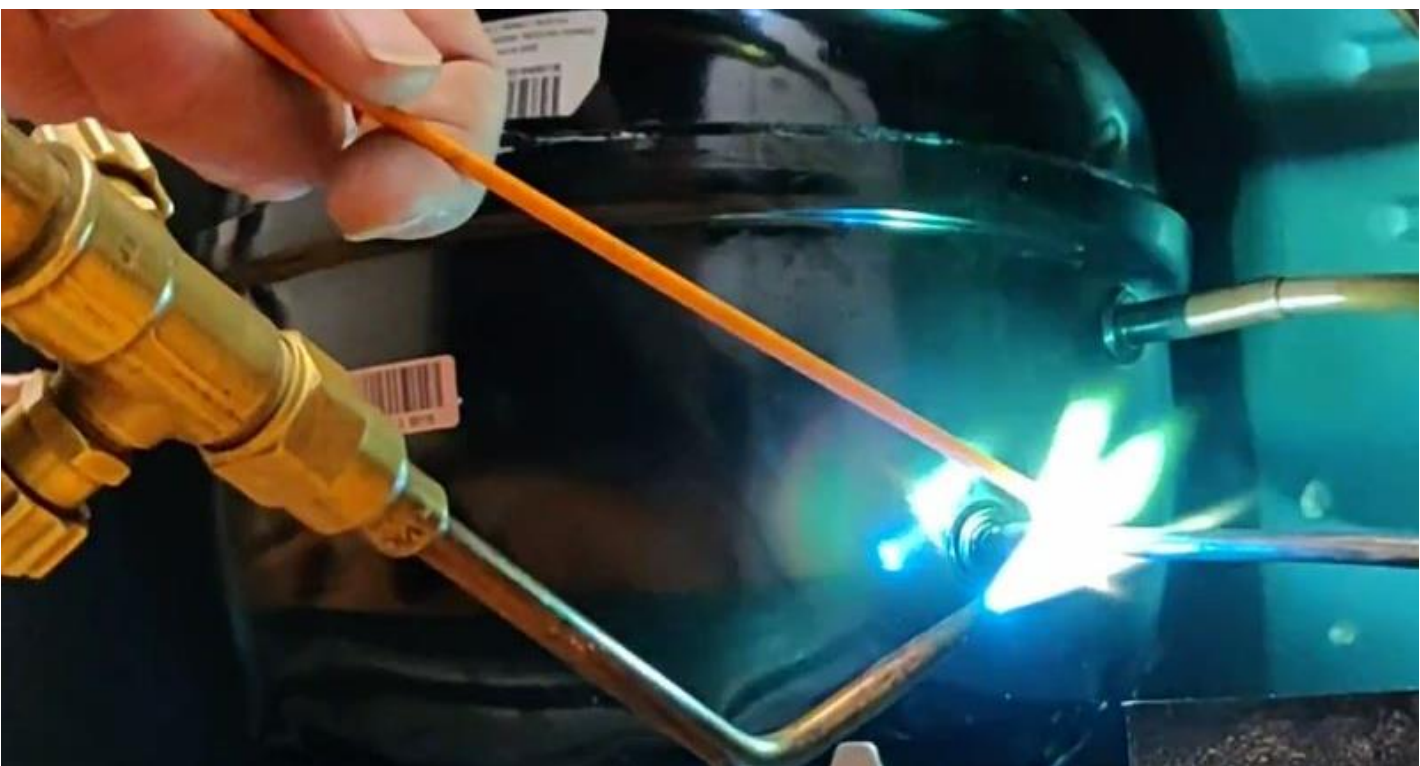


Applications

Refrigeration Manufacturing

Joining of Steel, Copper and Aluminium pipe parts are brazed for commercial and domestic refrigeration manufacturing.

Fortebraze brazing rods and fluxes should be used on connections of compressors and joints of pipes.



Product Code	Alloy Composition	Application
2000 and 3000 series alloys	CuP and CuPAg in rods, rings and preforms	<ul style="list-style-type: none">• Brazing Cu to Cu
8000 series alloys	CuZn Brass alloys as rod or ring forms	<ul style="list-style-type: none">• Brazing Steel to Steel with liquid flux• Brazing Steel to Cu with liquid flux
6000 series alloys	Cd-free high silver contained brazing rods as flux coated, bare or brazing rings	<ul style="list-style-type: none">• Brazing Steel to Steel• Brazing Steel to Cu
10004	Flux coated ZnAl4 rods or ZnAl4 alloy with Cs based fluxes	<ul style="list-style-type: none">• Brazing Al to Cu• Brazing Al to Al
70/30 GREENFLAME	liquid flux (gasflux) can be used for bright and clean sight of copper parts. No oxidation on brazed parts.	<ul style="list-style-type: none">• Cu-Cu• Steel-Steel• Steel-Cu



Applications

Compressor Manufacturing

Joining of Steel, Copper and Aluminium pipe parts are brazed for commercial and domestic refrigeration manufacturing.

Fortebraze brazing rods and fluxes should be used on connections of compressors and joints of pipes.



Product Code	Alloy Composition	Application
6000 series alloys	Cd-free high silver contained brazing rods as flux coated, bare or brazing rings	Brazing Steel to Steel Brazing Steel to Cu



Applications

Heat Exchanger Manufacturing

Heat exchangers are used to transfer heat from one medium to another. refrigerations and air conditioning units, cold rooms, chiller systems, etc...



Product Code	Alloy Composition	Application
2000 and 3000 series alloys	CuP and CuPAg in rods, rings and preforms	• Brazing Cu to Cu
70/30 GREENFLAME	liquid flux (gasflux) can be used for bright and clean sight of copper parts. No oxidation on brazed parts.	• Cu-Cu • Steel-Steel • Steel-Cu



Applications

Plumbing and Installation

Copper-Phosphorus and Copper-Phosphorus-Silver alloys are used for brazing application of piping for air conditioning and refrigeration systems, for plumbing of water systems , joining of copper pipes to joints and fittings.



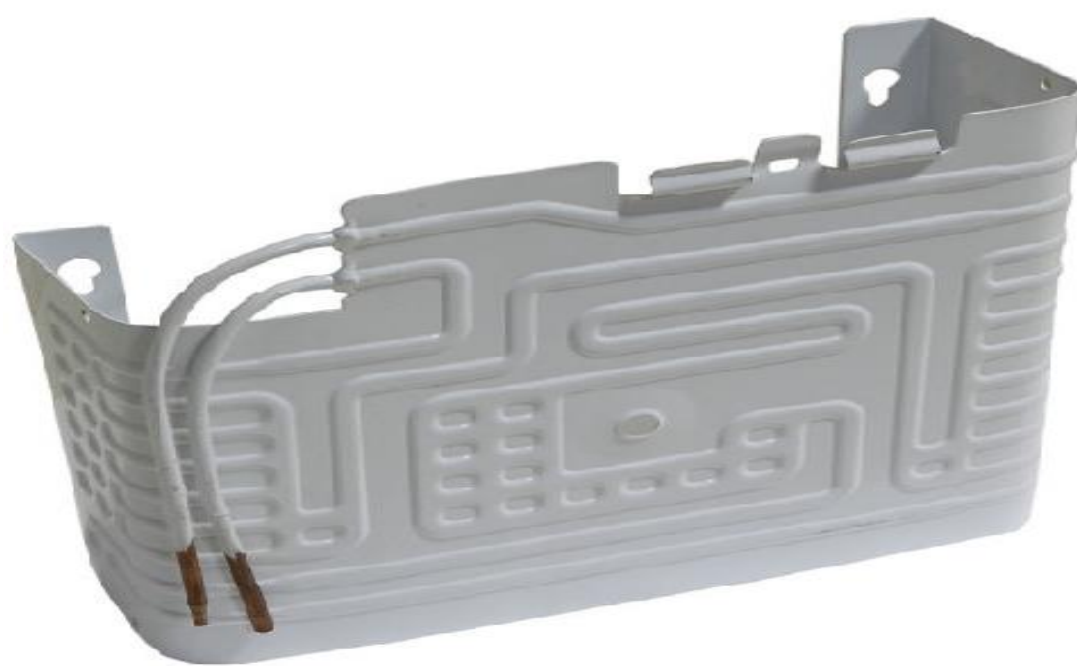
Product Code	Alloy Composition	Application
2000 and 3000 series alloys	CuP and CuPAg in rods, rings and preforms	• Brazing Cu to Cu
70/30 GREENFLAME	liquid flux (gasflux) can be used for bright and clean sight of copper parts. No oxidation on brazed parts.	• Cu-Cu
6000 series alloys	Cd-free high silver contained brazing rods as flux coated, bare or brazing rings	• Brazing Cu to Brass Brazing Brass to Brass



Applications

Refrigeration
Aluminium parts

ZnAl rods and cesium flux (low temperature Al flux) are used for joining aluminium pipes and aluminium to copper joints while manufacturing No-frost and roll bond evaporators.



Product Code	Alloy Composition	Application
10004 alloy	ZnAl4 alloy wire or with Cs based flux coating	• Brazing Al to Cu Brazing Al to Al
040 & 041 flux	Cs based fluxes in powder and paste form	
10004 alloy	ZnAl4 alloy wire or with Cs based flux coating	• Brazing Al to Cu Brazing Al to Al

