

BRAZING

Filler metals and fluxes



STELLA
WELDING ALLOYS

CATALOGUE



STELLA

WELDING ALLOYS

STELLA WELDING ALLOYS is a specialized supplier of brazing alloys, fluxes and filler metals for **Brazing**, Soldering and Welding. Our headquarters are located in the **north of Italy** from where we supply **Customers** in more than **60 countries worldwide**. With more than **20 years of experience**, we operate in HVAC&R, diamond and carbide tipped tools, heat exchangers, electro-mechanical, metal furniture industries and others, being a reliable source for worldwide leader original equipment manufacturers (OEMs). Our Quality System is certified ISO 9001/2008.

We offer:

- the most comprehensive and widest range of different alloys and products, from general purpose to special applications
- variety of different make-ups, from standard forms to custom engineered forms
- conformity to the main international, technical and environmental standards
- complete source for technical information, consulting and assistance



We operate regularly in:

English, German, French, Spanish, Russian and Italian.

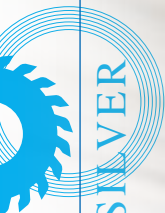


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SILVER BASED ALLOYS - CADMIUM FREE

The following are general purpose brazing alloys, suitable to join easily a wide range of ferrous and non-ferrous base materials (iron, steel, stainless steel, copper, brass, etc.). Continuous service operating temperatures of joints brazed with these alloys range up to approx 200 °C.

When joining stainless steel in wet environments, in order to avoid failure of the joint due to interfacial corrosion, it is recommended to use zinc-free alloys (Ag60Sn1), or alloys with Nickel additions: see page 4.

Available in many different presentation forms (rods, flux-coated rods, wires, strips, rings, preforms, pastes and powders), these alloys are very free flowing, ductile and strong.

All these alloys do not contain Cadmium, do not present the Health & Safety concerns associated with Cadmium-Bearing Alloys and are compliant with the RoHS regulation.

They are divided in two categories: alloys with Tin and alloys without Tin; Tin being used to lower the melting temperature of the alloy.

When brazing in an oxidizing environment (that is: in air), the use of a proper flux is required: see page 14.



CODE	COMPOSITION %					MELTING RANGE SOL - LIQ	DENSITY	TENSILE STRENGTH	CORRESPONDING STANDARDS		
	Ag	Cu	Zn	Sn	Si	°C	g/cm ³	kg/mm ²	ISO 17672	EN 1044	AWS A5.8

WITH TIN

Ag60Sn	60	23	14	3		620-685	9,6	48		AG 101	
Ag60Sn/1	60	30		10		600-730	9,8		Ag 160	AG 402	BAG-18
Ag56Sn	56	22	17	5		620-655	9,4	48	Ag 156	AG 102	BAG-7
Ag55Sn	55	21	22	2		630-660	9,4	44	Ag 155	AG 103	
Ag45Sn	45	27	25,5	2,5		640-680	9,2	43	Ag 145	AG 104	BAG-36
Ag40Sn	40	30	28	2		650-710	9,1	44	Ag 140	AG 105	BAG-28
Ag38Sn	38	32	28	2		650-720	9,1	45	Ag 138		BAG-34
Ag34Sn	34	36	27,5	2,5		630-730	9	48	Ag 134	AG 106	
Ag30Sn	30	36	32	2		665-755	8,8	48	Ag 130	AG 107	
Ag25Sn	25	40	33	2		680-760	8,8	48	Ag 125	AG 108	BAG-37

WITHOUT TIN

Ag60	60	26	14			695-730	9,5	45		AG 202	
Ag45	45	30	25			665-745	9,1		Ag 245		BAG-5
Ag44	44	30	26			675-735	9,1	51	Ag 244	AG 203	
Ag40	40	30	30			660-720	9,1	46			
Ag35	35	32	33			685-755	9	48	Ag 235		BAG-35
Ag33	33	33,5	33,5			680-750	9				
Ag30	30	38	32			680-765	8,9	50	Ag 230	AG 204	BAG-20
Ag25	25	40	35			700-790	8,8	45	Ag 225	AG 205	
Ag20	20	44	36		0,15	690-810	8,7	43		AG 206	
Ag12	12	48	40		0,15	800-830	8,4	48	Ag 212	AG 207	
Ag5	5	55	40		0,15	820-870	8,4	48	Ag 205	AG 208	

NOTE: ALLOYS WITH 0,2 % SILICON ARE AVAILABLE.

CHARACTERISTICS MAKE-UP

 Rods	Ø: 0,5 → 4 mm	Length: 500 / 1.000 mm
 Coated Rods	Ø: 1,5 - 2 - 2,5 - 3 mm	Length: 500 mm / Different kinds of coating available in various colours
 Wires	Ø: 0,25 → 3 mm	Coils and Spools
 Strips	Thickness: 0,1 → 1 mm	Width: 1,3 → 80 mm
 Powder and Paste	 Rings	 Preforms from Wire and from Strip

SILVER BASED ALLOYS - SPECIAL APPLICATIONS



The following are alloys that, thanks to the addition of specific elements, or to their particular composition, have improved characteristics that make them suitable for specific applications or to operate in difficult conditions.

In particular, the addition of Nickel helps in joining difficult-to-braze materials (such as stainless steel, tool steel, tungsten carbide, nickel and nickel alloys, etc.) and improves corrosion resistance.

Manganese helps in brazing carbides.

Alloys without Copper are ammonia resistant.

Alloys without Zinc are suitable for brazing in oven and may be used to join stainless steels in wet conditions to avoid interfacial corrosion problems.

Alloys with Indium are suitable to join pieces that will undergo TiN coating.

CODE	COMPOSITION %						MELTING RANGE SOL - LIQ °C	DENSITY g/cm ³	TENSILE STRENGTH kg/mm ²	CORRESPONDING STANDARDS		
	Ag	Cu	Zn	Ni	Mn	Others				ISO 17672	EN 1044	AWS A5.8

ALLOYS WITH NICKEL

Ag27MnNi	27	38	20	5,5	9,5		680-830	8,7		Ag 427	AG 503	
Ag40Ni	40	30	28	2			670-780	8,9		Ag 440		BAG-4
Ag49MnNi	49	16	23	4,5	7,5		680-705	8,9	55	Ag 449	AG 502	BAG-22
Ag49MnNi/1	49	27	21	0,5	2,5		670-690	8,9				
Ag50Ni	50	20	28	2			660-705	9,0	45	Ag 450		BAG-24

ALLOYS WITHOUT COPPER (AMMONIA RESISTANT)

Ag72Zn	72		28				710-730	8,4	44			
Ag85Mn	85				15		960-970	10		Ag 485	AG 501	BAG-23

ALLOYS WITHOUT ZINC (SUITABLE FOR BRAZING IN OVEN)

Ag99,99	99,99						960-960	10,5				
Ag60Sn/1	60	30				Sn 10	600-730	9,8		Ag 160	AG 402	
Ag72	72	28					780-780	10	35	Ag 272	AG 401	BAG-8
Ag40Ni/1	40	58		2			780-900	9,6	35			

ALLOYS WITHOUT INDIUM (SUITABLE FOR TIN COATING)

Ag56InNi	56	27		2,5		In 14,5	600-710	9,6			AG 403	
Ag64MnNiIn	64	26		2	2	In 6	730-780	9,6				

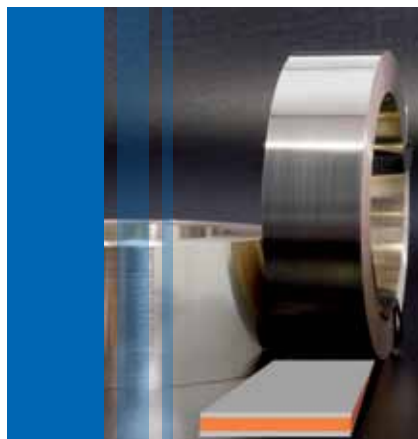
CHARACTERISTICS MAKE-UP

 Rods	Ø: 0,5 → 4 mm	Length: 500 / 1.000 mm
 Coated Rods	Ø: 1,5 - 2 - 2,5 - 3 mm	Length: 500 mm / Different kinds of coating available in various colours
 Wires	Ø: 0,25 → 3 mm	Coils and Spools
 Strips	Thickness: 0,1 → 1 mm	Width: 1,3 → 80 mm
 Powder and Paste	 Rings	 Preforms from Wire and from Strip

SILVER BASED ALLOYS - TRIMETALS

Trimetals strips consist of two layers of silver brazing alloy clad onto a copper core and are very popular for brazing of carbides onto steel, especially large pieces.

The copper core of the strip absorbs and relieves the stresses caused by the difference in thermal expansion between carbide and base metal, thus helping to prevent cracking.



CODE	COMPOSITION % (external layers)					MELTING RANGE SOL - LIQ	DENSITY	NOTES
	Ag	Cu	Zn	Ni	Mn	°C	g/cm³	

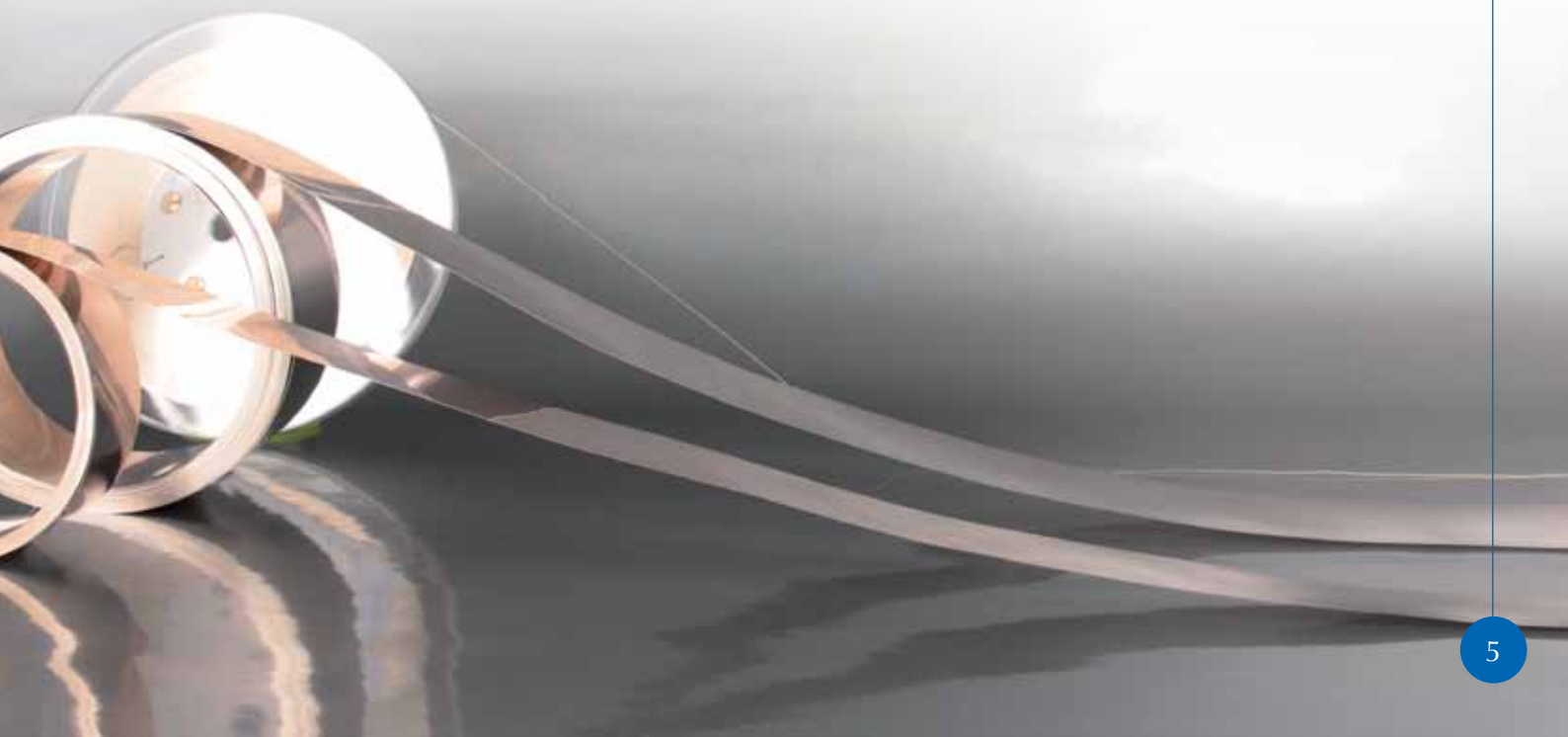
TRIMETALS

Ag49MnNi/1 TR	49	27,5	20,5	0,5	2,5	670-690	9,0	Copper Core - Ratio 1:2:1
Ag49MnNi/1 TR 161	49	27,5	20,5	0,5	2,5	670-690	9,0	Copper Core - Ratio 1:6:1
Ag49MnNi/1 TR 111	49	27,5	20,5	0,5	2,5	670-690	9,0	Copper Core - Ratio 1:1:1
Ag40Ni TR	40	30	28	2		670-780	8,9	Copper Core - Ratio 1:2:1
Ag38MnNi TR	38	26	24	4,5	7,5	650-690	8,9	Copper Core - Ratio 1:2:1

NOTE: OTHER ALLOYS AVAILABLE UPON REQUEST.

CHARACTERISTICS MAKE-UP

 Strips	Thickness: 0,1 → 1 mm	Width: 1,3 → 80 mm
 Preforms from Strip		



SILVER BASED ALLOYS - CADMIUM BEARING

The brazing alloys presented in this page are very versatile, high-strength, free-flowing and exhibit the lowest melting points of all silver based alloys.

They can be used to join a wide range of base materials.

Continuous service operating temperatures of joints brazed with these alloys range up to approx 200 °C.

Because of the presence of Zinc and Cadmium, and the possible failure of the joint due to the mechanism of interfacial corrosion, these alloys are not recommended for the joining of stainless steels in wet conditions; in these conditions, zinc free and cadmium free alloys, or alloys with nickel additions are preferred: see page 4.

Since Cadmium and its oxides are toxic, special safety precautions must be followed during brazing operations (e.g. mechanical ventilation and/or respiratory mask).

The use of these alloys in applications where food, beverages and/or human health in general is involved, is forbidden.

CADMIUM BEARING BRAZING ALLOYS HAVE BEEN BANNED IN THE EUROPEAN UNION SINCE DECEMBER 2011 (EU COMMISSION REGULATION NO. 494/2011) AND THEIR USAGE IS NO MORE ALLOWED: PLEASE CONTACT OUR TECHNICAL AND COMMERCIAL STAFF TO GET AN ADVICE ON SELECTING THE MOST APPROPRIATE CADMIUM-FREE SUBSTITUTES.

CODE	COMPOSITION %						MELTING RANGE SOL - LIQ °C	DENSITY g/cm³	TENSILE STRENGTH kg/mm²	CORRESPONDING STANDARDS		
	Ag	Cu	Zn	Cd	Si	Ni				ISO 17672	EN 1044	AWS A5.8

ALLOYS

Ag50CdNi	50	15,5	15,5	16		3	635-655	9,5	45	Ag 351	AG 351	BAG-3
Ag50Cd	50	15,5	16,5	18			625-635	9,5	43	Ag 350	AG 301	BAG-1a
Ag45Cd	45	15	16	24			605-620	9,4	43	Ag 345	AG 302	BAG-1
Ag42Cd	42	17	16	25			605-620	9,4	42		AG 303	
Ag40Cd	40	19	21	20			595-630	9,3	42	Ag 340	AG 304	
Ag38Cd	38	20	22	20			610-650	9,2	40			
Ag34Cd	34	22	24	20			610-670	9,1	40	~ Ag 335	~ AG 305	~ BAG-2
Ag30Cd	30	28	21	21			600-690	9,1	38	Ag 330	AG 306	~ BAG-2a
Ag25Cd	25	30	27,5	17,5			605-720	8,8	40	Ag 326	AG 307	BAG-33
Ag21Cd	21	35	27	17	0,5		620-730	8,7	42		AG 308	
Ag20Cd	20	40	25	15			620-750	8,7	40		AG 309	
Ag19Cd	19	39	28	14			630-730	8,8	40			
Ag17Cd	17	41	26	16			620-760	8,7	42			
Ag13Cd	13	44	33	10			605-795	8,7	42			

TRIMETAL STRIPS (BRAZING OF CARBIDES)

Ag40Cd TR	40	19	21	20			595-630			Trimetal Strip - Copper Core - Ratio 1:2:1		
Ag30Cd TR	30	28	21	21			600-690			Trimetal Strip - Copper Core - Ratio 1:2:1		

CHARACTERISTICS MAKE-UP

NOTE: ALLOYS WITH 0,2 % SILICON ARE AVAILABLE

 Rods	Ø: 0,5 → 4 mm	Length: 500 / 1.000 mm
 Coated Rods	Ø: 1,5 - 2 - 2,5 - 3 mm	Length: 500 mm / Different kinds of coating available in various colours
 Wires	Ø: 0,25 → 3 mm	Coils and Spools
 Strips	Thickness: 0,1 → 1 mm	Width: 1,3 → 80 mm
 Powder and Paste	 Rings	 Preforms from Wire and from Strip

BRASS AND COPPER BASED ALLOYS

This group includes four different categories of high-temp brazing alloys:

- General Purpose Brasses
- Brasses with addition of Nickel
- High temperature Copper Alloys for special applications
- Copper for furnace brazing

All these alloys are economical to use and can be generally supplied in a variety of forms (rods, wires, strips, preforms, powder and pastes). General purpose brasses can be used for brazing and for the Oxy-Fuel Gas Braze-Welding process, with liquid flux spread through the torch flame.

CODE	COMPOSITION %								MELTING RANGE SOL - LIQ	DENSITY	TENSILE STRENGTH	CORRESPONDING STANDARDS		
	Cu	Zn	Ag	Ni	Mn	Sn	Si	Other	°C	g/cm ³	kg/mm ²	ISO 17672	EN 1044	AWS A5.8

GENERAL PURPOSE BRASSES

Cu60Zn	60	Bal					0,3		875-895	8,4	40	Cu 470a	CU 301	
Cu59ZnSn	59	Bal				0,4	0,3		875-895	8,4	45	Cu 470	CU 302	RBCuZn-A
Cu59ZnSnMn	59	Bal		0,7	0,7	0,4	0,3		870-890	8,4	45	Cu 681	CU 306	RBCuZn-B
Cu59ZnAg	59	Bal	1		0,1	0,1	0,1		860-890	8,4	45			

BRASSES WITH NICKEL

Cu48ZnNi10	48	Bal		10			0,3		890-920	8,7	54	Cu 773	CU 305	RBCuZn-D
Cu48ZnNi9Ag	48	Bal	1	9			0,2		890-920	8,7	54			
Cu53ZnNi6	53	Bal		6			0,2		900-920	8,5	49			

HIGH TEMPERATURE COPPER ALLOYS

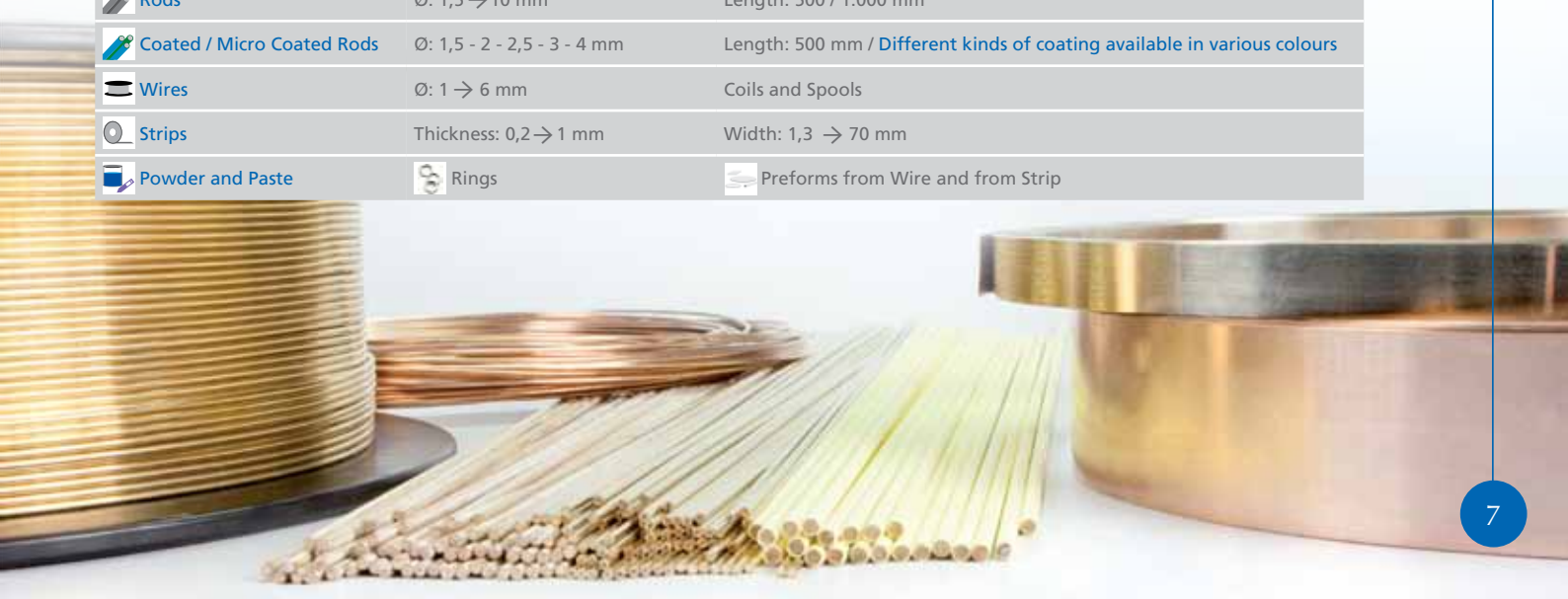
Cu97Ni3B	97			3				B 0,03	1085-1100			Cu 186	CU 105	
Cu87MnCo3	87				10			Co 3	980-1030	8,7				
Cu86MnNi2	86			2	12				960-990	8,8				
Cu85MnNi3	85			3	12				960-990	8,8				
Cu67MnNi9	67			9	24				950-955	8,2				
Cu58ZnMnCo2	57,5	38,5			2			Co 2	880-930	8,2				
Cu55ZnMn4Ni6	55	Bal		6	4		0,3		880-920	8,9				
CuMn38Ni9,5	52,5				9,5	38			880-925	7,7				

COPPER (FURNACE BRAZING)

OF-Cu	99,95								1085	8,9		Cu 102	CU 102	BCu-3
ETP-Cu	99,90								1085	8,9		Cu 110	CU 101	BCu-1b
DHP-Cu	99,90							P<0,075	1085	8,9		Cu 141	CU 104	BCu-1

CHARACTERISTICS MAKE-UP

 Rods	Ø: 1,5 → 10 mm	Length: 500 / 1.000 mm
 Coated / Micro Coated Rods	Ø: 1,5 - 2 - 2,5 - 3 - 4 mm	Length: 500 mm / Different kinds of coating available in various colours
 Wires	Ø: 1 → 6 mm	Coils and Spools
 Strips	Thickness: 0,2 → 1 mm	Width: 1,3 → 70 mm
 Powder and Paste	 Rings	 Preforms from Wire and from Strip



COPPER PHOSPHOROUS ALLOYS

The Copper-Phosphorous alloys are extensively used to join copper and copper alloy base metals (brass, bronzes). They have self-fluxing properties when used on copper and may or may not contain Silver.

A flux is required when joining brass or bronze.

Continuous service operating temperatures of joints brazed with these alloys range up to approx 200 °C.

Corrosion resistance is satisfactory, except when the joints are exposed to sulfurous environments, especially at elevated temperatures.

Copper-Phosphorous alloys should not be used on ferrous, nickel based alloys, or copper-nickel alloys with more of 10% nickel, in order to avoid premature failure of the joint due to the formation of brittle intermetallic phases.

They are available in rods, wires, rings, preforms, pastes and powders.

Ag5CuP and Ag15CuP are also available in strip form.

CODE	COMPOSITION %				MELTING RANGE SOL - LIQ	FLOW POINT	DENSITY	TENSILE STRENGTH	CORRESPONDING STANDARDS		
	Ag	Cu	P	Sn	°C	°C	g/cm ³	kg/mm ²	ISO 17672	EN 1044	AWS A5.8

COPPER-PHOSPHORUS

CuP6		94	6		710-890	760	8,1	56	CuP 179	CP 203	
CuP7		93	7		710-820	730	8,1	58	CuP 180	CP 202	BCuP-2
CuP8		92	8		710-770	720	8	60	CuP 182	CP 201	

COPPER-PHOSPHORUS-TIN

CuP7Sn		86	7	7	650-700	700	8	60	CuP 386	CP 302	~ BCuP-9
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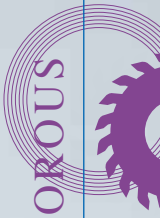
SILVER-COPPER-PHOSPHORUS

Ag0,4CuP	0,4	93	6,6		650-810	750	8,2	58			
Ag2CuP	2	91,5	6,5		645-825	740	8,1	55	CuP 279	CP 105	~ BCuP-6
Ag5CuP	5	89	6		645-815	710	8,2	55	CuP 281	CP 104	BCuP-3
Ag6CuP	6	87	7		643-813	720	8,3	55	CuP 283		BCuP-4
Ag10CuP	10	84	6		650-750	720	8,3	65			
Ag15CuP	15	80	5		645-800	700	8,4	54	CuP 284	CP 102	BCuP-5
Ag18CuP	18	75,5	6,5		643-666	670	8,4	50	CuP 285		

NOTE: ALLOYS WITH DIFFERENT PHOSPHORUS CONTENT ARE AVAILABLE.

CHARACTERISTICS MAKE-UP

 Rods	Ø: □: 1,5 → 4 mm	Length: 500 / 1.000 mm
 Coated Rods	Ø: 1,5 - 2 mm	Length: 500 mm
 Wires	Ø: 0,5 → 3 mm	Coils and Spools
 Strips (Ag5CuP and Ag15CuP)	Thickness: 0,1 → 1 mm	Width: 1,3 → 120 mm
 Powder and Paste	 Rings	 Preforms from Wire and from Strip



ALUMINIUM & ZINC-ALUMINIUM ALLOYS

Alloys based on Aluminium and/or Zinc for brazing of Aluminium.

Continuous service operating temperatures of joints brazed with Al/Si alloys range up to approx 150 °C.

Zinc-Aluminum alloys are also suitable for copper-aluminium and brass-aluminium joints.

CODE	COMPOSITION %					MELTING RANGE SOL - LIQ	CORRESPONDING STANDARDS		
	Al	Si	Mg	Mn	Zn	°C	ISO 17672	EN 1044	AWS A5.8

ALUMINIUM

Al99,5	Bal	0,3	0,03	0,03		647-658	SG-Al99,5 (DIN 1732)		1050 (AWS A5.10)
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ALUMINIUM-SILICON

AlSi5	Bal	5				575-630	Al 105	AL 101	4043 (AWS A5.10)
AlSi12	Bal	12				575-585	Al 112	AL 104	BAISi-4

ZINC-ALUMINIUM

AlZn98	2				98	430-440			
AlZn78	22				78	441-471			



CHARACTERISTICS MAKE-UP

Rods	Ø: 1,6 → 5 mm	Length: 500 / 1.000 mm
Wires	Ø: 0,8 → 3,2 mm	On Spools DIN 300 and DIN 100
Flux-cored rods & wires	Ø: 2 → 5 mm	
Flux-grooved rods & wires	Ø: 1,6 → 2 mm	Only AlSi12 - AlZn98 - AlZn78
Powder and Paste		AlSi12 - AlZn98
Rings		

SOFT SOLDERS

Alloys based on Tin for Soft-Soldering.

Lead and Cadmium bearing alloys have particular Health and Safety limitations in applications and uses.

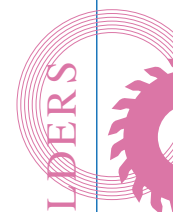
Lead-free and Cadmium-free alloys, compliant to RoHS regulation, are available.

Available as ingots, bars, sticks, wires and flux-cored wires.

Flux cored wires are available with different cores for various applications:

- General purpose soldering
- Soldering of stainless steel
- Soldering of aluminium
- Electromechanics
- Electrical Engineering
- Electronics (no clean)
- Others





CODE	COMPOSITION %							MELTING RANGE SOL - LIQ °C	CORRESPONDING STANDARDS	
	Sn	Pb	Ag	Cu	Sb	Zn	Cd		DIN 1707	EN 29453

TIN

Sn100	99,9							232		
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TIN-COPPER

SnCu97/3	97			3				230-250	SnCu3	S-Sn97Cu3
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TIN-SILVER

Ag2Sn	98		2					221-225		
Ag3,5Sn	96,5		3,5					221		S-Sn97Ag3
Ag5Sn	95		5					221-235	SnAg5	
Ag10Sn	90		10					221-300		

TIN-SILVER-COPPER

Ag1SnCu4	95,6		0,4	4				225-258		
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TIN-SILVER-LEAD

Ag1,4SnPb	63	35,6	1,4					178	Sn63PbAg	
Ag1,5SnPb	5	93,5	1,5					296-301		

TIN-ANTIMONY

SnSb95/5	95				5			230-240	SnSb5	S-Sn95Sb5
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TIN-LEAD

SnPb80/20	80	20						183-205	Sn80Pb20	
SnPb63/37	63	37						183	Sn63Pb	S-Sn63Pb37
SnPb60/40	60	40						183-190	Sn60Pb	S-Sn60Pb40
SnPb50/50	50	50						183-215	Sn50Pb	S-Pb50Sn50
SnPb40/60	40	60						183-235	Pb60Sn	S-Pb60Sn40
SnPb33/67	33	67						183-242	PbSn33	
SnPb30/70	30	70						183-255	PbSn30	S-Pb70Sn30
SnPb8/92	8	92						280-305		S-Pb92Sn8

LEAD

Pb100		99,9						327		
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CD-BEARING

Cd82Zn16Ag			2			16	82	270-280	Cd82Zn16Ag2	
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CHARACTERISTICS MAKE-UP

Cast ingots, bars and sticks	
Solid Wires	Ø: 0,5 → 3 mm
Flux-cored wires	Ø: 0,8 → 3 mm
Strips	
Powder and Paste	Rings Preforms from Wire and from Strip

BRAZING POWDERS & PASTES

A wide range of filler metals in powder and paste is available.

Brazing is performed in air, under protective atmosphere, or in vacuum, by flame, induction or in furnace.

Powders are available in different grain sizes, from coarse to fine.

Pastes can be supplied with and without flux, with various binders and with different metal content percentages, in order to fulfill the most demanding applications.

To select the most appropriate brazing paste, many factors have to be taken into account, such as: type and dimensions of pieces, materials to be joined, heating method, type of atmosphere, etc.

Consequently technical testing is generally required to select the most appropriate paste for the specific customer application.



SELECTION CHART

	AVAILABLE ALLOYS	AVAILABLE MAKE UP		
● SILVER BASED ALLOYS	See pages: 3 - 4	Powder	Paste	
			Torch	Induction Furnace
● COPPER-PHOSPHOROUS ALLOYS	See page: 8	Powder	Paste	
			Torch	Induction Furnace
● COPPER	Copper / Copper-cuprous oxide		Paste	
				Furnace
● BRONZE	CuSn6 - CuSn8 - CuSn12	Powder	Paste	
				Furnace
● COPPER BASED	Cu60Zn - Cu48ZnNi10 Cu87MnNi3	Powder	Paste	
			Torch	Induction Furnace
● ALUMINIUM	AlSi12 - AlZn98	Powder	Paste	
			Torch	Induction Furnace
● SOFT SOLDER	Ag/Sn - SnCu97/3 Sn/Pb alloys	Powder	Paste, with following flux types: General purpose: 3.1.1.C For aluminium: 2.1.2.C	

NICKEL BASED ALLOYS

CODE	COMPOSITION %									MELTING RANGE SOL - LIQ	CORRESPONDING STANDARDS	
	Ni	Cr	Fe	Si	B	C	P	Mn	Cu	°C	ISO 17672	AWS A5.8
Ni1	Bal	14	4,5	4,5	3,1	0,7				1021-1052		BNi-1
Ni1a	Bal	14	4,5	4,5	3,1					977-1077	Ni 610	BNi-1a
Ni2	Bal	7	3	4,1	3					971-999	Ni 620	BNi-2
Ni3	Bal			4,5	2,9					982-1037	Ni 630	BNi-3
Ni4	Bal			3,5	1,9					982-1066	Ni 631	BNi-4
Ni5	Bal	19		10						1080-1135	Ni 650	BNi-5
Ni6	Bal						11			875-875	Ni 700	BNi-6
Ni7	Bal	14					10			890-890	Ni 710	BNi-7
Ni8	Bal			7				23	4,5	982-1010	Ni 800	BNi-8
Ni9	Bal	15			3,6					1021-1052	Ni 612	BNi-9

These brazing alloys are generally used when specifications require good corrosion resistance and/or extreme service temperature (both high and subzero) properties.

Ideal for brazing of stainless steels and nickel based alloys. They find numerous applications in the manufacturing of heat exchangers, diamond tools, and high-tech sectors such as aerospace industry.

Available in powder and paste. Brazing is performed under a protective, reducing atmosphere, or in vacuum.



PARTICLE SIZE COMPARISON TABLE

PARTICLE SIZE			MESH		
MICRONS [μ]	MILLIMETRES [mm]	INCHES	US STANDARD MESH [No.] (*)	TYLER STANDARD MESH	BRITISH STANDARD MESH
33	0,0330	0,0013	425	-	-
38	0,0380	0,0015	400	-	-
45	0,0450	0,0018	325	325	-
53	0,0530	0,0021	270	270	300
63	0,0630	0,0025	230	250	-
75	0,0750	0,0030	200	200	-
90	0,0900	0,0035	170	170	170
106	0,1060	0,0042	140	150	150
125	0,1250	0,0049	120	115	120
150	0,1500	0,0059	100	-	-
180	0,1800	0,0071	80	-	85
212	0,2120	0,0083	70	-	72
250	0,2500	0,0098	60	-	-
300	0,3000	0,0118	50	-	-
350	0,3500	0,0138	45	42	44
420	0,4200	0,0165	40	-	-
500	0,5000	0,0197	35	-	30
600	0,6000	0,0236	30	28	-
710	0,7100	0,0280	25	20	-
850	0,8500	0,0335	20	-	-

(*): a "+" sign before the sieve mesh number indicates that the particles are retained by the sieve.

a "-" sign before the sieve mesh number indicates that the particles pass through the sieve. For instance if the particle size of a powder is described as -140 +325 mesh, then 90% or more of the powder will pass through a 140 mesh sieve (particles smaller than 106 μ) and will be retained by a 325 mesh sieve (particles larger than 45 μ). If a powder is described as -100 mesh, then 90% or more of the powder will pass through a 100 mesh sieve (particles smaller than 150 μ).

FLUXES

Our range:

- Fluxes for Silver Based Alloys
- Fluxes for Brass and Copper Based Alloys
- Liquid Fluxes for Braze-Welding
- Fluxes for Aluminium alloys
- Fluxes for Soft Soldering alloys

Available in different presentations, such as:
Powder, Paste and Liquid form.



FLUXES FOR SILVER BASED ALLOYS:

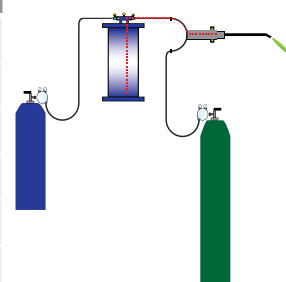
CODE	ACTIVITY RANGE	MAKE-UP		STANDARD	DESCRIPTION
	°C	Powder	Paste	EN 1045	
FLUX AG1	550-800	✓	✓	FH 10	General purpose
FLUX AG3	600-850	✓	✓	FH 10	For high temperatures
FLUX AG4	550-850	✓	✓	FH 10	General purpose - Very wide range of temperatures
FLUX AG5	700-1000	✓	✓	FH 20	For very high temperatures
FLUX AG6	550-850	✓		FH 11	For Aluminium Bronze
FLUX AG7	550-800	✓	✓	FH 10	General purpose. Also for Stainless Steel.
FLUX AG8	550-850		✓	FH 12	For Stainless Steel and Hard Metal - Brown paste
FLUX AG11	550-800		✓	FH 10	General purpose. Also for Stainless Steel - For use with automatic dispensing machines
FLUX AG12	550-850		✓	FH 12	For Stainless Steel and Hard Metal - For use with automatic dispensing machines
ANTIFLUX			✓		Prevents wetting of brazing alloy

FLUXES FOR BRASS AND COPPER BASED ALLOYS:

CODE	ACTIVITY RANGE	MAKE-UP		STANDARD	DESCRIPTION
	°C	Powder	Paste	EN 1045	
FLUX BR1	800-1000	✓	✓	FH 21	Brazing with Brass
FLUX BR4	700-1200	✓	✓	FH 21	For high temperatures
FLUX BR5	1000-1300	✓	✓	FH 30	For very high temperatures
FLUX BR7	760-1200		✓	FH 21	For very high temperatures

LIQUID FLUXES FOR BRAZING AND FOR BRAZE-WELDING:

CODE	ACTIVITY RANGE	STANDARD	DESCRIPTION
	°C	EN 1045	
FLUX LI1	550-1100	FH 21	For Brazing with Vaporizer systems. Medium Concentration
FLUX LI2	550-1100	FH 21	For Brazing with Vaporizer systems. Medium-High Concentration
FLUX LI3	550-1100	FH 21	For Brazing with Vaporizer systems. High Concentration
FLUX LI1 ECO	550-1100	FH 21	Non - toxic formulation
FLUX LI2 ECO	550-1100	FH 21	Non - toxic formulation
FLUX LI3 ECO	550-1100	FH 21	Non - toxic formulation





FLUXES FOR ALUMINIUM:

CODE	ACTIVITY RANGE	MAKE-UP		STANDARD	DESCRIPTION
	°C	Powder	Paste	EN 1045	
FLUX AL1/d	550-650	✓	✓	FL 10	Corrosive flux for flame brazing
FLUX AL1 NC	550-650	✓	✓	FL 20	Non-corrosive flux for flame, induction and furnace (C.A.B.) brazing
FLUX AL3	550-650	✓		FL 10	Autogenous welding of pure aluminium
FLUX AL4	550-650	✓		FL 10	Autogenous welding of Al-Si and Al-Mg alloys
FLUX AL6	440-470		✓		Non-corrosive flux for brazing with Zinc-Aluminium alloys

FLUXES FOR SOFT SOLDERS

CODE	MAKE-UP		STANDARD		DESCRIPTION
	Paste	Liquid	DIN 8511	EN 29454-1	
FLUX SN1	✓	✓	F - SW12	3.1.1.A/C	General purpose
FLUX SN2		✓	F - SW11	3.2.2.A	For Stainless Steel
FLUX SN6		✓	F - SW25	2.1.3.A	For Electromechanics
FLUX SN35		✓		2.1.2.A	For aluminium and low-alloyed aluminium alloys



OTHER PACKAGES AVAILABLE UPON REQUEST

Powder:	Packages of: 0,1 - 0,25 - 0,5 - 1 - 10 - 20 kg
Paste:	Packages of: 0,1 - 0,25 - 0,5 - 1 - 1,5 - 10 - 20 kg
Liquid:	Packages of: 0,25 - 0,5 - 1 - 5 - 10 - 25 lt • Drums of 60 - 200 lt (LI1 - LI2 - LI3)

CONTACT MATERIALS

CODE	COMPOSITION % (Ag is balance)	MELTING POINT	DENSITY	ELECTRICAL CONDUCTIVITY	MECHANICAL PROPERTIES (RECRYSTALLIZED STATE)		
		°C	g/cm ³	MS/m	Rm [MPa]	A [%]	HV _{0,2}
Ag99,9	Ag 99,9 min.	960	10,5	60	155-215	40	30
AgNi0,15	Ni 0,10—0,20	960	10,5	57	185-255	30	40
AgNi10	Ni 10,0	960	10,4	48	200-250	20	50
AgNi20	Ni 20,0	960	10,3	46	270-300	15	60
AgCu8	Cu 7,4—8,4	900-940	10,3	50	225-325	25	60
AgCd8	Cd 7,0—9,0	890-910	10,4	25	195-295	35	35
AgCd13	Cd 12,0—14,0	830-850	10,3	20	215-315	35	40
AgCuO10	CuO 10,0	960	10,2	45	225-325	15	60
AgCdO10	CdO 10,0	960	10,3	49	225-325	15	60
AgCdO15	CdO 15,0	960	10,2	45	225-325	15	80
AgSnO ₂ (Bi ₂ O ₃)	SnO ₂ 10,0	960	9,8	45	270	10	100

Wires

Strips

Solid and bimetallic contact rivets

Solid and bimetallic contact discs



CHARACTERISTICS MAKE-UP & PREFORMS CAPABILITIES

RODS



COATED RODS



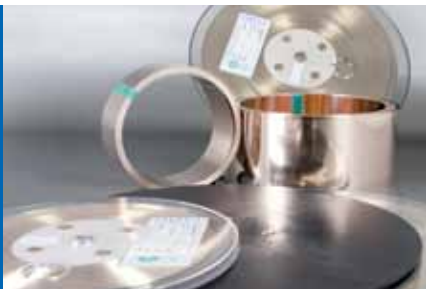
WIRES



WIRES ON SPOOLS



STRIPS



POWDERS & PASTES



RINGS



MULTITURN RINGS



SLUGS



FLUXES



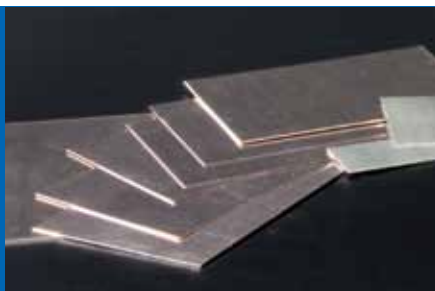
MARKED RODS



PACKAGING



SHIMS



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