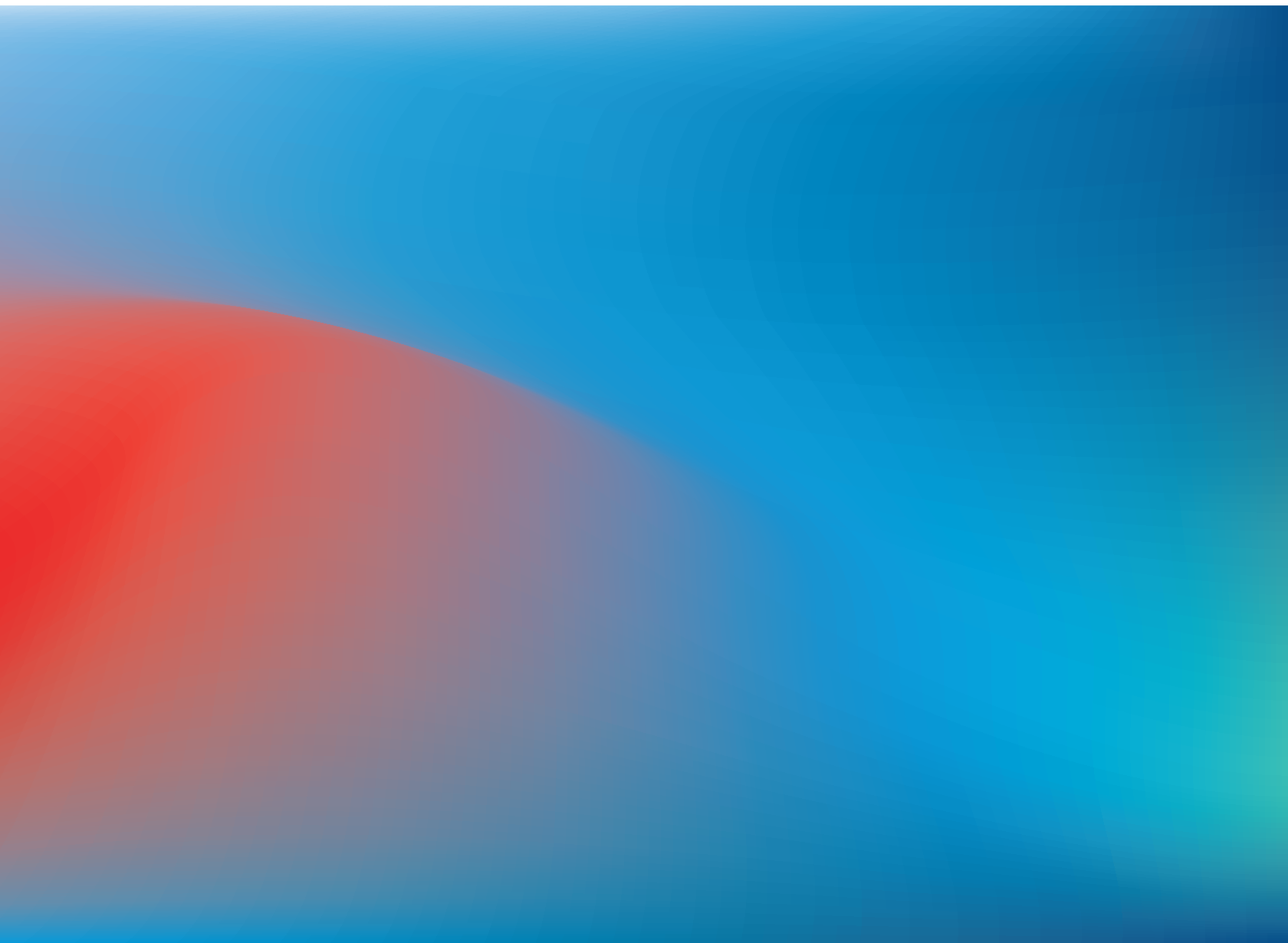
HUA GUANG WELDING

HUA GUANG
PROFESSIONAL BRAZING & GREEN CONNECTION

CATALOGUE 2023

Brazing, Soldering & Fluxes

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华光新材(仁和厂区)
Huaguang Advanced Material

Enhance Industrial Joining Technologies

Hua Guang has been specialising in the R&D and manufacture of a wide range of brazing alloys as well as providing customers with brazing expertise since 1995. Our mission is to provide innovative, efficient and environmental-friendly products and technical services while making no compromise on reliability.

Upholding our core values of integrity, vitality and ingenuity, Hua Guang has rapidly become a leader in the brazing industry. Today, we endeavour to realise our mission to tackle new challenges in the related fields of electronics joining, high temperature and wear resistance welding etc.

Driven by Innovation —— At Hua Guang, we are dedicated to implement innovative solutions on both production and application sides. Our state of the art, highly automated facilities allow us to efficiently produce quality products at an over 10,000 tons annual design capacity. On the application side, our customizable products coupled with welding expertise have led to significant production cost and energy savings for some of the world's most respected manufacturers.

The in-house R&D institute at Hua Guang continuously attracts technical talents who are passionate about problem solving and meeting the evolving demands of the industrial joining industries.

40+

COUNTRIES

A global yet local presence

Our sales footprint covers about 40 countries worldwide. Highly trained channel sales agencies are established on virtually every continent to provide local customers with timely and professional sales and technical services.

Quality Assurance

ISO Certificates

- ISO9001:2015 Quality Management Systems
- ISO014001:2015 Environmental Management Systems
- ISO45001:2018 Occupational Health & Safety

Industry Specific Certificates

- IATF16949:2016 International Automotive Task Force Quality Management System

Regional Certificates

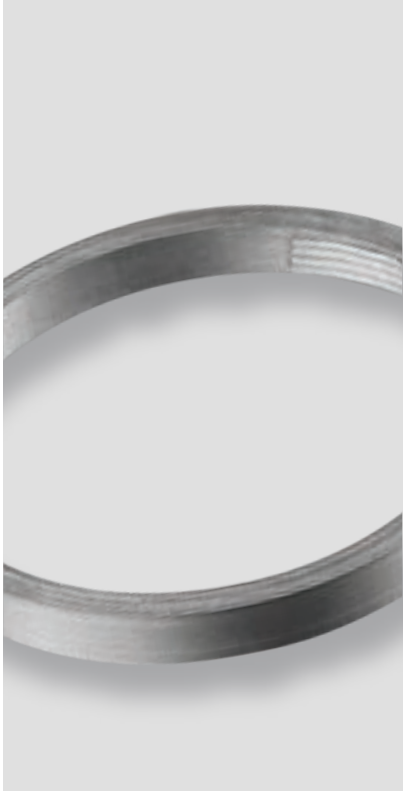
- RoHS certificates available for most common products (European Union)
- REACH certificates available for most common products (European Union)
- WaterMark (Australia)
- GB/T23331 Energy Management System (China)

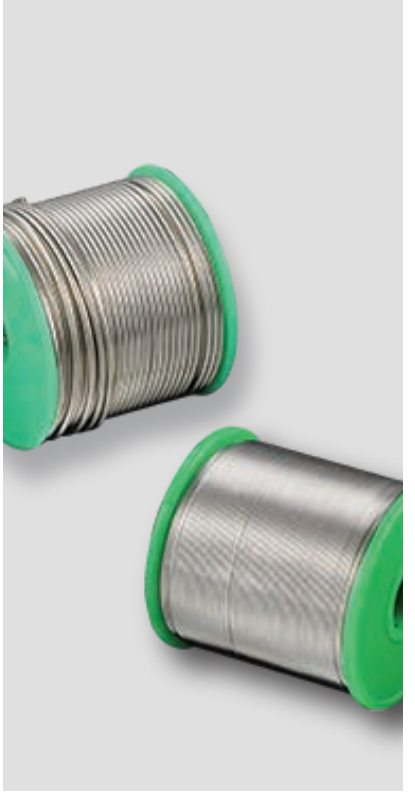
Testing Laboratory Accreditations

- CNAS, China National Accreditation Service

Product Lines

ECO BRAZ	ABLE SILV
HUA GUANG 0	HGW SILV 30
HGW SILV 0P7	HGW SILV 30Sn
HGW SILV 2	HGW SILV 34Sn
HGW SILV 2	HGW SILC 35
HGW SILV 5	HGW SILV 38Sn
HGW SILV 6	HGW SILV 40Sn
HGW SILV 6	HGW SILV 45
HGW SILV 15	HGW SILV 49Mn
HGW FLUID 0	HGW SILV 50Ni
	HGW SILV 56
	HGW SILV 68
	HGW SILV 72
	HGW SILV 72Ni





AL BOND	TIN MATE	COMPOSITE	
HGW AL 4047	HGW TIN 99.7	Flux Coated Brazing Alloy	
HGW AL 4043	HGW TIN 99.3	Flux Cored Brazing Alloy	
HGW AL 4045	HGW TIN 97		
HGW AL 5356	HGW TIN 63	FLUX	
HGW AL 22	HGW TIN 50	FB101	HGW FB101
HGW AL 4047 FCR	HGW TIN 25	FB102	HGW FB102
HGW AL 4043 FC	Tin Mate X100A SAC305	FB103	HGW FB103
Aluminum Brazing Flux		FB105G	HGW FB105G
		QJ501Y	HGW QJ501Y
		QJ403	HGW QJ403

ECO BRAZ

The simple joy of brazing

Based on copper-phosphorus binary alloys, copper-phosphorus brazing filler metals have good flow properties and are suitable for resistance brazing, flame brazing, high-frequency brazing and certain types of furnace brazing.

Copper-phoshophurs brazing alloys can be used without flux when brazing copper, and the braze joints have high strength and electrical conductivity. It is widely applied in many industries, especially in HVAC(R) and motor manufacturing.

Top of the Series

HUA GUANG 0

A brazing alloy with good flow and suitable for filling small braze joints (0.05mm). It has a low brazing temperature.

HGW SILV 2

2% silver content provides high plasticity and mechanical strength. It can be used to braze joints with uneven gaps.

HGW SILV 5

Provides even higher plasticity and mechanical strength compared to HGW SILV 2. It can be used to braze joints with uneven gaps.

HGW SILV 15

An overall champion among copper-phosphorus brazing alloys considering factors such as joint strength, plasticity, electrical conductivity and the ability to fill uneven gaps. It has low requirements for brazing equipment and joint set up.

HGW FLUID 0

A low cost alternative for brazing brass. The low brazing temperature of this alloy allows it to be used for brazing applications with strict operating temperature requirements.

PRODUCTS	Ag	Cu	P	Sn	Other	AWS A5.8 ISO 17672	Solidus	Liquidus	Brazing Temp	Flux Coated Flux Cored
HUA GUANG 0 A brazing alloy with relatively low brazing temperature, which is suitable for filling narrow gaps. It is an economical product, but not well suited for brazing joints which need to withstand vibration and shock.	/	Rem.	6.8 -7.2	/	<0.25	/	710°C 1310°F	820°C 1508°F	730°C 1346°F	● ●
HGW SILV 0P7 This alloy has higher phosphorus content than HUA GUANG 0, which gives it higher fluidity. Plasticity of this product is lower than that of HUA GUANG 0.	/	Rem.	7.0 -7.5	/	<0.25	BCuP-2 CuP181	710°C 1310°F	793°C 1459°F	730°C 1346°F	● ●
HGW SILV 2 A very widely applied brazing alloy with moderate brazing temperature. It has the ability to fill uneven gaps. Joints brazed with this product displays decent plasticity and mechanical strength.	1.8 -2.2	Rem.	6.8 -7.2	/	<0.25	BCuP-6 CuP280	643°C 1189°F	788°C 1450°F	788°C 1450°F	● ●
HGW SILV 2P7 Compared to standard HGW SILV 2, it has slightly higher phosphorus content, and it is more fluid.	1.8 -2.2	Rem.	7.1 -7.3	/	<0.25	/	643°C 1189°F	788°C 1450°F	788°C 1450°F	● ●
HGW SILV 5 A common brazing alloy whose resulting joints are of high mechanical strength and plasticity.	4.8 -5.2	Rem.	5.8 -6.2	/	<0.25	BCuP-3 CuP281	645°C 1193°F	815°C 1499°F	815°C 1499°F	● ●
HGW SILV 6 This brazing alloy is suitable for brazing narrow joints. The braze joints are of higher plasticity than that of HGW SILV 5 because of its higher silver content.	5.8 -6.2	Rem.	7.0 -7.2	/	<0.25	BCuP-4 CuP283	643°C 1189°F	813°C 1495°F	720°C 1328°F	● ●
HGW SILV 6P6 Compared to standard HGW SILV 6, brazing temperature of this alloy is slightly higher because of its higher phosphorus content.	5.8 -6.2	Rem.	6.1 -6.4	/	<0.25	/	646°C 1195°F	810°C 1490°F	730°C 1346°F	● ●
HGW SILV 15 An overall champion among copper-phosphorus brazing alloys considering factors such as joint strength, plasticity, electrical conductivity and the ability to fill uneven gaps. It has low requirements for brazing equipment and joint set up.	14.5 -15.5	Rem.	4.8 -5.2	/	<0.25	BCuP-5 CuP284	645°C 1193°F	800°C 1472°F	700°C 1292°F	● ●
HGW FLUID 0 This brazing alloy contains 6.5% tin, which gives it a relatively low brazing temperature. It is suited for brazing applications with strict temperature requirements. It is not designed to braze joints of high vibration and shock requirements.	/	Rem.	6.0 -7.0	6.0 -7.0	<0.25	BCuP-9 CuP385	635°C 1175°F	675°C 1247°F	655°C 1211°F	● ●

● Note: The maximum impurity content (w.%) of various elements are as follows, Al 0.01, Bi 0.03, Cd 0.01, Pb 0.025, Zn 0.05, (Zn+Cd) 0.05. The maximum total amount of impurities is 0.25 (w.%).

Flux ● Yes ● No

ABLE SILV

Making a long-lasting bond

ABLE SILV brazing alloys contain silver or silver-based solid solution, which have excellent properties. These high silver brazing alloys have low melting temperature and high fluidity. They have high wetting and gap filling properties. The resulting joints are of high strength, plasticity, electrical conductivity and corrosion resistance. It can be used to braze all ferrous and non-ferrous metals except aluminum, magnesium and other metals of low melting point. ABLE SILV products are designed to be used with a suitable brazing flux.

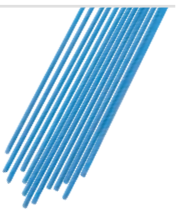
Top of the Series

HGW SILV 30

This product is able to fill uneven gaps. The resulting joints are of high mechanical strength. A relatively economical choice with reliable brazing performance.

HGW SILV 40Sn

The tin content of this brazing alloy gives it a relatively low brazing temperature and high fluidity. It is able to flow speedily at braze joints.

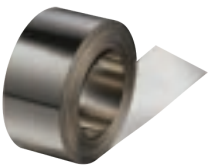


HGW SILV 45

A common high silver brazing alloy which enables the formation of strong joints with high anti-seismic fatigue performance and overal mechanical properties.

HGW SILV 56

A brazing alloy of low brazing temperature. The surface of the braze joints is quite smooth, making it a good choice for applications with high appearance requirements.



Top of the Series

HGW SILV 72

This product is made of a silver-copper binary eutectic. It is suitable for vacuum brazing, as it does not contain volatile elements. It displays high wetting properties on copper and nickel, and it has good electrical conductivity.

HGW SILV 72Ni

Nickel element is added to standard HGW SILV 72, which improves its wetting properties on steel and stainless steel. It is suitable for vacuum brazing and reducing atmosphere protection brazing.

PRODUCTS

	Ag	Cu	Zn	Sn	Ni	Mn	Si	Other	AWS A5.8 ISO 17672	Solidus	Liquidus	Brazing Temp	Flux Coated Flux Cored
HGW SILV 30 * Silver brazing alloys with moderate brazing temperature. Because of their wide melting temperature range, they can be used for filling uneven gaps.	29 -31	37 -39	Rem.	-	-	-	/	0.05 0.15	BAg-20 Ag230	680°C 1256°F	765°C 1409°F	795°C 1463°F	● ●
HGW SILV 30Sn *	29 -31	Rem.	30 -32	1.0 -3.0	-	-	/	0.05 0.15	- -	665°C 1229°F	755°C 1391°F	785°C 1445°F	● ●
HGW SILV 34Sn *	33 -35	35 -37	25.5 -29.5	2.0 -3.0	-	-	/	0.05 0.15	- Ag134	630°C 1166°F	730°C 1346°F	760°C 1400°F	● ●
HGW SILV 35 *	34 -36	31 -33	31 -35	-	-	-	/	0.05 0.15	BAg-35 Ag235	685°C 1265°F	755°C 1391°F	785°C 1445°F	● ●
HGW SILV 38Sn *	37 -39	Rem.	26 -30	1.5 -2.5	0.1 -0.3	-	0.07 -0.2	0.05 0.15	BAg-34 Ag138	650°C 1202°F	720°C 1328°F	750°C 1382°F	● ●
HGW SILV 40Sn *	39 -41	29 -31	26 -30	1.5 -2.5	-	-	/	0.05 0.15	BAg-28 Ag140	650°C 1202°F	710°C 1310°F	740°C 1364°F	● ●
HGW SILV 45 A common silver brazing alloy with relatively low brazing temperature. Braze joints are of good anti-seismic fatigue performance and excellent overall mechanical properties.	44 -46	29 -31	23 -27	-	-	-	≤0.02	0.05 0.15	BAg-5 Ag245	665°C 1229°F	745°C 1373°F	775°C 1427°F	● ●
HGW SILV 49Mn Joint strength is further improved with the addition of manganese and nickel. It is widely used for the brazing of carbide tools applied in the oil and gas industries.	48.0 ~50.0	15.0 ~17.0	21.0 ~25.0	-	4.0 ~5.0	7.0 ~8.0	/	0.05 0.15	BAg-22 -	680°C 1256°F	705°C 1301°F	735°C 1355°F	● ●

PRODUCTS

	Ag	Cu	Zn	Sn	Ni	Mn	Si	Other	AWS A5.8 ISO 17672	Solidus	Liquidus	Brazing Temp	Flux Coated Flux Cored
HGW SILV 50Ni A nickel-containing brazing alloy. The addition of nickel improves the wetting properties of the alloy on steel and stainless steel. The braze joints are of high qualities and neat apperance.	49 -51	19 -21	26 -30	-	1.5 -2.5	-	/	0.05 0.15	BAg-24 Ag450	660°C 1220°F	705°C 1301°F	735°C 1355°F	● ●
HGW SILV 56 This brazing alloy has low melting temperature. It is very fluid, and flows fast into the gap at braze joints. This product is mainly used for applications which require low brazing temperature. Braze joints are of smooth and neat appearance.	55 -57	21 -23	15 -19	4.5 -5.5	-	-	/	0.05 0.15	BAg-7 Ag156	620°C 1148°F	655°C 1211°F	685°C 1265°F	● ●
HGW SILV 68 This brazing alloy is designed by reducing the silver content of standard HGW SILV 72 product while maintaining its overall performance.	67 -69	Rem.	-	-	-	-	/	0.05 0.15	- -	775°C 1427°F	790°C 1454°F	820°C 1508°F	● ●
HGW SILV 72 This product is made of a silver-copper binary eutectic. It is suitable for vacuum brazing, as it does not contain volatile elements. It displays high wetting properties on copper and nickel, and it has good electrical conductivity.	71 -73	27 -29	-	-	≤0.1	-	/	0.05 0.15	BAg-8 Ag272	779°C 1434°F	779°C 1434°F	809°C 1488°F	● ●
HGW SILV 72Ni Nickel element is added to standard HGW SILV 72, which improves its wetting properties on steel and stainless steel. It is suitable for vacuum brazing and reducing atmosphere protection brazing.	70 -72	Rem.	-	-	0.5 -1.0	-	/	0.05 0.15	- -	780°C 1436°F	805°C 1481°F	835°C 1535°F	● ●

● Note: The maximum impurity content (w.%) of various elements are as follows, Al 0.001, Bi 0.03, Cd 0.01, P 0.008, Pb 0.025, Si 0.05, (Zn+Cd) 0.05. The maximum total amount of impurities is 0.15 (w.%).

Flux ● Yes ● No

AL BOND

A trustworthy alternative

AL BOND products are mainly used for brazing aluminum and aluminum alloys. These prodcuts are suitable for flame brazing, furnace brazing, induction brazing and salt bath immersion brazing. Aluminum-based solders mainly consist of aluminum-silicon eutectic. Other elemnts are sometimes added for the reduction of melting point. The braze joints of aluminum-based brazing alloys are of high corrosion resistance in atmosphere or water. However, in acid or alkali, their corrosion resistance is inferior to that of fusion welding joints.

Top of the Series

HGW AL 4047

It is an aluminum-silicon eutectic alloy containing 12% silicon. It has low melting point, good fluidity and corrosion resistance. It is suitable for gas welding and argon arc welding, and it is widely used for the brazing of aluminum, aluminum-manganese, and aluminum-silicon-magnesium alloys.

HGW AL 4047 FCR

4047 aluminum-silicon alloys with the addition of different fluxes. Choices for flux include cesium-containing flux and cesium-free flux. This brazing alloy is suitable for flame brazing and induction brazing.

HGW AL 4043 FC

An aluminum-silicon solder used for the soldering of different aluminum alloys. It is widely used in the automotive and heat conduction industries. This solder is used for flame soldering. The consistent coating thickness of the solder ensures soldering consistency and improves production efficiency.

Aluminum Brazing Flux

This is a low-corrosion flux used for the soldering of aluminum and aluminum alloys. Cesium-containing and cesium-free options are both available.

PRODUCTS

PRODUCTS	Al	Si	Fe	Cu	Mn	Mg	Zn	Cd	Pb	Other	Other	AWS A5.8MA5.8 ISO 17672	Solidus	Liquidus	Brazing Temp	Flux Coated Flux Cored
HGW AL 4047 Welding * Aluminum-silicon alloys used for the soldering of different kinds of aluminum alloys. These products are widely used in the automotive and heat conduction industries.	Rem.	11.0 ~13.0	0.8	0.3	0.15	0.1	0.2	0.01	0.025	-	0.05 0.15	/ Al 112	575°C 1067°F	585°C 1085°F	615-625°C 1139-1157°F	● ●
HGW AL 4043 * Welding	Rem.	4.5 ~6.0	0.6	0.3	0.15	0.2	0.1	0.01	0.025	Ti:0.15;	0.05 0.15	/ Al 105	575°C 1067°F	630°C 1166°F	660-670°C 1220-1238°F	● ●
HGW AL 4045 * Welding	Rem.	9.0 ~11.0	0.8	0.3	0.05	0.05	0.1	0.01	0.025	Ti:0.20;	0.05 0.15	/ Al 110	575°C 1067°F	590°C 1094°F	620-630°C 1148-1166°F	● ●
HGW AL 4047 * Brazing	Rem.	11.0 ~13.0	0.8	0.3	0.15	0.1	0.2	-	-	-	0.05 0.15	BAlSi-4 Al 112	575°C 1067°F	585°C 1085°F	615-625°C 1139-1157°F	● ●
HGW AL 4045 * Brazing	Rem.	9.0 ~11.0	0.8	0.3	0.15	0.05	0.1	-	-	-	0.05 0.15	BAlSi-5 Al 110	575°C 1067°F	590°C 1094°F	620-630°C 1148-1166°F	● ●
HGW AL 5356 Brazing An aluminum alloy containing magnesium. It has high corrosion resistance, and it is used in the manufacture of chemical containers and cryogenic pressure containers. It is also used in the soldering of aluminum structures in constructions and rail transport carriages.	Rem.	≤0.25	≤0.40	≤0.10	0.05 ~0.20	4.5 ~5.5	≤0.10	-	-	Cr0.05 ~0.20; Ti0.06 ~0.20	0.05 0.15	/	575°C 1067°F	633°C 1171°F	663-673°C 1225-1243°F	● ●
HGW AL 22 Brazing An aluminum alloy containing zinc. When the product is used for the soldering of copper and aluminum, the presence of zinc prevents corrosion and britleness of the solder joints.	Rem.	-	-	-	-	-	77-79	-	-	-	0.05 0.15	/	441°C 826°F	471°C 880°F	501-511°C 934-952°F	● ●

Aluminum Brazing Flux

Flux used for aluminum brazing filler metals. It causes low corrosion. This flux can be used both as a powder and as a paste made with the mixture of solvents such as water. It is used for soldering of conventional aluminum alloys.

● The values in the table are the maximum acceptable percentages. **Flux** ● Yes ● No

TIN MATE

A smooth soldering experience

HUA GUANG's expertise in the low temperature solder field enables us to provide customers with tin solders for a variety of application scenarios. Applications of TIN MATE solders include electronics, electricals, food and toys industries. Some of our tin solders are used in high end industries such as medicals and military. Typical products of the TIN MATE series include lead-free tin paste, lead-free tin rod, tin solder wire and active tin solder wire.

Top of the Series

HGW TIN 97

High purity tin alloy with excellent flow. Melted tin is non-stick and smooth. This alloy has strong anti-oxidant properties and wetting properties.

Tin Mate X100A SAC305

A lead-free, no clean tin solder paste with wide applications. It has low void defects, and can be used for fine-pitch printing. This product has excellent on-line testing performance for the prevetion of void and head pillow defects.

PRODUCTS

	Sn	Ag	Cu	Bi	Sb	In	Zn	Pb	Au	Ni	Fe	As	Al	Cd	JIS Z 3282 ISO9453	Solidus	Liquidus	Brazing Temp	Flux Coated Flux Cored
HGW TIN 99.3 Lead-free High wettability, electrical and thermal conductivity. Easy to dispense. It is used for the manufacture of precise electronics and other devices.	Rem.	0.1	0.5 ~0.9	0.1	0.1	0.1	0.001	0.07	0.05	0.01	0.02	0.03	0.001	0.002	Sn99.3Cu0.7 401	227°C 441°F	227°C 441°F	380-450°C 716-842°F	🔴 🟢
HGW TIN 97 Lead-free This tin solder has similar applications as HGW TIN 99.3, but it has higher operating temperature.	Rem.	0.1	0.5 ~0.9	0.1	0.1	0.1	0.001	0.07	0.05	0.01	0.02	0.03	0.001	0.002	Sn97Cu3 402	227°C 441°F	310°C 590°F	380-450°C 716-842°F	🔴 🟢
HGW TIN 63 Leaded This tin solder has low melting temperature and high fluidity. It has high wettability, and solder joints are shiny. It is used for the manufacture of precise electronics with high requirements.	62.5 ~63.5	0.1	0.08	0.1	0.2	0.1	0.001	Rem.	0.05	0.01	0.02	0.03	0.001	0.002	Sn63Pb377 101	183°C 361°F	183°C 361°F	245-265°C 473-509°F	🔴 🟢
HGW TIN 50 Leaded This tin solder has slightly higher melting temperature than HGW TIN 63. It is used for applications with standard requirements in the electronics, electricals and toys industries.	49.5 ~50.5	0.1	0.08	0.1	0.2	0.1	0.001	Rem.	0.05	0.01	0.02	0.03	0.001	0.002	Sn50Pb50 111	183°C 361°F	215°C 419°F	255-275°C 491-527°F	🔴 🟢
HGW TIN 25 Leaded Resin cored and solid versions are both available for this tin solder. Operating temperature is relatively high.	24.5 ~25.5	0.1	0.08	0.25	0.5 ~2.0	0.1	0.001	Rem.	0.05	0.01	0.02	0.03	0.001	0.002	/ 136	185°C 365°F	263°C 505°F	200-350°C 392-662°F	🔴 🟢
Tin Mate X100A SAC305 Lead-free This product is made of the standard lead-free SAC305 alloy. The 3% silver content allows improvement of thermal fatigue resistance, joint strength and resistance to mechanical stress, while maintaining excellent wetting property.	Rem.	2.8 -3.2	0.3 -0.7	0.05	0.1	-	0.005	0.05	-	0.05	0.02	0.01	0.005	0.002	Sn96.5Ag3.0 Cu0.5 /	217°C 422°F	217°C 422°F	220-260°C 428-500°F	🔴 🔴

Flux 🟢 Yes 🔴 No

COMPOSITE

Tailored to your needs

Flux Coated

Flux is pre-coated on the surface of solid brazing alloys, which allows the precise control of flux volume. Brazing performance is consistent. Flux coated products are available for brass, silver, copper phosphorus and aluminum alloys. Please consult HUA GUANG team for details.

Flux Cored

Flux is pre-filled inside the alloy core. Similar to flux coated products, flux volume is precisely controlled, which improves the consistency of brazing performance. Alloy shell protects the flux core during transport. Compatible alloys include brass, silver alloy and aluminum alloy.

Flux

A wide range of options are available for different applications, which include silver brazing flux, aluminum brazing flux and gas flux.

Top of the Series

Flux Coated Brazing Alloy

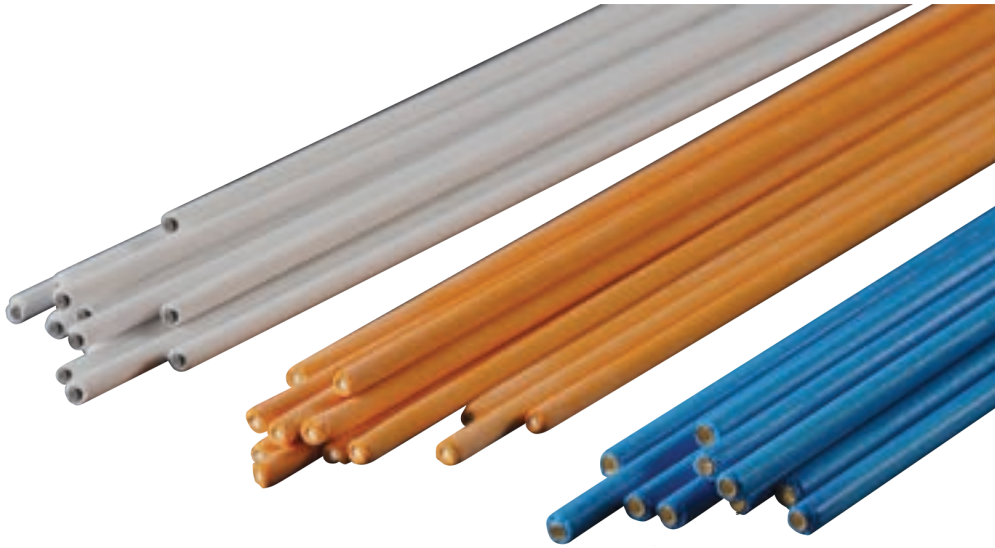
One typical flux coated brazing alloy is HGW SILV 56 FC, it can be used for complex structures where flux application is difficult, such as the complex tubes of compressors.

Flux Cored Brazing Alloy

One typical flux cored brazing alloy is HGYX 3AD1 FCR, it is a patnted flux cored brass ring. It is specially designed for the brazing of steel tubes in compressors.

Brazing Flux

A wide range of options are available for different applications, which include silver brazing flux, aluminum brazing flux and gas flux.



Brazing Flux

Product Name	License Number	Active Temp °C
FB101	HGW FB101	550-850°C
FB102	HGW FB101	600-850°C
FB103	HGW FB103	550-750°C
Silver Brazing Flux	HGW FB105G	600-850°C
QJ501Y	HGW QJ501Y	550-600°C
QJ403	HGW QJ403	800-950°C

Hua Guang Welding

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HUA GUANG

PROFESSIONAL BRAZING & GREEN CONNECTION