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Handy-One® Flux Cored Silver Brazing Alloys Braze 380 and Braze 505

This proprietary new family of brazing & soldering products eliminates the need for a separate fluxing operation, which can result in a significant increase in productivity while minimizing flux exposure to your personnel and plant equipment.

THE PRODUCT

Handy One is a trademark for a family of flux-cored brazing materials that offers numerous advantages compared to traditional metal joining methods. It consists of a filler metal in strip form that is rolled around a powdered flux. Formulations currently exist for silver (and aluminum based) brazing filler metals and it is available on spools, coils or rods for wire feed applications and as preformed rings and shapes for automated production lines.

Some of the primary advantages of Handy One cored wire include:

- It simplifies the brazing process by eliminating the manual fluxing operation; this also reduces flux exposure to your brazing personnel.
- Joint quality and throughput can be improved due to the consistent application of flux and filler metal.
- Reduces heating time and secondary post braze operations, increasing productivity and throughput
- Improved strength due to a reduction in flux inclusions at the joint interface
- Reduces the flux in your wastewater effluent by as much as 75%
- Multiple formulations exist for a variety of base metals, joint designs and heating methods.

These materials will join ferrous and non-ferrous metals including steel, stainless steel, copper, brass and bronze.

<i>NOMINAL COMPOSITION</i>	<i>BRAZE 505</i>	<i>BRAZE 380</i>
Silver	50.0% ± 1.0%	38.0% ± 1.0%
Copper	20.0% ± 1.0%	32.0% ± 1.0%
Zinc	28.0% ± 2.0%	28.0% ± 2.0%
Tin	-----	2.0% ± 0.5%
Nickel	2.0% ± 0.5%	-----
Total Other Elements	0.15% max.	0.15% max.

PHYSICAL PROPERTIES

	<i>BRAZE 505</i>	<i>BRAZE 380</i>
Color	Yellow White	Pale Yellow
Solidus (Melting Point)	1220°F (660°C)	1200°F (650°C)
Liquidus (Flow Point)	1305°F (705°C)	1330°F (720°C)
Specific Gravity	9.17	9.06
Density (Troy oz./cu.in.)	4.83	4.77
Electrical Conductivity (% IACS)	15.00	18.00
Electrical Resistivity (Microhm-cm)	11.95	9.50
Recommended Brazing Temp. Range	1330°-1500°F (720° - 815°C)	1330°-1500°F (720° - 815°C)

USES

Braze 505 readily wets nickel and iron base alloys. It is recommended for joining 300 Series stainless steel and will retard interface corrosion in most exposures for which the base metals are suitable. Because this alloy is cadmium-free, it can be safely used on food handling equipment and hospital utensils. The presence of nickel in Braze 505 aids in the joining of small tungsten carbide inserts in cutting tools.

Braze 380 is a good general purpose low temperature brazing filler metal for use in cadmium-free brazing applications, such as air conditioning and refrigeration which involve the joining of steels, copper, copper alloys and nickel alloys

BRAZING CHARACTERISTICS

Braze 505 is very fluid at its flow point and will quickly fill long, narrow joints. Its low flow point will minimize oxidation of the stainless steel during brazing.

Braze 380 is a free-flowing, low temperature filler metal with excellent wetting of most ferrous and non-ferrous base metals, and is a good substitute for cadmium-bearing filler metals with similar silver contents. The material is best suited for narrow gap situations (.002"-.005" clearance).

PROPERTIES OF BRAZED JOINTS

In tests at room temperature, torch brazed "wiped" butt joints yielded the following average results:

	<i>Braze 505</i>		<i>Braze 380</i>	
	<u>Tensile Strength (lbs./sq.in.)</u>	<u>Elongation (% in 2")</u>	<u>Tensile Strength (lbs./sq.in.)</u>	<u>Elongation (% in 2")</u>
Stainless Steel (18-8 annealed)	69,500-88,000	1-9		
1029 Steel (cold rolled)	66,000-73,300	15-25		
Low Carbon Steels			55,000-65,000	8-13
304 Stainless Steel			80,000-85,000	2-5
Copper			31,000-33,000	25-35
Brass			35,000-45,000	15-30

BRAZING FLUXES AVAILABLE

Lucas-Milhaupt has several different fluxes available depending upon the material form (wire or preformed shape) as well as base metals and heating methods utilized.

Restrictive Flux – protects the parts being joined, yet restricts the flow of the filler metal, enabling the building of fillets and minimizing post braze secondary operations. This flux is recommended for most hand feed or wire feed applications. Flux content is typically 12% ($\pm 3\%$) of the total volume.

Free Flowing Flux – This very fluid flux provides excellent protection of your parts and facilitates filler metal flow. Recommended for preformed ring applications, it is typically 18% ($\pm 3\%$) of the total volume.

Heat Resistant Flux – Boron modified flux for large mass assemblies or long heating cycles. It is also typically 18% ($\pm 3\%$) of the total volume and also recommended for preformed ring applications.

Please Note: Flux percentages may vary depending upon material size and finished form, please contact Lucas-Milhaupt's Technical Services Department for specific product and process parameters.

SPECIFICATIONS

These filler metals conform to the following specifications:

	<u>Braze 505</u>	<u>Braze 380</u>
AWS A5.8	BAG-24	BAG-34
SAE	AMS 4788	AMS 4761

AVAILABLE FORMS

Wire (.060" diameter and .075"), rod form (20 inch lengths of .075" dia.) and preformed rings and shapes to specification.

WARRANTY CLAUSE

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