

CUPRO-FLO™ 100

Cupro-Flo™

PRODUCT DESCRIPTION

Cupro-Flo 100 brazing paste product is designed for brazing copper and brass components used in industrial and automotive heavy-duty trucks and earth moving equipment heat exchangers.

Cupro-Flo 100 is a flux-free slurry consisting of a brazing filler metal powder OKC 600, an organic polymer, and low odor volatile organic compound (VOC) containing solvents that are quick drying and have an evaporation rate near 0.3 (butyl acetate = 1.0). Since the flash point of the solvent is 110°F, the product is non-flammable at room temperature. The product is designed for coating heat exchanger tubes and fins by spraying, brushing or rolling. Product is premixed and ready to use. It is recommended to remix the slurry by hand stirring, paint shaker, or paint mixer prior to use.

Additionally, Cupro-Flo 100 is available in a VOC-exempt version and contains an even faster evaporating solvent and has an evaporation rate near 0.9 (butyl acetate = 1.0). The flash point of the VOC exempt solvent is near 110°F, so the product is non-flammable at room temperature. Lastly, the VOC-exempt slurry has more odor when compared to the VOC-containing product. Therefore, adequate ventilation is necessary for the application of this slurry.

NOMINAL COMPOSITION

Braze Filler Metal: OKC 600

| | |
|------------|---------------|
| Phosphorus | 5.25% ± 0.25% |
| Nickel | 4.20% ± 0.30% |
| Tin | 15.6% ± 1.0% |
| Copper | Balance |

PHYSICAL PROPERTIES

| | |
|-------------------------------|---------------------------------|
| Melting Range | 1100°F - 1120°F (593°C - 604°C) |
| Metal Content | 85% |
| Binder Content | 15.0% |
| Density (gm/cm ³) | 3.3 - 3.6 |

Cupro-Flo 100 slurry is recommended for brazing tube to fin joints in a serpentine fin type heat exchanger. The material can be coated on to the tube by spraying, rolling or brushing. The fins can also be coated by either spraying, dipping, or by fin tip applicator (FTA) equipment. The viscosity of Cupro-Flo 100 can be varied to meet the requirements for application. See application methods described below.

APPLICATION METHODS

Prior to brazing, individual components must be clean or free of oxide, grease, oil, dirt or any other foreign materials so material can adhere and flow properly.

TUBE COATING

Typical tube coating by a spraying set up is shown below. It is recommended to mix the product prior to loading into the spray reservoir. After coating the tube, pass the tube through hot air to quickly dry and form a hard coating. It is important to clean the spraying equipment, shortly after each use, to avoid drying in the lines and

clogging of the spray nozzle. The spray system can also be designed to circulate the slurry through the lines and have light mixing in the reservoir when not in use. It is important to turn off air pressure while not in use. For

your safety, please refer to the Material Safety Data Sheet (MSDS) of the Cupro-Flo 100, and any cleaning solvents, prior to use.

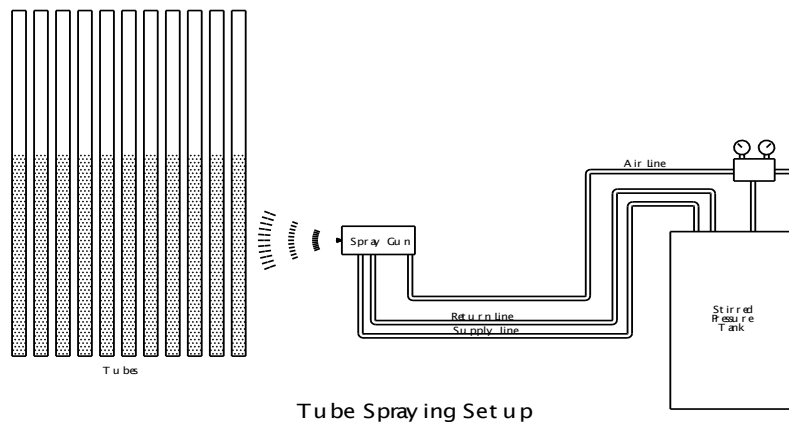


Figure 1.
 Tube Spraying Setup

FIN TIP APPLICATION

Fin Tip can be thin coated by spraying, dipping or using FTA equipment utilizing roll-coating techniques. In FTA equipment, the brazing slurry is placed in a tray having a mixer to keep the product homogenously mixed. A rotating roller, fitted with a scrapper blade to maintain slurry coating thickness, picks up the slurry from the tray so when the fin is passed between the roller and pressure plate, the fin is coated with the proper thickness of slurry. Once the fin is coated it can be passed through the hot air to quickly dry and form a hard coating. Again, shortly after each use, the roller and tray must be cleaned to avoid drying of the product. Refer to the MSDS for safety prior to use of products and cleaners.

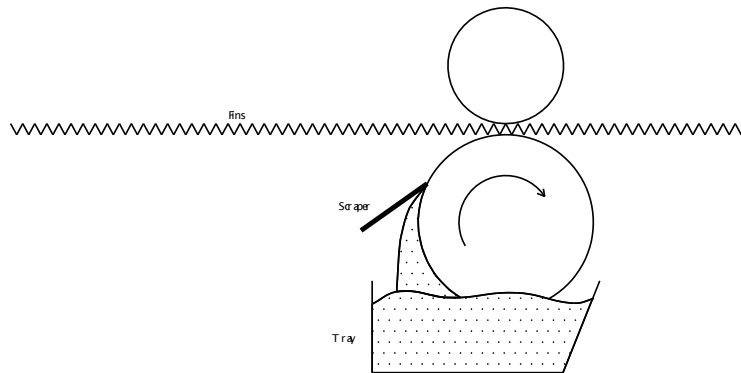


Figure 2.
 Roller Coating Application

BRAZING CHARACTERISTICS

Typical brazing is done in either batch or continuous furnace having controlled atmosphere like pure nitrogen or mixture of nitrogen and less than 10% hydrogen to prevent the oxidation of the components and braze material. Typical dew point of furnace is – 40°F (40°C) and oxygen content must be below 10 ppm. To achieve best results, during assembly, one must ensure that tube and fin are in contact with each other. When assembly is held in fixture, one must allow components to expand and contract during brazing cycle to avoid bowing of assembly. See below the typical brazing cycle.

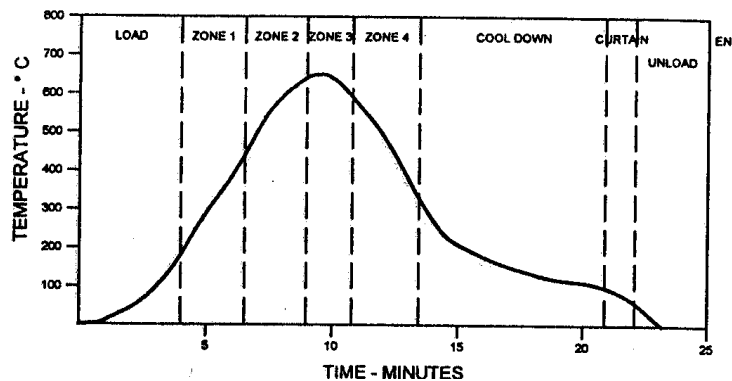


Figure 3.
 Typical Brazing Cycle

AVAILABLE PACKAGING

The standard packaging is 1-gallon plastic pail. Each pail contains either 20-lbs. or 10-kg of slurry. Other containers are available upon request. It is recommended to mix the product by paint shaker or jar by hand prior to opening to ease the mixing time before loading into applicator reservoir or tray.

SPECIFICATIONS

Cupro-Flo 100 alloy conforms to the following specifications: N/A

APPLICABLE PRODUCT CODE(S)

The applicable Lucas-Milhaupt product code(s) for this technical data sheet: 83-600/69-034/85C1.

SAFETY INFORMATION

The operation and maintenance of brazing equipment or facility should conform to the provisions of American National Standard (ANSI) Z49.1, "Safety in Welding and Cutting". For more complete information refer to the Material Safety Data Sheet for Cupro-Flo 100.

Use with proper precaution during application to ensure that all the OSHA, EPA and local regulation are met. Must read label and MSDS before use. Disposal of product must be in accordance with Environmental Protection Agency (EPA) and local regulation.

WARRANTY CLAUSE

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