



# SUPERIOR No. 650



## FLUORIDE-FREE BRAZING FLUX

- Excellent brazing characteristics on copper, nickel, precious metal alloys, and select ferrous metals.
- Flux emits **NO** hydrofluoric acid or boron-trifluoride gases into the air during brazing.
- Provides greater safety for mucous membranes and respiratory systems.
- Results in cleaner plant effluents.
- Flux complements the environmental, health, and safety features of cadmium-free filler alloys.
- Safer dermatologically due to the absence of fluorides.
- Residues are completely water-soluble.

### ENVIRONMENTAL, HEALTH, AND SAFETY CHARACTERISTICS

Beginning in the early 1990s, cadmium began to be removed from the silver filler metals for health and safety reasons. During the brazing process, cadmium oxidizes to cadmium oxide, a carcinogen. However, from an operations standpoint, one of the physical effects of cadmium removal is the higher liquidus temperature of the cadmium-free alloys.

**Superior No. 650 Fluoride-Free Flux** meets the higher temperature melting point and protection requirements of the cadmium-free brazing process. It also improves the safety of the brazing process by eliminating the gas production of hydrofluoric acid and boron-trifluoride gases in the plant environment. Additionally, the removal of fluoride yields a flux that is non-corrosive to hands and fingernails.

### DESCRIPTION

**Superior No. 650 Fluoride-Free Flux** is a creamy, white, brazing paste that is active and protective to a temperature of 870°C/1,600°F. It was formulated for brazing processes joining copper-based metals, and is recommended for joining copper, brass, and other copper-based alloys. It also works on select ferrous-based metals. Additionally, **Superior No. 650 Fluoride-Free Flux** is a superior selection for jewelry and silverware joining applications involving silver and other precious metals. The flux does not harden or crystallize and retains its creamy texture for two (2) years.

### APPLICATIONS

**Superior No. 650 Fluoride-Free Flux** is a general-purpose brazing flux that can be used in a wide variety of joining applications in many different manufacturing processes including:

- |                           |                                       |
|---------------------------|---------------------------------------|
| ◆ Plumbing Assemblies     | ◆ Electrical Connections              |
| ◆ Gas Valves and Fittings | ◆ Refrigeration/AC Systems Assemblies |
| ◆ Musical Instruments     | ◆ Heat Exchangers                     |
| ◆ Jewelry                 | ◆ Silverware and accessories          |

*Superior manufactures quality fluxes. Our business is solving problems.*



**Superior Flux  
& Mfg. Co.**

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## APPROPRIATE FILLER METALS

◆ Cadmium-Free BA<sub>g</sub> Alloys

◆ BCuP, Phos-Copper, Silver alloys

## PHYSICAL PROPERTIES

Form	Creamy Paste
Color	White
Specific Gravity	1.4
Viscosity	225,000 ± 20,000cps
Fluoride Content	<100ppm
Flash Point	None
Freezing Effects	None
Heating Effects to 50°C/122°F	Minimal
Active Temperature Range	670-870°C/1,235-1,600°F
<b>This Product is RoHS Compliant</b>	

## DIRECTIONS

**Superior No. 650 Fluoride-Free Flux** may be used in concentrated form or diluted with water to a thinner consistency to meet a particular preference. Heating the flux to 60-82°C/140-180°F makes it less viscous and more reactive. Heat the flux slowly to reduce spattering or excessive bubbling. The raw flux and residues are soluble in hot water (at least 60°C/140°F). Chipping or grinding is not necessary.

- 1 Remove any oil, grease, or other contaminants from the surface to be brazed.
- 2 Apply flux to joint by dipping, swabbing, or brushing area being brazed.
- 3 Apply heat to activate the flux, by torch, induction or other means to area being brazed.
- 4 Feed the braze alloy into the joint, unless a brazing preform is already in place.
- 5 Clean flux residues from brazed joint using hot water (60°C ± 5°C/140°F ± 10°F) for best results.

## SAFETY PRECAUTIONS

**Superior No. 650 Fluoride-Free Flux** is safer to work with than the conventional fluoride-bearing brazing fluxes. However, to achieve the highest level of safety when brazing, avoid contact with skin, eyes or clothing. Wear NIOSH approved safety goggles, latex or rubber gloves, and a rubber apron. As an added safety measure, wash hands thoroughly after use.

Brazing should be done in an area with adequate ventilation or air-flow. A NIOSH approved breathing mask is recommended for areas without good ventilation or for people who want to wear a breathing mask.

The flux may cause glare during brazing. Wear suitable, tinted NIOSH approved goggles or glasses when brazing.

Disposal of raw flux and flux residues must be carried out in accordance with local and federal environmental guidelines. Consult local or state authorities for requirements.

**Superior No. 650 Fluoride-Free Flux** has a two (2) year shelf life when stored in a closed container in a temperature of 20-25°C/68-77°F.

Refer to MSDS for additional safety information.

The information contained herein is based on data considered to be accurate and is intended for use by persons having technical skills at their own discretion and risk. Since conditions of use are outside of Superior Flux & Mfg. Co.'s control, we cannot assume liability for results obtained or damage incurred due to misuse, nor can we assume customer liability.

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