COOL-AMP COMPANY SINCE 1944 Conducto-Lube

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COOL-AMP #1233-500 PRODUCT INFORMATION SHEET

COOL-AMP is an odorless, water soluble, white powder used to apply a protective coating of Silver metal on copper or low-alloy brass and bronze substrates. The process is *electroless* and deposits an adherent coating typically 40 – 70 micro-inches in thickness by rubbing the moistened powder onto the cleaned part. There is no significant variation in thickness with the number of applications. It is an *electrochemical* process in which the very surface of the copper is displaced as the silver deposits.

Benefits of COOL-AMP Silver coating

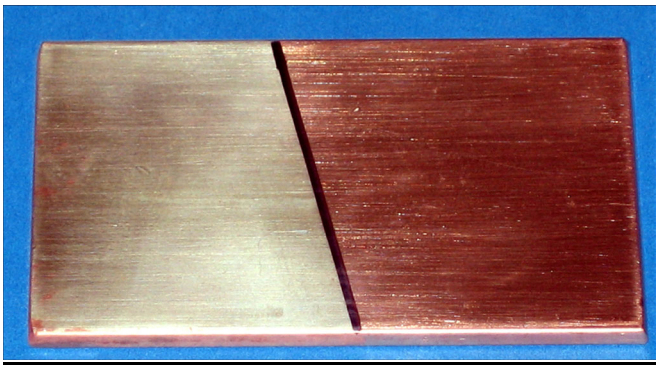
Applying a Silver coating provides a protective barrier to inhibit corrosion of the base copper. Copper oxidizes in air, creating a high resistance oxide film over the surface of the conductor. Silver brings an additional benefit: It has the lowest resistivity of all metals at room temperature. Silver is very resistant to oxidation in air so exposure to oxygen does not degrade electrical performance. By maintaining a stable resistivity over time, the silver coating significantly increases the useful life and efficiency of the connection.

Material	Resistivity, 10^{-8} Ohm•m
Silver	1.629
Copper	1.725
Gold	2.271
Aluminum	2.733
Zinc	6.06
Tin	11.5

Thermal conductivity of silver is 4.29 W/m-K.

Increases in *contact resistance* caused by oxide or other corrosion films on electrical contacts are well known. Tests exposing Silver and Copper contacts to N_2-O_2-SO_2-S_8-H_2O have shown Silver contacts to have superior performance.

Coated samples heat treated for two hours at 150 °C in air have shown the Silver-to-Copper bond passes ASTM B 571 in 45° modified Bend Test.



Procedures for applying COOL-AMP

Good bonding of the silver coating requires the metal substrate be completely free of any corrosion or oily films. Parts should be cleaned by wet-sanding with a fine-grit paper and distilled water and then rinsed with fresh distilled water.

In cases of oily residues, strong detergents, *e.g.*, those for automatic dish washers, may be required, prior to wet-sanding the surfaces. Heavy build-up of solid films may be removed with stainless steel, fine-wire brushes.

The cleaned part is now ready to be Silver coated. Use a wet/moist soft cloth to rub portions of the dry COOL-AMP onto the part, until a continuous, bright Silver surface has formed. Rinse the Silver with distilled water to remove all of the powder. After drying, the part is ready for service.

One pound of COOL-AMP will Silver coat 6000 in^2 or ~42 ft^2 of substrate.

Guidelines for using COOL-AMP

Recommended for use on parts made of copper or low-alloy brasses and bronzes. Use on moving parts will result in wear by friction or scratching.

COOL-AMP Registrations: NSN #6850-00-561-0349, NAIC CODE #325998 and SIC CODE #2899.