

## UNIGUARD™ alloy to help fight Formicary Corrosion

ClimateMaster and Luvata have joined forces in the continued fight against formicary corrosion. Luvata, one of the world's largest air coil suppliers, has introduced an air coil built using copper alloy 422, trade-named UNIGUARD™, which through testing has shown to have increased resistance to formicary corrosion. ClimateMaster is excited to offer residential customers the option of building units with UNIGUARD™ air coils. To provide even added protection, the UNIGUARD™ air coils will be e-coated.



### Coil Construction

Copper tube - Aluminum plate fin coils, used for over 70 years, are the most reliable, easily repairable, and highest performance coils on the market. These coils consist of a round copper tube and flat plate fin design. Over the years, a variety of tube enhancements, fin designs, and fin spacing have been employed to improve heat transfer. Copper / aluminum coils have proven to last for decades and can still serve as an effective and reliable product; however, recently there have been reports of formicary corrosion affecting copper tube air coils in some limited geographic regions. Unfortunately, this problem has proven to be unpredictable as to if and where it strikes.

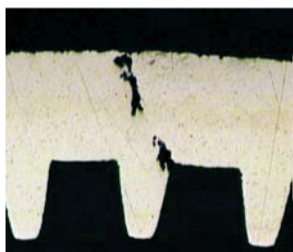


Figure 1: Copper Alloy 122

### Formicary – Drivers to recent awareness

In recent years the number of complaints of air coil leaks has been increasing in the indoor coils of AC systems, the primary form of cooling in the residential market for the U.S. Luvata's recent study has indicated that a majority of the heat exchanger coil failures were due to some type of corrosion. Many factors, including tighter homes and new types of building materials are contributing to increased occurrences. The frustrating part is that this problem may strike some while leaving others alone.

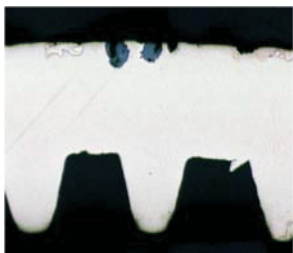


Figure 2: Copper Alloy 422

### Formicary Corrosion – What is it?

Formicary corrosion only occurs in copper based alloys and in the presence of organic acids, moisture, and oxygen. The corrosion has a unique characteristic that appears as a wandering pit (see figure 1). The pits are very small and require a microscope to view. Magnified 125 times, the corrosion is evident after only seven days of accelerated formicary corrosion testing. The UNIGUARD™ copper alloy 422 without e-coat is more resistant to corrosion and after 180 days of accelerated testing, only slight surface pitting has occurred (see figure 2).

### 422 alloy – Independent testing<sup>1</sup>

Luvata worked in cooperation with a leading 3rd party corrosion-testing lab that developed the industry standard for accelerated formicary corrosion testing. This lab performed testing on the new UNIGUARD™ 422 and leading copper alloys; 122, 220. Uncoated UNIGUARD™ was found to be at least 25 times more effective against formicary corrosion than the standard alloys.

ClimateMaster recommends the UNIGUARD™ air coil option be considered in areas where there is a higher than normal air coil failure rate due to formicary corrosion.

<sup>1</sup> This brochure is not intended to warrant or guaranty any specific level of performance, which can vary greatly depending on the field conditions in which products may be applied.

### 180 Day Accelerated Formicary Corrosion Test without E-coat

