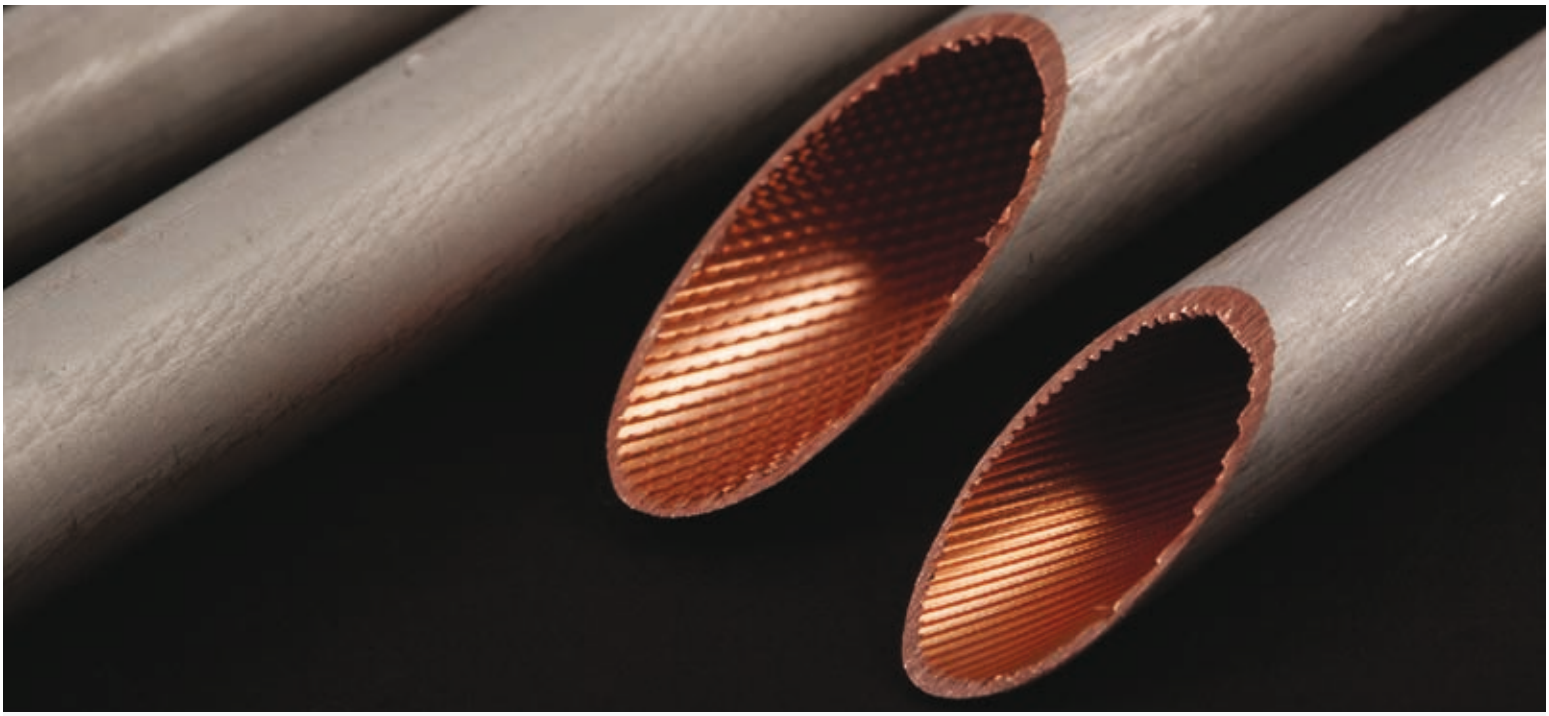
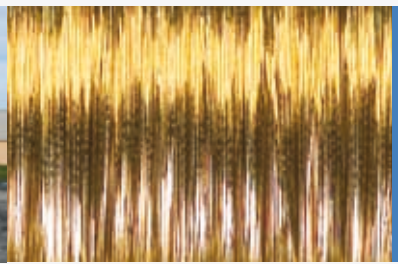
LUVATA
Partnerships beyond metals



T-Proof™
Coating technology addresses formicary corrosion

Based on independent laboratory testing, Luvata's T-Proof™ coating technology has been shown to be an effective solution against formicary corrosion. T-Proof coating technology is available to be applied on all current Luvata products and supplied as Pins-In-A-Bin™. This includes high performance heat transfer products and our cost saving alloys. T-Proof is compatible with traditional ACR heat exchanger manufacturing processes.



About Luvata
Luvata is a world leader in metal fabrication, component manufacturing and related engineering and design services. We are committed to partnering with our customers to help them increase their competitiveness. Our products and services enable our customers to improve operational efficiency, improve products and reduce tied-up capital. Because we focus on our customers' results and are unfailingly reliable, we are the partner on which our customers base their future development.

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Copper tube – Aluminum fin, Coils

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 spacings have been employed to improve heat transfer. These type of coils utilize existing equipment that OEMs have on hand, require no new capital investment, and have proven to last for decades. However, starting in the 1990s there has been an increasing problem with a certain kind of corrosion.

Formicary – Drivers to recent awareness

In recent years the number of complaints for leaks has been increasing in the indoor coils of vented AC systems, the primary form of cooling in the US residential market. Further study has indicated the cause in more than half of the heat exchanger coil failures was formicary corrosion. Longer warranty periods, and higher sensitivity to refrigerant leaks, are some factors leading to increased awareness. Tighter homes, different types of building materials, and other factors are contributing to the increased occurrence of formicary corrosion.

Formicary Corrosion – What is it?

Formicary ("Ants Nest") corrosion has a unique morphology that appears as a wandering pit (see 122 alloy photomicrograph below). Pits are not observable to the un-aided eye. This type of corrosion only occurs in copper based alloys and in the presence of organic acids, moisture, and oxygen.

T-Proof coating – Independent Testing*

Luvata has worked in cooperation with a leading 3rd party lab since 2001. This lab has developed the industry standard, accelerated formicary corrosion test. T-Proof coating technology was found to show no signs of attack after accelerated formicary corrosion testing. T-Proof coating can be added to Luvata's UNIGUARD™ tubing for increased system protection.

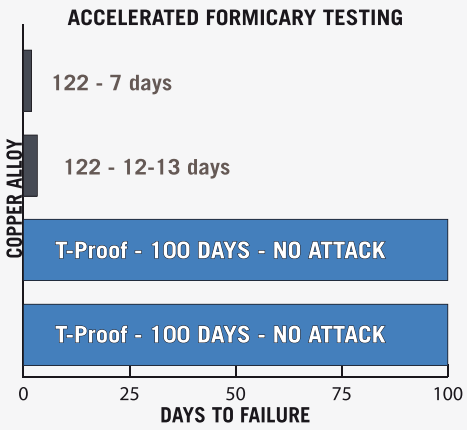
More information – T-Proof coating

Over 100 million T-Proof coated hairpins have been placed in the field since 2004 with no reported formicary corrosion failures. The automated plating process maintains a uniform coating thickness, with X-ray analysis of the tin deposit and assures coating quality. Luvata's T-Proof coating process reflects many years of refinement to address issues relating to assembly, contamination and brazing concerns associated with other plating processes in the industry.

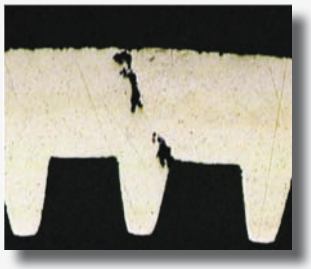
Brazing with T-Proof coating has been achieved in all application. No additional fluxing or tube prep is needed.

Luvata's T-Proof coating technology is covered under our corrosion warranty for up to 10 years. See your Luvata representative for details and a copy of the warranty.

*This paper is not intended to warrant or guaranty any specific level of performance, which can vary greatly depending on the field conditions in which T-Proof coating is used. Please contact your Luvata representative for further information.

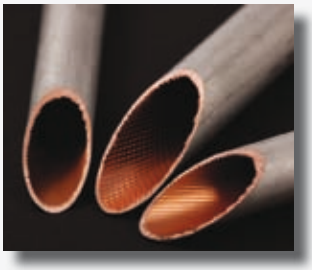


122 ALLOY



122 Alloy sample 125x magnification. Mounted after 7 days with failure, of accelerated formicary corrosion testing.

T-Proof Coating Technology



T-Proof coating can be added to any of our high performance internal enhancements.

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