OzKem Pty Ltd A.B.N 50 127 070 722
UNIT 2 481-483 Victoria St Wetherill Park
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ECRA-SHM HIGH GLOSS HYBRID ACRYLIC TECHNICAL DATA SHEET

Technical Data Sheet

ECRA= Enhanced Condensate Run-off Additive. OEM=Original Equipment Manufacturer, or if you like the product is used during the original manufacture of the product)

Description: Water based self-etching epoxy resin is supplied various colors at the required viscosity used for the coating of all ferrous and nonferrous metals (as used in A/C coil manufacture) to give long term corrosion protection. The coating cures to a thin deposit of high gloss super hydrophobic finish giving a perfect surface for heat exchange surfaces.

Advantages:

The coating provides protection from environmental and chemical exposures. It is a long-term protective coating that improves the long-term efficiency (structural and performance) of the system. The efficiency improvements come from four distinct features of the product.

1. SUPER Hydrophobic

The permanent super hydrophobic surface improves condensation characteristics and allows for faster run off of the condensate which improves heat exchange. The super hydrophobic surface also reduces dirt and dust consolidation reducing cleaning of the coil.

2. Corrosion Protection

The entire surface of the coil is protected, including tubes, which remain free of corrosion

allowing the coil to maintain its long-term heat exchange efficiency.

3. Reduce Mould and Bacteria

The coating contains permanent Ag+ technology (Ag+ = Silver ion) reducing mould and bacteria growth within the coil. The coil stays clean and free of micro-biological contamination. A clean dry, bio-film free coil uses far less energy than a wet dirty coil.

4. Very Thin

The coating is only 6-8 microns which does not affect heat exchange or air flow

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Indoor Air Quality

The heat exchange coil in an evaporator is a huge wet surface usually contaminated with mould and bacteria. The coating remains clean and dry, free of contamination, which stops odors, mould and bacteria entering the room.

Indoor air quality is a huge issue in commercial and residential buildings. By protecting the heat exchange surface with the nano-silver ion technology the coil with remain bio-film CLEAN.

Production Advantages

1. Replace pre-coated fin stock with a dipped coated coil, which gives protection of fins and copper tubes. (Dipped coated coil provides protection to all coil surfaces.)

2. Reduce thickness of Aluminum fin stock as the coating provides strength and rigidity to the coil.

3. Reduced Aluminum fin quality. The coating provides a barrier to chemicals and salt, stopping corrosion and allowing for the use of a lower quality Aluminum fin stock.

4. Reduced maintenance of fin press equipment because pre-coated fin stock is replaced with natural aluminum fin stock.

5. Water based coating with no special environmental save-guards in storage.

6. No shelf life - mixed with water and ready to use. Importantly, all viscosity adjustments are ONLY made using clean water.

TECHNICAL DATA SHEET

	PROPERTIES:
Color:	Translucent, light blue/green/black finish (color can be adjusted to meet manufacturer's needs)
Super Hydrophobic:	Additive to increase condensation and improve corrosion resistance
Gloss Level:	Full
Chemical Resistance:	Excellent (with the exception of strong alkalis or oxidizing chemicals), see chemical resistance information
Solvent Resistance:	Dependent upon selection of solvent
Temperature Range:	Up to 180 °C
Fin pattern:	Standard and also suitable for enhanced fin designs
Fin Type:	Aluminum, Copper and all Ferrous and Non-Ferrous Metals

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TECHNICAL DATA:

Application Method:	Total Coil Immersion or spraying
Immersion Cycle:	Dependent upon coil size
Curing Cycle:	Dependent upon coil size
Film thickness:	7-9 microns d.f.t. (dry film thickness) per coat
Heat Transfer:	Negligible impairment at the given thickness
VOC Level:	85 grams/Liter
Neutral Salt Spray:	5000 hrs. ASTM B117 (AS 2331.32 – 1980) Source: Hawker de Havilland (Boeing) ASTM B117 (American Standards Test Method) and AS 2331.32 - 1980(Australian Standard) are test procedures used for the Neutral Salt Spray testing
Acidified Salt Spray:	2000 hrs. ASTM G85 A5 Source Jotun Malaysia 2000-hour American Standards Test Method used with the very aggressive corrosion testing using the Acidified Salt Spray testing

Chemical Resistance

ECRA OEM offers protection in a majority of aggressive environments with the exception of strong alkalis and oxidizing chemicals. The following is the chemicals and solvent resistance guide of chemical exposure:

Corrosive Agent	Strength	Rating
Hydrochloric Acid	5%	E
Hydrochloric Acid	10%	E
Hydrochloric Acid	20%	E
Sulphuric Acid	5%	E
Sulphuric Acid	10%	E
Sulphuric Acid	20%	E
Phosphoric Acid	5%	E
Phosphoric Acid	10%	E
Phosphoric Acid	20%	E
Phosphoric Acid	30%	E
Acetic Acid	10%	E
Trichloroethylene		E
Toluene		G

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Methylated Spirits		G
Mineral Turpentine		G
MEK (Methyl Ethyl Ketone Solvent)		G
Acetone		G

(**NB** Where 1% = 10,000 ppm)

Legend **E=Excellent** **G=Good** **P=Poor**

In addition, the above ECRA OEM demonstrates excellent resistance to fumes from the following: Lactic Acid, Oxalic Acid, Humic Acid and Saltwater.

Additional/Specific Resistivity

ECRA-SHM product range is also resistant to the following materials.

Food acids:

1. Vinegar (3-7% Acetic acid). Frequent cause of 'copper tube pitting'.
   - Found in many foods, such as Salad dressings
   - Present during Small goods curing
2. Lactic acid. Also selectively attacking copper tube and can result in pitting.
   - Milk and Dairy products
   - Cheese products
3. Citric acid. Very widely used as food additive.
   - to acidify beverages
   - confectionery
   - effervescent salts, and other foods.
4. Maleic acid. Used in fats to reduce rancidity.
5. Oleic acid. Formed by hydrolysis of various fats and oils. On exposure to oxygen it forms rancidity in fats and oils.
6. Oxalic acid. Found in many plants and vegetables. It is also the product of many moulds.
7. Allyl Sulphide. Very corrosive vapors (onion and garlic) to copper tubes.
   - Found in large amounts in onion processing plants and other food processing plants

Vegetable and fruits:

1. Vegetables and fruits contain various acids which are mainly selective to copper (attack copper). They are the cause of significant coil copper damage via tube perforation. Acid concentration increases with multiple vegetable/fruit storage environments.

   - Present in varying concentration during vegetable and fruit storage

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Environmental/ambient:

1. Hydrogen sulphide (H2S) and Nitrous oxides (car emissions)
    - Found in various concentrations near transport routes
    - Car parks
    - General industry

2. CO2 (carbonic acid). Wide ambient presence. Also produced by burning coke and other carbonaceous materials.
    - Very widely experienced in industrial zones, power stations, etc.

3. Salt spray/acidified salt spray
    - Coastal and near coastal regions (main attack on coils is via Galvanic reactions leading to corrosion of aluminum and other anodic metals
    - Shipping and transportation by sea

Alcohol beverages manufacture/processing:

1. Ethanol vapors
    - Vapor concentrates on evaporator coils
    - Fumigating/sterilizing chemicals vapors

2. **Wood processing:**
    - Humic acid selectively and rapidly attacks copper tube components of coils during timber drying/aging

3. **Metal foundries:**
    - Hydrochloric acid vapors and other vaporized metallic compounds