PROMEK AMC - TITANIUM DIOXIDE HIGH GLOSS ENAMEL TECHNICAL DATA SHEET

General: ECRA-DTM TITANIUM DIOXIDE High Gloss Enamel is a direct to metal high gloss water based acrylic copolymer. Specifically designed for use in industrial, commercial and residential HVAC and refrigeration systems to stop corrosion and to improve indoor air quality.

The coating exhibits excellent performance properties. Including anti-corrosion resistance with superior salt spray resistance. The coating also uses multiple additives to give a broad protection against all microbial contamination present in the air and water environment.

The formulation, in addition, provides super hydrophobic film characteristics suitable for both the topcoat and maintenance enamel applications.

Uses:	HVAC and Refrigeration coils and topcoats for exterior/interior applications, maintenance coat for exterior/interior applications
Substrates:	Direct to metal to cold rolled steel pre-treated galvanised steel, aluminium, copper and other lightly etch primed metals, previously painted surfaces, etc.
Colour:	High gloss colour can be adjusted to meet manufacturer's/customer's needs
Gloss level:	Full
Environments:	Industrial, commercial, residential and in general other exposure environments where long term external durability is required. Moist environments in which microbial contamination could affect performance of heat exchange
Neutral Salt Spray:	>10000 hrs ASTM B117 (AS 2331.32 – 1980)
QUV	3000 hrs ASTM D2244 – colour ≤ 5 units
QUV	1500 hrs (Power: 650kJ/m^2; wavelength 300-800nm)

Chemical Resistance:	Excellent to chemical fumes and splash resistance (with exception to strong alkalis or oxidising chemicals)
Temperature Range:	Dry heat, up to 180 °C Wet heat, up to 200 °C Minimum – 40 C
After Curing	Within temperature range specified above there will be no dangerous / noxious chemical reaction into the circulating air space. As tested by EU Laboratory 2014.

Paint properties, typical:

Viscosity (Krebs, KU)	93- 98
Viscosity (Centipoise, cP)	1300 – 1500
Solids % by: volume/wt	30.00% /50.00%
Density	1.2138 Kg/L
pH	8.8 – 9.5
Gloss at: 20°/60°	65/92
VOC	165 g/Litre
Flash point	Water-Borne/Non-Flammable
Application	Brush/rolling – as supplied. Spray – reduce 10% with Di water
DFT	40 microns
Coverage (Practical)	15 m^2/Litre
Application temp.	Apply at above 5°C
Curing (Air-dry, 25°C)	
Tack free	15- 30 mins
Recoat	30- 60 mins
Fully cured	7 days
Accelerated cure	Cure can be accelerated significantly depending on the baking oven temp/time cycle selected
Packaging	20 litre metal drums

Chemical Resistance

ECRA DTM offers protection in a majority of aggressive environments with the exception of strong alkalis and oxidising 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
Hydrochloric Acid	30%	E
Sulphuric Acid	5%	E
Sulphuric Acid	10%	E
Sulphuric Acid	20%	E
Sulphuric Acid	30%	E
Phosphoric Acid	5%	E
Phosphoric Acid	10%	E
Phosphoric Acid	20%	E
Phosphoric Acid	30%	E
Phosphoric Acid	50%	E
Acetic Acid	10%	E
Trichloroethylene		E
Toluene		G
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-DTM demonstrates excellent resistance to fumes from the following: Lactic Acid, Oxalic Acid, Humic Acid and Saltwater.

Additional/Specific Resistivity

ECRA-DTM 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 vapours (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

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 aluminium and other anodic metals
    - Shipping and transportation by sea

Alcohol beverages manufacture/processing:
1. Ethanol vapours
    - Vapour concentrates on evaporator coils
    - Fumigating/sterilising chemicals vapours

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

Metal foundries:
1. Hydrochloric acid vapours and other vaporised metallic compounds

Chlorine Fumes
1. Chlorine fumes generated by cleaning agents in BLEACH
2. Chlorine fumes generated around Chlorine based POOL disinfection

Indoor Air Quality Treatment

ECRA-DTM contains three independent non-toxic antimicrobial additives that give a very broad disinfectant property.

1. Silver Ion additive to complete kill all bacteria, viruses and mould that comes into contact with the heat exchange surface

2. Quaternary Ammonia additive added within the resin as a HYBRID to maximise exposure and durability of the disinfectant.

3. Titanium dioxide (TiO_2) is a nontoxic antimicrobial with potential bactericidal and fungicidal applications in damp coating environments.

Registration of all Anti Bacteria Additive

- US EPA Drinking water contact
- US FDA food contact
- EPA FIFRA Registration
- EPA Food contact
- EPA HVAC Use
- NSF Certification Standard 51 Food Equipment contact

SUPER HYDROPHOBIC Self-Cleaning Surface

1. Highly effective super hydrophobic surface repels water to reduce dirt and accelerate self-cleaning capacity

2. Permanent SUPER HYDROPHOBIC surface reduces cleaning and maintenance

3. Coating improves efficiency by increase condensation capacity of heat exchange surface

LAB TESTING

Heat Transfer Affect : loss of less than 0.1% for HVAC and Refrigeration Coil Applications

Salt Spray (ASTM B117) : Pass 10 000 hrs

Acidified Salt Spray (ASTM G85 – A5) : Pass 3000 hrs

Moist SO_2 Test (ASTM G87) : Pass 50 cycles

Bend Test (ASTM 522 Method B) : Pass 3/8 " mandrel

Pencil Hardness (ASTM D-3363) : 2H

UV Resistance (ASTM D4798) : 9.8 after 300 hrs Xenon arc test method

Meets Mil Spec : MIL-STD-810 Sand and Dust

Impact Resistance (ASTM D2794) : Direct > 1.8 kg per cm^2
Indirect 1 kg per cm^2

Anti Bacterial Resistance (ASTM G22) : PASS

Anti Fungal Resistance (ASTM G21) : PASS

Meets FDA 175.300 for indirect food contact

NSF : NON FOOD COMPOUND Registered