

**1. PRODUCT INFORMATION SHEET**

BLUGUARD COIL PROTECTION HVAC MCHE & RTPF WATERBORNE COIL COATING

**2. MANUFACTURER**

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**3. PRODUCT DESCRIPTION**

BluGuard Coil Protection is a HVAC MCHE & RTPF COIL coating system, that gives a life time corrosion protection to full aluminium micro channel coils and round tube plate fin coils. The coating can be applied by spraying, dipping or flowing. Without any smell or environmental restrictions BLUGUARD COIL PROTECTION can be applied to coils in an OEM Plant or to installed HVAC & R units.

BluGuard Coil Protection has passed all HVAC accelerated tests like salt spray, flexibility and SWAAT > 3120 hours (130 days). BluGuard Coil Protection has been tested in the field at one of the most severe industrial exposure conditions, a refinery in coastal area, Jubail, Saudi Arabia. BluGuard Coil Protection did not show any deterioration after multiple years of condenser coils functioning in highly corrosive environmental conditions.

BluGuard Coil Protection can be supplied with antimicrobial properties or modified to hydrophilic or hydrophobic properties. Since the coating is waterborne, it can be applied at any site without restrictions by law.

BluGuard Coil Protection prevents surface and galvanic corrosion of HVAC coils. By following the maintenance instructions HVAC users will delay the replacement by many years and keep the energy consumption to a nominal level. Headers and frames of the coils are manufactured from different aluminium alloys. Joint areas in MCHE coils in combination with flux can start leaking at the brazed areas. BluGuard coatings are supported by mastic on the headers and brazes: a primer that builds an 80 micron // 3 mil layer before BluGuard coating is applied.

Any test certificate or property verification is available.

**To be applied to HVAC & R appliances:**

- Condensers RTPF // MCHX
- Evaporators
- Dry Coolers
- Air Radiators
- Split units
- AHU
- Roof top units
- Package units
- Heat pumps

**Special Properties (added feature):**

- Anti-odour
- Hydrophilic, Hydrophobic
- Anti-corrosive
- Limited dust adhesion

**Exposure Conditions include:**

- Food processing and storage
- Airports
- Office buildings
- Hotels

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- Schools
- Warehouse
- Water treatment
- Breweries
- Paper Mills
- Refineries
- Power Plants
- Meat processing industry
- Automotive industry

**4. SURFACE PREPARATION AND APPLICATION PROCEDURES**

• **Field application**

1. Cleaning with industrial degreaser (field application only).
2. De-oxidation with pickle, a 5% inhibited phosphoric acid solution (field application in case oxidation is present).
3. Degreasing // conversion (In case heavy process oils are used extra degreasing may be required).
4. Application of coating system with mastic and BluGuard Coil Protection.

• **New coils**

1. Degreasing // conversion (In case heavy process oils are used extra degreasing may be required).
2. Application of coating system with mastic and BluGuard Coil Protection.

• **Pickle**

In case any corrosion is present (white deposits) on the aluminum, black or green deposits on the copper or brown or white deposits on the galvanized sheets, pickle must be used for de-oxidizing. Apply by chemical dosing pump at 1:4 (water) ratio. Leave for 5 minutes and rinse with copious water to allow sewer disposal. Higher temperature will require higher dilution rate because of a higher rate. Rinse when reaction is present.

**Application Conditions**

Temperatures:

Surrounding: > 10 °C

Pickle : 5-50 °C

Substrate : > 15 °C

**Storage**

If stored in the original closed containers in a cool dry place the shelf life is 12 months.

**BLUGUARD COIL COATING**

The BLUGUARD COIL PROTECTION coating is based on modified acrylic waterborne binders with high elongation properties, with aluminium pigmentation added to establish heat transfer, chemical resistance and UV blocking properties. Corrosion resistance reaches > 10 000 hours (ASTM B117) and SWAAT > 3120 hours chemical resistance is excellent. All test reports are available upon request.

**Spray application**

BluGuard coating systems must be applied at a minimum wet layer thickness of approximately 50 µm resulting in a dry layer thickness of 25 µm. A theoretical amount of approximately 45 ml/m<sup>2</sup> by air mix spraying is required. Covering rate will be 22,2 m<sup>2</sup>/ltr heat exchange area (excluding over-spray). Spray as per the operational manual, by certified applicators only.

**Dip / Flow application**

BluGuard coating systems must be applied at a minimum wet layer thickness of 28 µm resulting in a dry layer thickness of 15 µm. A theoretical amount of approximately 28 ml/m<sup>2</sup> by air mix spraying is required. Covering rate will be 36 m<sup>2</sup>/ltr heat exchange area (excluding over-spray). DIP FLOW as per the operational manual, by certified applicators only. Edges are sprayed for extra protection, by spray application.

**Cans**

BLUGUARD COIL COATING is supplied in 5 ltr and 20 ltr cans.

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**Application Conditions**

Temperatures:

- Surrounding : 15-35 °C
- Mastic : 15-35 °C)
- Substrate : 15-35 °C

**Mixing Instructions**

Open container of BLUGUARD COIL PROTECTION, mechanically mix the BLUGUARD COIL PROTECTION until a uniform color with no darker spots has appeared. Add water as per application specification. Dilution by clean water only. Dilution ratio (volume), defined by DIN CUP in the procedures.

**Pot Life**

BLUGUARD COIL PROTECTION at 20 °C has no pot life. After approximately 45 minutes minor skin building may take place. Stir until dissolved.

**Solids**

52% by weight.

**Tools**

BluGuard is applied according to the quality and operations manual, by certified applicators only.

**Cleaning Equipment**

Clean by recirculating the equipment with water until clean water comes out of the processing equipment.

**Storage**

If stored in the original unopened containers in a cool (Room T) dry place (RH < 85%) the shelf life is 12 months.

**5. PHYSICAL/MECHANICAL PROPERTIES**

**Abrasion Resistance**

The TABER ABRASER test sets standards for wear resistance. Coated surfaces are artificially exposed to wearing by wheels with sandpaper. After 1000 rotations, mass loss of the coating is determined. BluGuard coating systems show a mass loss of 90 mg after 1000 rotations with CS 10 wheels, reflecting a maximum score regarding to the standards.

**Adhesion**

The BLUGUARD COIL PROTECTION system is classified as Gt 0 according to DIN 53151, the best score possible.

**Chemical Resistance**

BLUGUARD COIL PROTECTION withstands almost all chemical exposure conditions. As a simple rule the Maximum Acceptable Concentration or MAC-value is the exposure condition limit of BluGuard. For any concentration level exceeding the BluGuard resistance list, Bluchem should be consulted. A complete resistance list against vapours can be requested at [info@bluchem.co.za](mailto:info@bluchem.co.za)

ALKALINES

1. Ammonia
2. Ammoniac solution
3. Caustic soda
4. Sodium hydroxyde
5. Caustic potassium
6. Potassium hydroxide
7. Lithium hydroxide
8. Calcium hydroxide
9. Magnesium hydroxide

< 10 ppm	< 100 ppm	All
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ALCOHOLS

10. Methanol
11. Ethanol
12. Isopropanol
13. Butanol
14. Amyl alcohol
15. Benzyl alcohol
16. Diacetone alcohol
17. Glycerine
18. Propanol
19. Pentanol

< 10 ppm	< 100 ppm	All
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INORGANIC

37. Arsenic
38. Boric acid
39. Hydrogen carbonate
40. Chromic acid
41. Bromic acid
42. Hydrochloric acid
43. Hydrogen fluoride
44. Hydrogen sulphide
45. Nitric acid
46. Nitrous acid
47. Sulphuric acid
48. Sulphurous acid
49. Phosphoric acid
50. Perchloric acid
51. Selenic acid

< 10 ppm	< 100 ppm	All
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### Corrosion Resistance:

Aluminum Coil 25 µm	
Test:	Result:
ASTM B 117	5 000 hours
ASTM G 85 annex 5	3 000 hours
Kesternich SFW 2,0 S	40 cycles
Cycle exchange ISO 20340	1000 hours
Taber Abraser	1000 hours
Flexibility ISO 1519	passed *
Humidity ASTM D 2247 - 99	2000 hours
Ahesion ASTM B - 3359	G0 / 5B
Pencil Hardness 8H	passed *
Impact LBS/sqinch ASTM D2794	passed *
Seawater immersion	110 hours *
Heat resistance 360 C 4 hours	passed *

\* manufacturer specs

### Flexural Strength

Metals expand and shrink with fluctuations in temperature. BluGuard coating systems meet HVAC Flexibility standards by Erichsen tests (DIN 53156)

### Heat Resistance (RH < 90%)

- Maximum up to 100 °C.
- Minimum -40 °C.

At other non-peak level humidity levels, the supplier of the coating system should be consulted, to approve exposure conditions.

### Anti-Microbial Working

According to the laboratory test results the coating prevented bacterial and fungal growth of micro-organism on test specimen, by adding an anti-microbial contents. More details upon request.

### Use with equipment for cooling foodstuff, food production and food warehouses

BLUGUARD COIL PROTECTION should not be applied to refrigeration coils directly in contact with foodstuff where possible malfunction of the coating system could lead to particles contaminating the food.

## 6. BLUGUARD PRIMER

The BLUGUARD PRIMER coating is applied to the face area of coils that are exposed to extremely corrosive environments (e.g. C5 Marine). The primer is a cross linked epoxy polyamide that is fast drying, flexible, and has excellent abrasion and water resistance.

Exposure	Splash & Spillage	Fumes
Acids	Good	Good
Alkalies	Good	Very Good
Solvents	Good	Excellent
Salt	Excellent	Excellent
Water	Excellent	Excellent

### Temperature Resistance (Dry)

Continuous	180°C
Non-continuous	220°C

## 7. WARRANTY AND REGISTRATION

BluGuard manufacturing and application procedures meet ISO 9000 requirements. Manufacturing defects are accounted for by the manufacturer, application defects by the applicator. Manufacturing defects and responsibilities are described in the general conditions of sales of the manufacturer. Applications defects, responsibilities and conditions are described in the warranty terms of the applicator, licensed by the manufacturer.

*The information contained herein is furnished in good faith but without warranty of any kind. This product information sheet reflects information the manufacturer believes to be accurate on the date of preparation. Users should consider these data as supplement to other information gathered by them and must make independent determination of suitability and completeness of information from all sources to ensure proper use, handling and disposal of this product. Users are solely responsible for handling, application, or other use of this product and for ensuring the safety and health of their employees and customers and the protection of the environment. The manufacturer does not accept any liability whatsoever arising out of the use of this information. Consult with the manufacturer for further information.*

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