

Technical Data Sheet

Humidur® AF 5 - Anti-Fouling System



Product Description

Humidur AF 5 is a 2-component solvent-free modified polyamine cured epoxy system offering the following benefits:

- **Protection against fouling**
- **Single coat system**
- Can be applied on steel, concrete, aluminium, glass reinforced plastic (GRP), fibre reinforced plastic (FRP) or on top of Humidur anti-corrosion coatings
- **Environmentally friendly** (100% solids, no solvents, no isocyanates, no TBT, free of asbestos)
- **Excellent abrasion resistance**
- **Excellent impact resistance**
- **Outstanding adhesion** to substrate and interadhesion between layers
- Capable of **curing under water**: can be exposed to water immediately after application
- Capable of **curing at freezing temperatures**
- **Unlimited overcoating**

Recommended Use

Humidur AF 5 is generally applied on structures where fouling forms a threat:

- Anti-fouling in shipping: e.g. ship's hull
- Offshore structures
- Marine structure: e.g. lock door
- Intakes of cooling systems or hydropower facilities
- Inside of pipelines transporting any kind of water, regardless of its salinity

When the substrate is steel or aluminium, provide an anti-corrosion layer first.

Humidur AF can be sprayed, rolled, brushed or be applied with a spatula onto the substrate.





Manufacturer's Information

Acotec nv, with registered offices at Aalst, Belgium, is the developer and sole manufacturer of the Humidur products, distributed worldwide through a wide network of agents and cooperative companies. The expected lifetime of Humidur AF 5 is more than 5 years. Contact Acotec directly or visit www.acotec.be or www.humidur.be for reference projects.

Composition

Humidur AF 5 consists of two components:

A is the base component and contains:

- non-crystallisable epoxy resins,
- high-tech modifying agents and elastifiers,
- Anti-fouling and colouring pigments

B is the hardener and contains:

- polyamine hardener complex

Environment

Humidur AF 5 has been designed to fully respect the environment. The product contains:

- No VOC (0%),
- No solvents or diluents (WFT = DFT),
- No isocyanates,
- Free of asbestos (MSC.282(86), IMO MSC.1/Circ. 1379, IMO MSC.1/Circ. 1426)
- No TBT.

Humidur AF 5 is capable of curing under water and has a leaching that will have no toxic, mutating or lethal effect on the fauna and flora in and out of the water.

As Humidur is a one-layer system, it reduces the amount of waste and minimizes loss spray.

All technical reports are available upon request.

Humidur AF 5 is to be applied with the standard health and safety requirements: coveralls, gloves, safety goggles and air masks with gas and vapour filter.

Health & safety recommendations are to be consulted in the safety data sheet of Humidur AF.



Product Data

SPECIFIC DATA		Humidur AF 5
Density @ 23°C	Component A	$\pm 1.12 \text{ g/cm}^3$
	Component B	$\pm 1.06 \text{ g/cm}^3$
	Mixture A + B	$\pm 1.11 \text{ g/cm}^3$
Solid content		100%
Flash point mixture A + B		>100°C
Hardness		Shore D>60
Colour		Copper red
Minimum layer thickness		200 μm
Maximum layer thickness		500 μm
Covering capacity (WFT = DFT) Theoretical @ 400 μm		0.44 kg/m^2
Mixing ratio A : B	By weight	4.57/1
	By volume	4.3/1
Overcoating time		Unlimited
Standard packaging		18 kg
Pot life at 23°C		45 minutes
Shelf life max 25°C dry		12 months



Curing time

Humidur coatings have the ability to cure under water. The curing of Humidur is a chemical reaction and is water repellent. The curing times are based on air circulation, temperature and the film thickness. The touch dry time at 20°C is 4 hours. For a full cure, the indicative values are:

	10°C (50°F)	15°C (59°F)	20°C (68°F)	25°C (77°F)	30°C (86°F)
Full cure	4 days	3 days	48 hours	36 hours	24 hours

Surface Preparation

Humidur AF 5 can be applied on steel, aluminium, concrete or on GRP or FRP. If the structure is made in steel or aluminium, it is recommended to apply an anti-corrosion layer first, preferably Humidur FP or Humidur ME. All surfaces shall be free of oil, grease, dust or any other contamination prior to coating.

STEPS IN SURFACE PREPARATION	Substrate		
	Steel or Aluminum		Concrete, GRP or FRP
	Existing coating	Blank steel/Al	
Apply or repair anti-corrosion coating in accordance with the technical data sheet and application procedure of this coating	Yes	600 µm Humidur FP or ME	No
Check for compatibility between anti-corrosion coating and Humidur AF with manufacturer	Yes	No	No
Protect areas not to be coated with masking tape	Yes	Yes	Yes
Remove all existing fouling	Yes	No, if over-coating interval < 2 days Yes, if overcoating interval > 2 days	Yes
Remove salts by hydrojetting with fresh water	Yes	No	No
Clean surface with Acetone or similar	Yes	No	No
Roughen the surface with orbital electric sander or manually with abrasive paper	120-180 grade discs or paper	No	No
Remove all dust	Yes	No	TBD on-site
Clean the surface with fresh water	Yes	No	TBD on-site
Clean surface with Acetone or similar	Yes	Yes	Yes



Application

APPLICATION PARAMETERS		Humidur AF 5
Temperature before mixing		18°C - 25°C
Application temperature of mixture		20°C
Surface temperature	Minimum	> 0°C and > dew point + 3°C
	Maximum	50°C
	Ideal	> 20°C
Humidity	Relative Humidity	< 95%
	Surface	No condensation
Spray nozzle	Opening	0,019'' - 0,023''
	Angle	40°-60°

Lifetime

After application, an adhesion test is performed (according to ISO 4624) for which we commit ourselves to achieve a minimum criterion of 5 MPa.

A layer thickness of 400 µm is expected to perform at least 5 years.

Approvals/Certificates

- ABS certificate (American Bureau of Shipping)
- CCS certificate (Chinese Classification Society)
- University Ghent: tin-free anti-fouling coating
- SGS Intron: Leaching from a coating system: determination of anti-fouling properties
- Eco-friendly anti-fouling according to MSC.282(6), IMO MSC.1/Circ.1379, IMO MSC.1/Circ.1426