HUMIDUR® BY ACOTEC

Humidur AF

Application Manual

ACOTEC

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Content

1 Product Description

Humidur AF is the anti-fouling in the Humidur product range. It is a 2-component, solvent-free modified polyamine cured epoxy system and applicable in one coat. If required, multiple coats can be applied wet-on-wet or after curing indefinitely.

The base or A-component contains non-crystallisable epoxy resins, high-tech modifying agents, elastifiers, anti-fouling and colouring pigments. The B component contains the polyamine hardener complex.

There are two versions of Humidur AF: Humidur AF 5 and Humidur AF 10.

For more information we refer to the technical datasheets and the product overview tables which can be found on www.humidur.be.

Table 1 shows the possible application methods for Humidur AF.

TABLE 1

	Roller/Brush	Spatula	Single component spray	Plural component spray
Humidur AF 5	✔		✔	✔
Humidur AF 10		✔	✔	✔

Humidur AF 10 can be applied by single or plural component spray but should always be evened out by spatula for a smooth finish and to reach the recommended film thickness.

Humidur AF 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.

2 Packaging

The products are delivered in two parts (Part A resin and part B hardener) in pre-dosed labelled containers. The standard packaging for Humidur AF is 18 kg . Smaller or bigger packages on demand.

Part A and B can also be distinguished by colour: A is copper red and B is amber.

3 Surface Preparation

Before coating application, all surfaces should be free of oil, grease, dirt or any other contamination.

Steps in surface preparation	**Substrate**		
	Steel or Aluminium		**Concrete, GRP or FRP**
	Existing coating	**Blanks 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 overcoating interval < 2 days	Yes if overcoating interval > 2 days	
Remove salts by hydrojetting with fresh water	Yes	No	No	Yes
Clean surface with acetone or similar	Yes	No	No	Yes
Roughening the surface with orbital electric sander or manually with abrasive paper	120-180 grade discs or paper	No	No	60-120 grade discs or paper
Remove all dust	Yes	No	TBD on site	Yes
Clean the surface with fresh water	Yes	No	TBD on site	Yes
Clean surface with acetone or similar	Yes	Yes	Yes	Yes

Before coating application, check if surface temperature is higher than 0°C and at least 3°C above dew point and no higher than 50°C. Ensure that the surface is dry (no condensation) and free of grease, oil, dirt, dust or any other contamination.

4 Component mixing

When using plural component airless spray, continue with 5 Coating application.

The components A and B are delivered in pre-dosed sets so that they can be readily mixed. Before mixing, components A and B should have a temperature as described in Table 2. First stir component A. Pour component B in component A and mix the two materials to an even consistency with an electrical mixer at less than 300 rpm to avoid incorporated air. Only mix the components supplied: never add anything else. As the components are delivered in pre-dosed sets, mix one set completely.

Thinners cannot be used.

As the product has a limited pot life (see Table 2), application should be done immediately after mixing. When the temperature increases, the pot life reduces and when the temperature decreases, the pot life increases. Temperature of the product should be high enough to ensure good application and low enough in order to maintain the pot life. The ideal temperatures of the mixed products before application are given in Table 3.

Attention: once the components have been mixed, the exothermic reaction starts and the temperature may increase quickly reducing the pot life. No extra safety measures should be taken against this heat.

TABLE 2

	Humidur AF 5	Humidur AF 10
Temperature before mixing	18°C-25°C	18°C-25°C
Mixing ratio by weight	4.57:1	5.9:1
Mixing ratio by volume	4.3:1	4.89:1
Pot life at 23°C	45 min	45 min

5 Coating application

Before coating application, check if surface temperature is at least 0° and 3°C above dew point and does not exceed 50°C. Make sure that the surface is dry (no condensation) and free of contamination.

All Humidur systems are single coat systems.

Before application, check if the values in Table 3 are respected. Not respecting these values will result in a more difficult application and an inferior end result.

TABLE 3

	Humidur AF 5	Humidur AF 10
Temperature before mixing	18°C-25°C	18°C-25°C
Application temperature of mixture	20°C	20°C
Min. surface temperature	0°C and dew point + 3°C	0°C and dew point + 3°C
Max. surface temperature	50°C	50°C
R.H.	< 95%	< 95%
Humidity of surface	No condensation	No condensation

5.1 Brush and roller application

Before starting spray application, welds and edges are typical areas to be pre-brushed (stripe coating).

Brush application is mainly used for smaller surfaces, for touch ups or when spraying application is too difficult.

Follow the instructions for mixing as described in 4.

5.2 Airless spray application

For airless spray application, both single and plural component pumps can be used. The pumps should have a capacity of at least 60:1. Remove all filters from the pump and gun to prevent any blockage. Remove the elbow from the pump and pump the product directly. It is recommended that the hose has an inner diameter of 3/8'' and the last 2 – 3 m before the spray gun a reduced diameter of 1/4''. When the ambient temperature is below 20°C, the use of heating cables is recommended. Otherwise, problems may occur during the spraying process.

The recommended spray nozzle should have an angle between 40° and 60° and an opening between 0.019'' and 0.027''.

Perform a test spray before the actual application: try to spray component A without mixing B to set the right conditions. Spray component A directly back into its pail. When satisfactory, the components can be mixed.

For a single component pump, mix the components first as described in section 4. The temperature of the mixture should be as described in Table 3. Monitor the pot life closely. When using plural

component pump, the separate components can be connected to the pump. Make sure that the pump has the right settings regarding the mixing ratio (see Table 2).

Apply the coating preferably by cross-spraying and measure the wet film thickness regularly.

If problems occur: stop spraying, clean the pump and the equipment and contact Acotec NV or your local representative.

5.3 Film thickness

Always follow recommendations of your Acotec contact concerning the film thickness that should be applied. In Table 4 the practical limitations are given that one can apply in one layer on vertical surfaces.

TABLE 4

	Humidur AF 5	Humidur AF 10
Min thickness in one layer (µm)	200	400
Max thickness in one layer (µm)	500	1000

5.4 Inspection

5.4.1 Layer thickness

During application it is recommended to check the layer thickness by means of wet layer thickness gauges.

After sufficient curing of the coating, the layer thickness is checked in conformity with ISO 19840.

Criteria

- each individual dry layer thickness value less than 80 % of the required dry layer thickness is unacceptable
- the average of all individual dry layer thicknesses should be equal to or more than the specified dry layer thickness
- the number of measurements between 80 % and 100 % of the required dry film thickness can at the most amount to 20 % of the total number of measurements

5.4.2 Adhesion ISO 4624

Before performing this test the coating should already be sufficiently cured. The optimal delay, in function of the long term properties, amounts to one month, however after about 7 days it can already be tested with sufficient certainty.

For applications under aggressive exposure, an adhesion with the substrate of 5 MPa is required. This is measured with a hydrodynamic adhesion tester. Failures in the glue or cohesion failures with lower values are rejected. At least three representative measurements are necessary.

5.5 Clean-up

Immediately after application of Humidur, the pump must be cleaned. The solvent cleansing agent (preferably HumiClean) is connected with the pump and recycled into its pail via the spraying gun. By disconnecting the spray nozzle from the gun and continuously pumping up the solvent cleansing agent under low pressure for at least 20 minutes, a good intermittent cleaning will be obtained. The agent is refreshed until a constantly clear solvent comes out of the gun.

If the pump does not need to be re-used and will be stored for a number of days or weeks, it is advised to open up the paint reservoir of the pump completely for closer cleaning.

5.6 Water Immersion

The Humidur products have the ability of curing under water. They can be immersed in water right after application.

6 Disposal of Waste and Spillage

After application, the product and the packages should be considered as waste.

Product

Incinerate in an appropriate incineration plant The legal prescriptions should however be taken into account.

Non-cleaned packaging

Soiled packaging should be emptied as thoroughly as possible, after appropriate cleaning it can be reused. Packaging which cannot be cleaned should be disposed of in the same way as the substance.

7 Curing

Curing times for full cure are given in Table 5. The touch-dry time at 20°C is 4 hours. These values are indicative and depend on a number of parameters such as air circulation, film thickness, temperature, etc. The curing characteristics are the same for Humidur AF 5 and Humidur AF 10.

TABLE 5

FULL CURE at	10°C	15°C	20°C	25°C	30°C
Humidur AF	4 days	3 days	48 hours	36 hours	24 hours

8 Storage

The product should be stored in a dry environment at max. 25°C in the unopened original pails. The shelf life is 12 months.

9 Safety Precautions

Details can be found in the Material Safety Data Sheets for Components A and B.