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Technical Data Sheet Humidur® WF22 FP

ACOTEC N.V.

INDUSTRIELAAN 8 ZUID III
9320 AALST, BELGIUM

WWW.HUMIDUR.COM
INFO@HUMIDUR.COM



HUMIDUR.

Let's face corrosion.



1. Product Description

Humidur WF22 FP is a two-component, solvent-free, modified polyamine cured epoxy system offering the following benefits:

- Long term protection in highly corrosive environments: life expectancy over 30 years
- Single coat system, no primers required
- High chemical resistance to acids, alkalis, acids, oils, lubricants, detergents, ...
- Environmentally friendly (100 % solids, no solvents, no heavy metals, no coal tar)
- Excellent abrasion resistance and impact resistance
- Surface tolerant & 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
- Excellent cathodic disbondment resistance
- NDT inspection allowed
- Resistant to temperatures from -35 °C to 150 °C and to most fluids between pH 0 and pH 14 (see Humidur chemical resistance list)
- Cost-effective (LCCA conducted by Royal Haskoning DHV)
- Compatible with fire protection coating Multifire basecoat S707-120 and SC901/SC90 (70 minutes heat resistance at 300 – 350 °C)

2. Composition

Humidur WF22 FP consists of two components:

A is the base component and contains:

- Non-crystallizable epoxy resins
- High-tech modifying agents and elastifiers
- Lamellar abrasion and impact resistant fillers
- Colouring pigments

B is the hardener and contains:

- Polyamine hardener complex

3. Recommended Use

In the Humidur product range, Humidur WF22 FP has the highest chemical resistance offering solutions to:

- Marine structures in extreme corrosive environments: splash zone, atmospheric and submerged steel
- Offshore and petrochemical structures (submerged, splash zone and tidal movements)
- Storage tanks that hold petroleum, diesel and chemical products
- Pipelines in oil and gas or penstocks in hydropower facilities.





Humidur WF22 FP comes in two variants: WF22 FP Single and WF22 FP Brush.

Each has been developed for specific application means:

PRODUCT USE		HUMIDUR WF22 FP SINGLE	HUMIDUR WF22 FP BRUSH
By brush	Stripe coat	Yes	Yes
	Thick layers	Yes	Yes
By spray (heated hoses)	One layer	Yes	/
	Multiple layers	Yes	/

4. 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 proven lifetime of the Humidur coatings in practice is more than 30 years.

Contact Acotec directly or visit www.humidur.com for reference projects.

5. Product Data

SPECIFIC DATA		HUMIDUR WF22 FP SINGLE	HUMIDUR WF22 FP BRUSH
Density @ 23 °C	Component A	± 1,43 g/cm ³	± 1,15 g/cm ³
	Component B	± 1,08 g/cm ³	± 1,08 g/cm ³
	Mixture A + B	± 1,36 g/cm ³	± 1,13 g/cm ³
Solid content		100 %	100 %
Viscosity of the mixture @ 23 °C and CSS 750 Pa		25 ± 1 Pa·s	8,8 ± 1 Pa·s
Flash point mixture A + B		> 100 °C	> 100 °C
Hardness		Shore D > 74	Shore D > 74
Colour (gloss) (For colour stability (only aesthetic), apply Humidur TC on top of Humidur WF22 FP)		Any RAL colour 25 colours immediately deliverable	Any RAL colour 25 colours immediately deliverable
Compatibility with Cathodic Protection Systems (ISO 20340)		Yes	Yes
Practical thickness in one layer	Brush	400 µm	200 µm
	Stripe coat	400 µm – 500 µm	400 µm
	Thick layer	400 µm – 800 µm	/
Spray	One layer		
Minimum thickness in 1 layer		400 µm – 600 µm	400 µm – 600 µm
Covering capacity (WFT = DFT)	Theoretical @ 200 µm	/	0,23 kg/m ²
	Theoretical @ 400 µm	0,54 kg/m ²	0,45 kg/m ²
	Theoretical @ 600 µm	1,08 kg/m ²	/
Mixing ratio A : B	By weight	5 : 1	3,7 : 1
	By volume	3,8 : 1	3,475 : 1
Overcoating time		Unlimited	Unlimited
Standard packaging / set		18 kg or 264 kg	1 kg or 5 kg
Pot life @ 23 °C		25 minutes	25 minutes
Shelf life max. 25 °C dry		24 months	24 months



6. 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 depend on air circulation, temperature and the film thickness. Humidur is able to cure at sub-zero temperatures.

	-5 °C	5 °C	10 °C	15 °C	20 °C	25 °C	30 °C
Touch-dry	24 hours	7 hours	5 hours	4 hours	3 hours	2,5 hours	2 hours
Full cure	6 days	5 days	3 days	48 hours	24 hours	12 hours	8 hours

7. Surface preparation

All surfaces shall be free of oil, grease, dust or any other contamination prior to coating.

SURFACE PREPARATION	CLEANLI-NESS	METHODS	ROUGHNESS	EXPECTED LIFE TIME	WARRANTY
Minimum	St 2 – 3	Hand tool Power tool (wire brush, needle gun, bristle blaster, grinding disc)	Original profile	15 years	On request
Optimal	Sa 2 ½ Iso 8501	Grit blasting	60 ± 10 µm 2/3 reference ISO 8503	> 30 years	On request

8. Application

APPLICATION PARAMETERS	HUMIDUR WF22 FP SINGLE	HUMIDUR WF22 FP BRUSH
Temperature before mixing	35 °C – 40 °C	20 °C – 25 °C
Application temperature of mixture	35 °C ± 5 °C	25 °C ± 5 °C
Surface temperature* minimum Surface temperature* maximum	Dew point + 3 °C 50 °C	Dew point + 3 °C 50 °C
Humidity* Relative Humidity Humidity* Surface	< 95 % No condensation	< 95 % No condensation
Spray nozzle opening Spray nozzle angle	0,015" – 0,025" 30° - 60°	/ /



* These criteria are valid to achieve the most durable protection. If a reduced coating lifetime is desired, application can continue outside this window. The existing warranties do not apply in these conditions. Please contact Acotec NV directly for more information on the expected lifetime in these conditions.

Humidur WF22 FP is almost always applied in a single coat. If several coats are requested, different Humidur layers can be applied wet-on-wet depending the maximum layer thickness or on top of fully cured layers after removing possible surface contamination/pollution. The overcoating interval is unlimited over time.

9. Environment

Humidur WF22 FP has been designed to fully respect the environment.

The product contains:

- No VOC (0 %) (100 % solids)
- No solvents or diluents (WFT = DFT)
- No coal tar
- No isocyanates
- No heavy metals

Humidur WF22 FP is capable of curing under water without leaching taking place and has no detrimental effect on the sediment, fauna and flora in and out of the water. When using Humidur WF22 FP on static marine structures, the biofilm can form itself on top of the Humidur coating without affecting the substrate and without any loss of the anti-corrosion properties.

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

All technical reports are available upon request.

10. Insurance

After application, an adhesion test is performed (according to ISO 4624) for which we commit ourselves to achieve a minimum criterion of 8 MPa.

A corporate warranty can be given under certain conditions. More information upon request.

An insurance policy of 10 years, given by HDI Gerling, is available on all Humidur coatings in case of optimal surface preparation. For the terms and conditions on this warranty, please contact Acotec NV directly.

11. Humidur WF22 FP Approval / Certificates

Approved in petrochemical industry and offshore oil and gas market by: Shell, Statoil, ConocoPhillips, Talisman Energy, Maersk Offshore, Transocean Drilling, Fairfield Energy

- University Ghent: Approval for resistance against Microbially Induced Corrosion (MIC)
- TÜV Rheinland: Approval for combination with cathodic protection systems
- SGS: Resistance to liquids of Humidur WF22 FP (EI 1541 + ISO 2 812-1)
- Force Technology: Fuel and water resistance testing of Humidur WF22 FP (MIL-PRF 4456F)
- Norsok M-501: Rev. 6 June 2013, section N° 7, by SGS
- NDT inspections allowed (tested on Talisman Energy assets)
- Royal Haskoning: Most cost-effective anti-corrosion solution (Life Cycle Cost Analysis)



- Approved by CCS for above and below ship's waterline and the inside of tanks
- The use of Humidur WF22 FP in combination with the Humidur Non-Skid Aggregate is approved according to the Friction Test Standard Requirements as per UK CAA CAP 437 (Standards for offshore helicopter landing areas).

12. Important note

The English version of the Technical Data Sheet takes precedence over other languages. The latest version of the Technical Data Sheet can be found on our website www.humidur.com.

Should there be any discrepancies between this document and the document online, the online document takes precedence.