

Technical Data Sheet



Humidur® E (Fast-Curing System)



Product Description

Humidur E is a 2-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
- **Fast-curing**
- **Environmentally friendly** (100% solids, no solvents, no heavy metals, no coal tar)
- **Excellent abrasion resistance and impact resistance**
- **Outstanding adhesion** to substrate and interadhesion between layers
- **Surface tolerant**
- 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 **-30°C to 100°C**
- Resistant to most fluids between **pH 0 and pH 14** (see Humidur chemical resistance list)
- **Cost-effective** (LCCA conducted by Royal Haskoning)

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.acotec.be or www.humidur.be for reference projects.

Acotec nv

LET'S FACE CORROSION

Industrielaan 8
Zuid III
9320 Erembodegem (Aalst)

T: +32 53 83 86 60
F: +32 53 83 69 88
M: info@acotec.be

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Composition

Humidur E consists of two components:

A is the base component and contains:

- non-crystallisable 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

Recommended Use

Humidur E is the fast-curing variant in the Humidur product range. When workshop-applications or precoat is demanded, Humidur E is advised as it is most favourable because of its fast-curing properties and minimal downtime of a structure. Humidur E is generally applied on structures in salt, brackish, fresh, chemicals and acids, oils, fuels and lubricants, and specific markets such as:

- Marine Infrastructure (sheet piling, lock doors, tubular piles, etc...)
- Petrochemical (storage reservoirs, pipelines, offshore platforms, cranes, etc...)
- Renewables (penstocks, turbines, windmills, tidal and river stream energy, etc...)
- Shipping (ballast tanks, cargo holds, etc...)



Humidur E is sprayed by plural component high-pressure airless spraying equipment. It can be brushed if needed for stripe coating of small or difficult-to-reach areas.

PRODUCT USE		E
By Brush	Stripe coat	Yes
	Thick layers	/
By Spray (heated hoses)	One layer	Yes
	Multiple layers	Yes



Product Data

SPECIFIC DATA			Humidur E
Density @ 23°C	Component A		± 1,46 g/cm³
	Component B		± 1,12 g/cm³
	Mixture A + B		± 1,38 g/cm³
Solid content			100%
Viscosity of the mixture at 23°C and CSS750Pa			10,5 ± 1 Pas
Flash point mixture A + B			>120°C
Hardness			Shore D > 74
Colour (gloss) (For colour stability (only esthetic), apply Humidur TC on top of Humidur E)			Any RAL colour 25 colours immediately deliverable
Compatibility with Cathodic Protection Systems (ISO20340)			Yes
Practical thickness in one layer	Brush	Stripe coat	300 µm
		Thick layer	/
	Spray	One layer	300 µm – 2000 µm
Minimal recommended thickness			400 µm – 600 µm
Covering capacity (WFT = DFT)	Theoretical @ 300µm		0,42 kg/m²
	Theoretical @ 600µm		0,83 kg/m²
	Theoretical @ 2000 µm		2,76 kg/m²
Mixing ratio A : B	By weight		4,03 : 1
	By volume		2,90 : 1
Overcoating time			unlimited
Standard packaging			22 kg
Pot life at 23°C			10 min Two-component airless spray recommended
Shelf life max 25°C dry			24 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 depend on air circulation, temperature and the film thickness. The touch dry time at 20°C is 2 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	48 hours	36 hours	12 hours	6 hours	4 hours

Application

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

SURFACE PREPARATION	Cleanliness	Methods	Roughness	Expected life time	Warranty
Minimum	St 2 - 3 ISO 8501	Hand tool Power tool (wire brush, needle gun, bristle blaster, grind disk)	Original Profile	15 years	On request
Optimal	Sa 2½ ISO 8501	Gritblasting	60 ± 10 µm 2/3 reference ISO 8503	> 30 years	On request

APPLICATION PARAMETERS		Humidur E
Temperature before mixing		18°C - 25°C
Application temperature of mixture		30°C ± 5°C
Surface temperature*	Minimum	Dew point + 3°C
	Maximum	50°C
Humidity*	Relative Humidity	< 95%
	Surface	No condensation
Spray nozzle	Opening	0,019'' - 0,023''
	Angle	40°-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.



Environment

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

- No VOC (0%) (100 % solids),
- No solvents or diluents (WFT = DFT),
- No coaltar,
- No isocyanates,
- No heavy metals.

Humidur E 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 E 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.

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.

Approvals/Certificates

- Approved in petrochemical industry and offshore oil and gas market by: Shell, Statoil, ConocoPhillips, Talisman Energy, Maersk Offshore, Transocean Drilling, Fairfield Energy
- Norsok M-501: Rev. 5 June 2004, section n° 7, by EXOVA
- University Ghent: Approval for resistance against Microbially Induced Corrosion (MIC)



Approvals/Certificates

- TÜV Rheinland: Approval for combination with cathodic protection systems
 - Arcelor Mittal: Performance tests executed by Strako, official applicator of Arcelor Mittal, where Humidur shows excellent adhesion onto the substrate
 - 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
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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.be. Should there be any discrepancies between this document and the document online, the online document takes precedence.