

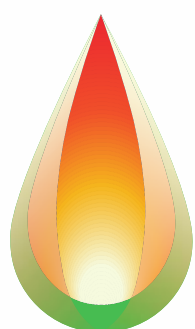
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# Technical Data Sheet Humidur® Char

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# HUMIDURCHAR.

Let's face fire in one coat.

## Product Description

**Humidur® Char** is a two-component, solvent-free, 100% solids, modified polyamine cured epoxy system offering the following key benefits:

- Provides passive fire protection against hydrocarbon jet and pool fires by intumescence action
- Tested and approved for high heat flux jet fires and gas explosion resistance
- Single coat system, no primers required
- No reinforcing mesh or any other reinforcement required
- Approved by DNV for optimal surface preparation (ISO 8501-1 Sa 2 ½) and minimal surface preparation (St 2)
- Combines long-term corrosion and fire protection in high risk environments
- Environmentally friendly (100% solids, no solvents, under no circumstance whatsoever should thinner be used)
- Unlimited overcoating window

## Approvals and certificates

- ISO 22899-1 Jet Fire test for structural steelwork
- High Heat Flux Jet Fire test as per Gexcon AS methodology to achieve 350 kW/m<sup>2</sup> (intended to be the basis for future PFPNet Standard)
- ISO 834-3 and BS 476-20 Appendix D Hydrocarbon Pool Fire test
- ISO/DIS 23693-1 Gas Explosion Resistance
- Received Type Approval from Det Norske Veritas (DNV)
- Every test had test specimens prepared to ISO 8501-1 Sa 2 ½ and St 2 coated with Humidur® Char. DNV states that the difference in surface preparation has no effect on the fire and explosion performance.
- For all tests, Humidur® Char has been applied directly to the steel without use of a primer or reinforcing mesh.

Other approvals and certificates may be available upon request.

## Recommended Use

Humidur® Char protects steel structures from the effects of hydrocarbon jet and pool fires in high risk environments such as the Oil & Gas, Petrochemical and Energy industries. The product is approved for both onshore and offshore environments.



## Product Data

SPECIFIC DATA		Humidur® Char
<b>Spray applied density</b> (ISO 1183:2019 Method A)		1.15 g/cm <sup>3</sup>
<b>Solid Content</b>		100%
<b>VOC</b> (EPA Method 24)		0 g/l
<b>Flash point mixture A + B</b>		> 100°C
<b>Hardness</b>		Shore D > 45
<b>Colour *</b>		Grey
<b>Practical thickness in one layer **</b>		Up to 35 mm
<b>Covering capacity</b> (WFT = DFT)	Theoretical @ 1 mm	1.15 kg/m <sup>2</sup>
	Allow appropriate loss factors for practical coverage.	
<b>Mixing ratio A : B</b>	By weight	3.58 : 1
	By volume	2.8 : 1
<b>Shelf life</b> (store between 10 and 35 °C, store in dry conditions away from direct sunlight)		24 months

\* Possibly slight variance in the colour.

\*\* Depends on geometry of object of application, substrate temperature, product temperature and ambient conditions.

## Manufacturer's Information

Acotec NV, with registered offices at Aalst, Belgium, is the developer and sole manufacturer of the Humidur® Char products, distributed worldwide through a wide network of agents and cooperative companies. For more information, please contact Acotec directly or visit [www.humidur.com](http://www.humidur.com).



## Application

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

Application of the product shall occur strictly in accordance with the Humidur® Char Application documents.

### Method of application

The product can be applied by trowel (immediately apply the product after mixing) or by plural component airless spray with heated and insulated hoses (e.g. Graco XM 70 or Graco XP 70). Further specifications can be found in the Application documents and Pump Specifications documents from Humidur®.

Under specific conditions, application by single airless spray pump is also possible. Please contact your Humidur® representative for further guidance.

APPLICATION PARAMETERS for spraying	By airless spray (plural pump) with heated and insulated hoses
Spray nozzle opening	0.025 – 0.041"
Spray nozzle angle	20 – 50°
Gun exit temperature	45 – 55 °C
Displacement pump pressure	200 – 350 bar (2900 – 5075 psi)

### Ambient parameters

AMBIENT CONDITIONS	By trowel	By airless spray (plural pump)
Surface temperature* Minimum	Dew point + 3 °C	Dew point + 3 °C
Surface temperature* Maximum	50 °C	50 °C
Relative Humidity	< 95%	< 95%

\* These criteria are valid to achieve the most durable protection. If a reduced coating lifetime is acceptable, application can continue outside this window. Please contact your Humidur® representative for more information on the expected lifetime in these conditions.



## Surface preparation

Both minimal and optimal surface preparation are approved by DNV as a primary surface preparation for steel.

SURFACE PREPARATION	Cleanliness	Methods	Roughness
<b>Minimal</b>	St 2 – 3 ISO 8501-1	Hand tool, Power tool (wire brush, needle gun, bristle blaster, grinding disk)	Original Profile
<b>Optimal</b>	Sa 2 ½ ISO 8501-1	Grit blasting	± 60 µm 2/3 reference ISO 8503

## Preheating of the product

Individual components should be heated in accordance with the temperatures in the table below. The viscosity of the product shall only be influenced by temperature, the use of thinners is strictly forbidden.

## Mixing

Use the pre-dosed sets as they are delivered. First power agitate Component A. Next empty a pail of Component B into Component A and power agitate until a homogeneous mixture is obtained.

APPLICATION PARAMETERS	By trowel	By airless spray (plural pump) with heated and insulated hoses
<b>Temperature before mixing</b>	25 °C ± 2 °C	Max. 70 °C
<b>Application temperature of mixture</b>	25 °C ± 2 °C	50 °C ± 5 °C
<b>Pot life @ 25 °C</b> (mixed product temperature)	25 minutes	NA
<b>Overcoating time</b>	Unlimited	Unlimited

## Thickness

The required thickness depends on the fire scenario and project specific requirements. Please contact your Humidur® representative for further guidance. Since no thinners shall be used during application, WFT = DFT.



<b>PRODUCT</b>	
<b>Primer</b>	Humidur® Char shall be applied directly to the steel, without the use of any primer system.
<b>Thinner</b>	The use of thinners is strictly forbidden during application.
<b>Cleaner</b>	All tools and equipment shall be clean prior to use and should be cleaned after use. Do not allow material to remain in the hoses, gun or other spray equipment. Clean the material regularly and always clean the material immediately after the coating application is finished. Humiclean should be used as a cleaner. Make sure no remnants of Humiclean remain at tools or equipment prior to use. Other cleaning agents should be approved by your Humidur® representative.
<b>Mesh</b>	Humidur® Char is a meshless system, reinforcing mesh or metal mesh is not required.
<b>Topcoat</b>	A topcoat is not required for corrosion or fire protection properties. If desired for aesthetic reasons, Humidur® TC (available in every RAL colour) can be applied as a topcoat.

## Curing time

The curing of Humidur® Char is a chemical reaction. The curing times depend on air circulation, ambient temperature, product temperature, surface temperature and the film thickness.

<b>SUBSTRATE TEMPERATURE</b>	<b>10°C</b>	<b>20°C</b>	<b>40°C</b>
<b>Touch-Dry</b>	3.25 h	2.5 h	1 h
<b>Full cure*</b>	3 days	2 days	1.5 days

*\* These curing times indicate when the product will offer full protection against corrosion and fire. For destructive testing (such as pull-off adhesion testing), the curing times as outlined in the Coating Procedure Standard shall be respected.*

## Compatibility

Humidur® Char can be used to repair other PFP coating systems and is compatible with other fully cured PFP epoxy coating systems. Compatibility shall always be confirmed by your Humidur® representative.

## Qualification of PFP Applicators

Only personnel who have completed a formal qualification and training programme carried out by Humidur® or approved representatives and are in the possession of a valid Humidur® Char certificate, shall apply Humidur® Char.

## Inspection and QAQC

The coating inspector shall be minimum NACE Level 2 or approved equivalent. A minimum of 5 years of experience in the application of epoxy intumescent PFP industry is required. Inspection shall be carried out in line with the manufacturer's recommendations.

## Technical support

For technical services and other support, please contact your Humidur® representative.



## Packaging

STANDARD PACKAGING	Component A	Component B
20 kg kit (pre-dosed)	15.60 kg	4.40 kg
Barrel kit (pre-dosed)	220 kg	61.52 kg

Other kit sizes such as repair kits available upon request.

## Environment

Humidur® Char has been designed to fully respect the environment.

The product contains:

- No VOCs (0 g/l) (100% solids)
- No solvents or thinners shall be used during the application.

## Additional information

For additional documentation such as the Application Guide, Extended Application Manual, SDS and other documents, please visit our website [www.humidur.com](http://www.humidur.com) or contact your Humidur® representative.

## Health and Safety

The products must be stored in accordance with the national regulations.

All personnel applying the product must refer to the applicable SDS, precautionary notices on the pails, and ensure they wear appropriate PPE, including eye protection, breathing filters suitable for protection against vapours, gloves, boots and long sleeve flame retardant shirts and trousers. Ensure that adequate ventilation is to be provided in the workspace and exclude non-essential personnel during coating application.

## Important notes

This product is for professional use only. Users of this product shall always contact a Humidur® representative to search guidance and to verify suitability of this product with the project specifications.

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](http://www.humidur.com).

This document has been based on the current knowledge of the product.

