

HUMIDURCHAR.

Let's face fire in one coat.



Humidur® Char

Humidur® Char is a two-component, solvent-free, polyamine cured epoxy Passive Fire Protection (PFP) system that offers anti-corrosion and fire resistance properties by intumescent action. Humidur® Char has been specially designed together with our customers in the Oil & Gas industry. Many companies in the Oil & Gas industry were looking for a PFP solution that could reduce asset downtime and enhance efficient application. Why? Because this simplified system would lead to a significant cost reduction without compromising safety.

WHY IS HUMIDUR® CHAR REVOLUTIONARY?

- » **Protection** against hydrocarbon fires in just one coat
- » **Applied** directly to the steel, without a primer
- » **Meshless system**, even for (HHF) Jet Fires
- » **Significant reduction** of the downtime of the structure and the overall project cost
- » **Approved** for minimal surface preparation
- » **Extended test program and type approved** by DNV
- » **Environmentally friendly** PFP system, solvent-free and no thinners shall be used

HUMIDUR® CHAR, THE NEW GENERATION OF PFP COATING

THE ADVANTAGES



Humidur® Char offers full fire protection in just one coat

- » No primer, no reinforcing mesh, no topcoat required
- » No overcoating window, no waiting time between coats, no interadhesion problems
- » Easy and straightforward application



Approved by DNV for optimal surface preparation (ISO 8501-1 Sa 2 ½) and minimal surface preparation (St 2) as primary surface preparation

- » No grit blasting required, easy surface preparation by hand or power tools
- » Can reduce access, no encapsulation of the grit, etc.
- » Easy repair
- » Safer
- » Reduces application cost



Combines long-term corrosion and fire protection in high-risk environments

- » Environmentally friendly
- » 100% solids, no solvents, under no circumstances thinners shall be used
- » Meets local HSE regulations
- » Improves safety during application
- » Less risk for coating failures



Easy and straight-forward application

- » Wide application window: max. relative humidity up to 95%
- » Unlimited overcoating window
- » Water streaking not detrimental to overall performance of the product
- » Application by spray or trowel
- » Pre-dosed sets, different kit sizes available to suit the application
- » Shelf life of 2 years



With Humidur® products, one team can apply anti-corrosion coatings, PFP coatings and carry out structural repair

- » Humidur® Char can be applied by means of standard plural pumps (such as Graco XP70 or XM70), no need for specialized spray equipment or specialized PFP applicator teams
- » Application of PFP is more accessible
- » One versatile team, no multiple specialized teams
- » Less (de)mobilization, more flexibility



Fully approved by DNV to be used without primer or mesh, directly applied to the steel (minimal or optimal preparation)





EXTENSIVE FIRE AND EXPLOSION TESTS

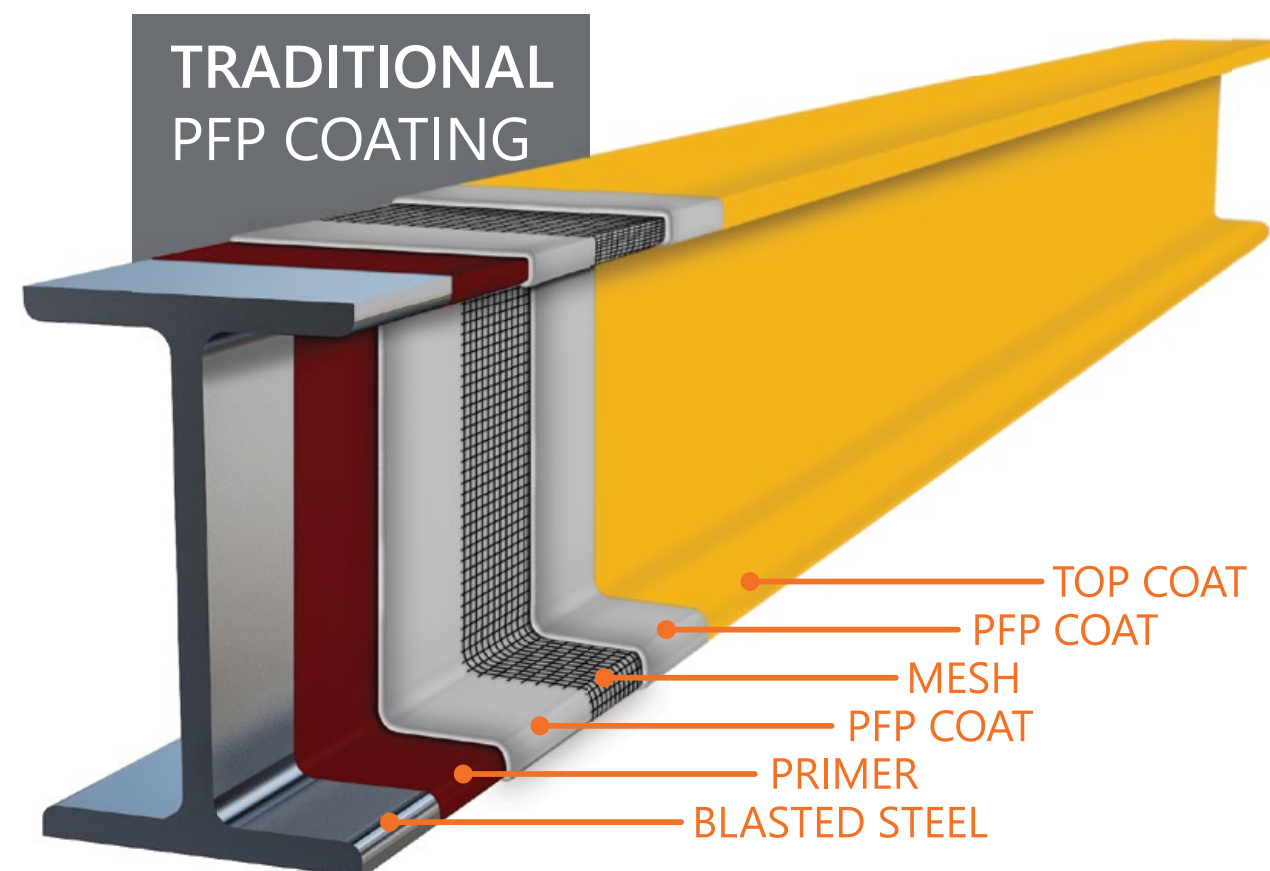
Humidur® Char has passed all relevant industry standards and exceeds all industry expectations.

- » ISO 22899-1 Jet Fire test for structural steelwork
- » High Heat Flux Jet Fire test as per Gexcon AS methodology to achieve 350 kW/m² (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.
- » Approved by DNV as remediation for other similar epoxy PFP systems.
- » Other approvals and certificates can be obtained upon request.



MULTIPLE HSE BENEFITS

Humidur® Char is typical of Acotec's approach to contribute to a more sustainable environment. Just as all other Humidur® products, Humidur® Char is 100% solids and free of VOCs. Even during the application, no thinners shall be used. This makes Humidur® Char the preferred option from an HSE point of view, to meet local HSE regulations and improve the safety of the personnel. Because of the solvent-free characteristics, Humidur® Char also reduces the risk of coating failures.



KEY BENEFITS FOR OUR CUSTOMERS

Humidur® Char significantly reduces the overall project cost.



REDUCTION OF MAN HOURS

- » Can reduce access
- » Surface preparation (minimal vs. optimal)
- » Single-coat system (no primer, no mesh, no waiting between coats)



REDUCED TURNAROUND WINDOW

- » Straightforward application (1 coat)
- » Minimal surface preparation
- » Reduced project duration
- » Less impact on asset operations
- » Less HSSE exposure



REDUCED MACHINERY & EQUIPMENT COST

- » 1 team for anti-corrosion, fireproof and cold bonding
- » Standard pumps for anti-corrosion coatings
- » Hand & power tools instead of grit blasting
- » Can reduce access

NORMS COMPARISON

Humidur® Char vs. traditional PFP system

A norms comparison has been carried out for the surface preparation and coating application of Humidur® Char and a traditional PFP system. Identical specimens were prepared in line with the manufacturer’s specifications. The specific times taken for each stage of the PFP system were registered and compared independently by the class society Bureau Veritas.



SPECIMEN NO. 1 (8.175 m²)
low complex open sections



SPECIMEN NO. 2/3 (5.37 m²)
complex hard to access
restricted configurations

Traditional PFP coating (7 – 10 mm)
Humidur® Char (7 – 10 mm)
Humidur® Char (15 – 18 mm)

16.28 hours

1.78 hours

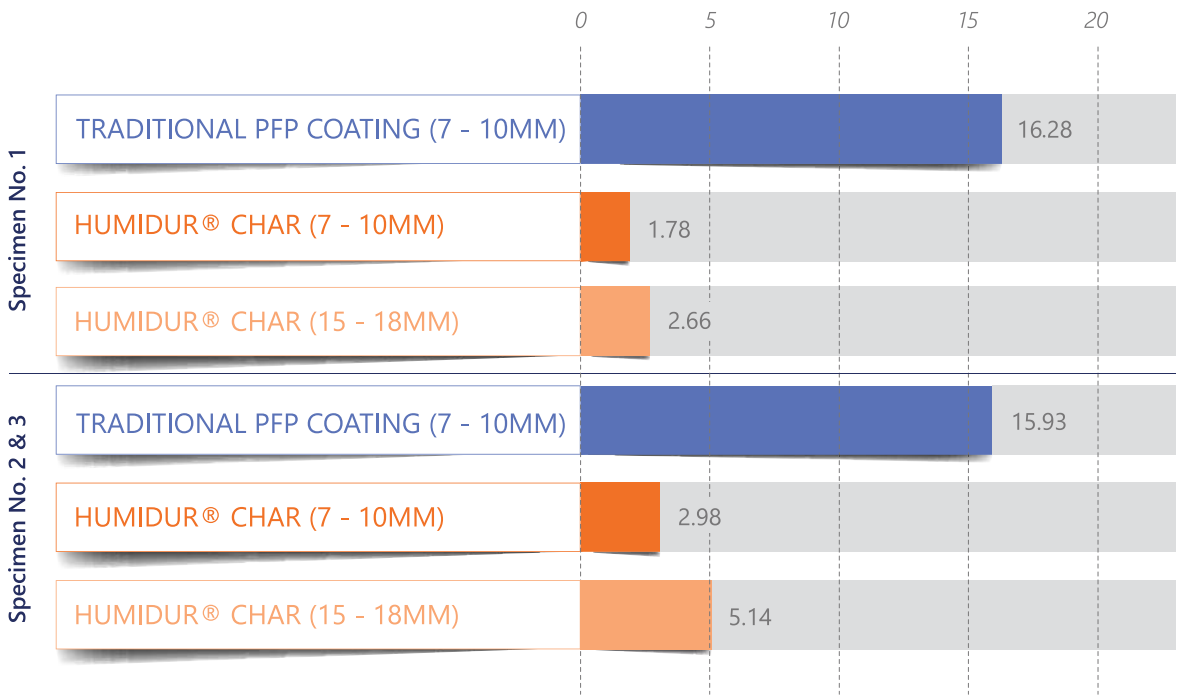
2.66 hours

15.93 hours

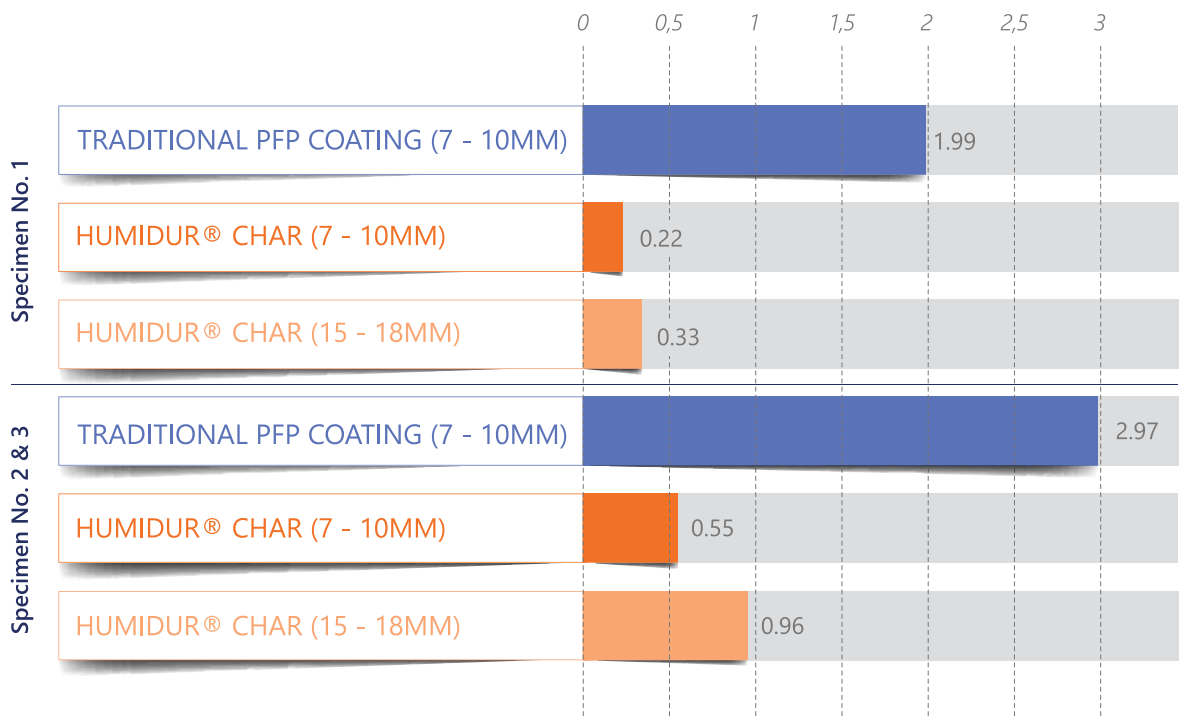
2.98 hours

5.14 hours

TOTAL DURATION PER SPECIMEN PER COATING SYSTEM (HOURS)



TOTAL DURATION PER SQM PER COATING SYSTEM (HOURS/M²)





"By combining PFP properties with **Humidur®** we have access to a world-class, all-in-one, single-product system that meets the highest industry testing and qualification criteria. **Humidur® Char** carries over all the benefits from the traditional **Humidur®** product range while simultaneously reducing the need for additional PFP layers and materials like reinforcing mesh, thus substantially reducing the cost and time for preparation and application."

says Woodside Corrosion Technology Specialist Travis Baensch.

Source Woodside Energy. www.woodside.com



HUMIDUR® CHAR AT WOODSIDE ENERGY

Woodside Energy uses Humidur® Char on both offshore and onshore assets.

HUMIDUR® CHAR
REVOLUTIONIZES
THE WAY WE COAT!



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**EXCLUSIVE DISTRIBUTOR OF HUMIDUR COATINGS
AUSTRALIA | NEW ZEALAND | PAPUA NEW GUINEA**

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