



PITT-CHAR[®] XP

The ultimate solution for extreme hydrocarbon fire scenarios



**PPG Protective &
Marine Coatings**

Bringing innovation to the surface.™



PPG Protective & Marine Coatings

Unrivaled performance and protection

Global experience and reliability

PPG Protective & Marine Coatings (PPG) is a world leader in protective and marine coatings. We develop products that protect customers' assets in some of the world's most demanding markets and environments including:

- Civil Infrastructure
- Marine New-Build
- Marine Dry Dock
- Marine Sea Stock
- Rail
- Offshore
- Petrochemical
- Power

Our coatings provide unrivaled performance for asset owners, contractors, fabricators and applicators across the globe, helping our customers meet the challenges they face today and tomorrow.

Experience, innovation and integrity –
that is what makes PPG the ideal coatings partner.



PITT-CHAR[®] XP

Optimum steel protection for hydrocarbon fire

Saving lives – protecting assets

PITT-CHAR XP is the only flexible intumescent epoxy on the market today and offers proven hydrocarbon passive fire protection (PFP) against the constant threat of hydrocarbon fire in many industries throughout the world.

Upon exposure to fire *PITT-CHAR XP* expands, forming an insulating char that prevents steel from heating up rapidly and delays the loss of load bearing capacity and integrity, thereby allowing crucial time for the personnel to escape.

In addition to its unrivaled fire protection, the unique flexibility of *PITT-CHAR XP* provides enhanced resistance to cracking on flexing and vibrating structures, and exhibits excellent performance particularly under cryogenic and explosion overpressure conditions.

Longer life – lower costs

PITT-CHAR XP is an extremely robust coating and ensures a long-service lifetime that withstands weathering and aging with little or no maintenance.

This epoxy coating system also delivers excellent resistance against solvents, acids, alkalis and salts providing fire and corrosion protection at the same time.

All this makes *PITT-CHAR XP* the ideal PFP choice for harsh weather conditions, chemical environments, and virtually any onshore and offshore location.

PITT-CHAR XP market sectors

Onshore

- Chemical plants
- LNG terminals
- Refineries

Offshore

- Drilling rigs
- FPSOs
- Platforms

Marine

- LNG carriers

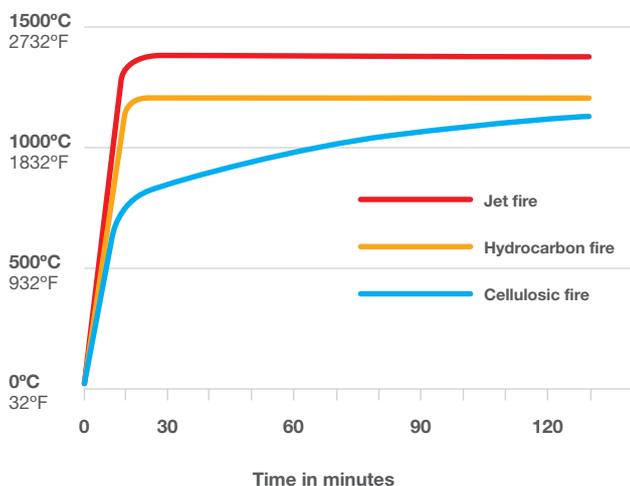


Maximum protection and performance

Fully tested and approved

Comparison of fire test curves

The graph below shows the difference in temperatures depending on the type of fire. *PITT-CHAR XP* meets the most severe jet fire temperatures.



Advantages of *PITT-CHAR XP* over rigid hydrocarbon PFP

PITT-CHAR XP is based on a patented, flexible, cross-linked epoxy resin that enhances the coating's performance over other conventional, rigid epoxy intumescent coatings, demonstrating superior protection and flexibility under severe circumstances. When blast-tested, *PITT-CHAR XP* exceeded the requirements with no signs of cracking, delamination or disbondment. It also has one of the highest impact resistances in the hydrocarbon PFP industry.

Industries require a flexible and resilient hydrocarbon PFP that can withstand movement, flexing and stress after application, can tolerate cold temperatures without embrittlement or cracking, and stay in place after high-pressure blasts that cause significant substrate deflections.

Greater cold-temperature resistance of hydrocarbon PFP

At low temperature, *PITT-CHAR XP* exhibits higher tensile strength and elongation than rigid hydrocarbon PFP products, enabling it to withstand higher stress at break – particularly important in cold climates where parts of a steel structure can experience -40°C (-104°F).



Consequently, *PITT-CHAR XP* is a more suitable hydrocarbon PFP for applications requiring flexibility and toughness due to structural movement or deflection, temperature cycling, or extreme cold exposures.

Continuous innovation, research and development has given *PITT-CHAR XP* a range of proven fire and corrosion protection properties:

- Highly durable, long-lasting fire protection
- Unique flexibility and resistance to cracking for enhanced performance, in particular for cryogenic and explosion overpressure conditions
- Recommended dry-film thickness 1–7 mm (0.039–0.27 in.) applied in one coat; total dft in accordance with approval certification
- Excellent resistance to chemical splash and spillage
- Excellent resistance to weathering; meets Norsok M-501 requirements for accelerated aging and UL 1709 exposure testing
- Color – grey
- Independently approved

Independent certification – international approval

PITT-CHAR XP holds comprehensive type approval certification for the protection of structural steel members, bulkheads and decks from hydrocarbon and jet fires, and is able to withstand explosion overpressure of up to 3 bar.

Furthermore, it has been tested successfully in the GASAFE project for the fire protection of LNG and LPG vessels for up to 4 hours. It can also provide up to 4 hours' fire protection to structural steel in building projects, where UL 263 for cellulosic fires is required.

PITT-CHAR XP has been subject to extensive testing in our R&D facilities comprising not just accelerated weathering but also chemical resistance, meeting Norsok M-501 requirements for accelerated aging and UL 1709 exposure testing.

PITT-CHAR XP has comprehensive type approval certification for hydrocarbon and jet fires from major recognized authorities:

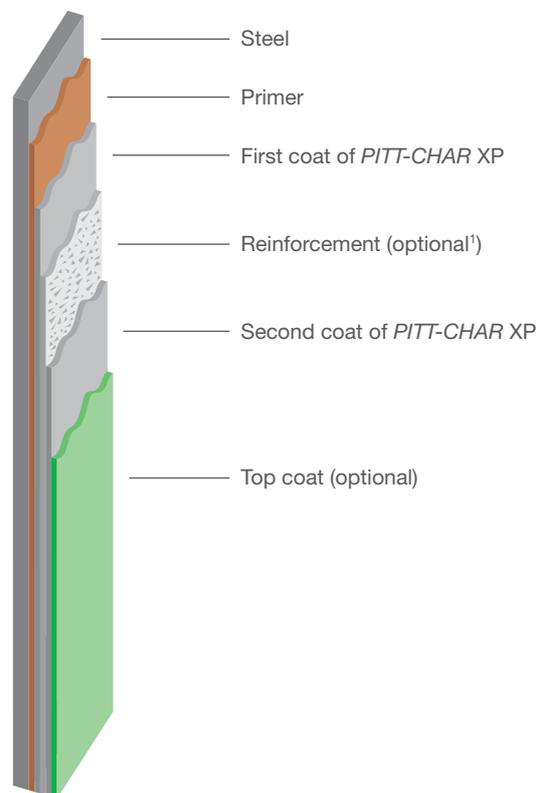
- American Bureau of Shipping (ABS)
- Bureau Veritas (BV)
- Det Norske Veritas (DNV)
- Lloyd's Register of Shipping (LR)
- Underwriters Laboratories (UL)
- GASAFE



PITT-CHAR® XP

Versatile application – durable protection

PITT-CHAR XP is typically applied in dry-film thicknesses from 5 – 20 mm (0.19 – 0.78 in.) depending on the thickness of the steel and the relevant approval certification. When fire strikes, it forms an insulating, ceramic-like layer of char, 5 – 6 times as thick as the original coating.



The illustration shows the various layers used in the application of *PITT-CHAR* XP.

Typical coating system with *PITT-CHAR* XP to protect steel against hydrocarbon and jet fire. Depending on type approval certification reinforcement may not always be required.



Reinforcement and retention system¹

For the reinforcement of *PITT-CHAR XP* on decks, pins and washers may be used. In most hydrocarbon fire scenarios, fiberglass mesh or *PITT-CHAR FM Mesh* may be used instead of steel mesh for reinforcement – without the need for retention pins.

Fiber mesh types

Pins and washers (Plate)

- 238-2/66 Fiberglass mesh
- 238-4/66 Fiberglass mesh
- *PITT-CHAR FM Mesh*

PPG Protective & Marine Coatings brings unrivaled levels of innovation, experience and expertise in coatings technology, supported through our expanding global supply and distributors' network in over 60 countries.

We have in-depth knowledge of the industry, our customers' day-to-day challenges and the environmental, health and safety standards in the marketplace. By working in close partnership with customers, our technical service representatives are able to offer an unsurpassed level of market knowledge. This enables us to respond quickly with efficient, economic solutions in all environments and industries.

The result – performance-enhancing coating systems that can be applied more easily, resist the elements more effectively, and deliver maximum performance with minimum downtime.

PPG Protective & Marine Coatings

P.O. Box 58034

1040 HA Amsterdam

The Netherlands.

Tel +31 (0)20 407 5050

Fax +31 (0)20 407 5059

Email PMC@ppg.com

Website www.ppgpmc.com/fireprotection