DAKEN

DAKEN Jet Fire

Passive Fire Protection
Penetration Cover

DAKEN PASSIVE FIRE PROTECTION
Web: www.daken-pfp.com
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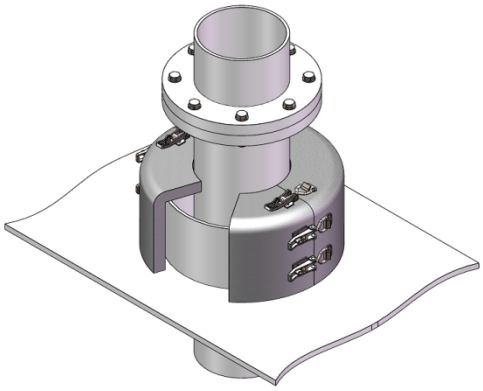
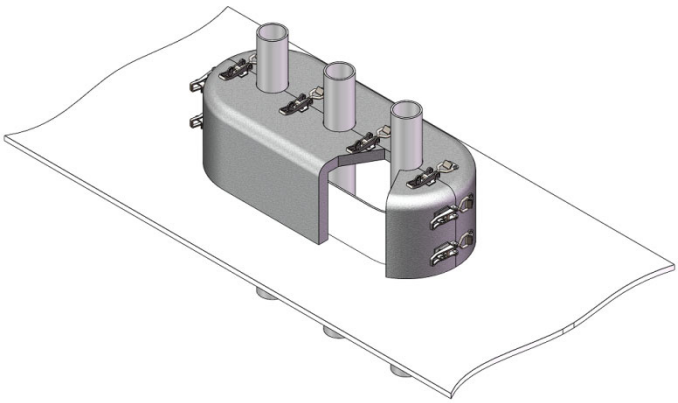
Introduction

Daken Jet Fire Penetration Cover is a specialized solution designed to provide structural support and sealing protection when pipelines pass through structural elements such as decks, and bulkheads. It is widely used across various industries, including the oil, gas, petrochemical, refining, nuclear and defence industries.

The Daken Jet Fire series of rigidity solid PFP enclosures represents a high-performance penetration Cover solution, delivering up to 180 minutes of certified jet fire protection.Pipe Penetration Covers not only combines multiple protective features, including fire resistance, explosion protection, water/gas tightness, impact resistance, corrosion resistance, and ease of maintenance.but also combined with exceptional design flexibility, allowing it to accommodate structural movement, vibration, and thermal expansion without compromising its fire integrity.



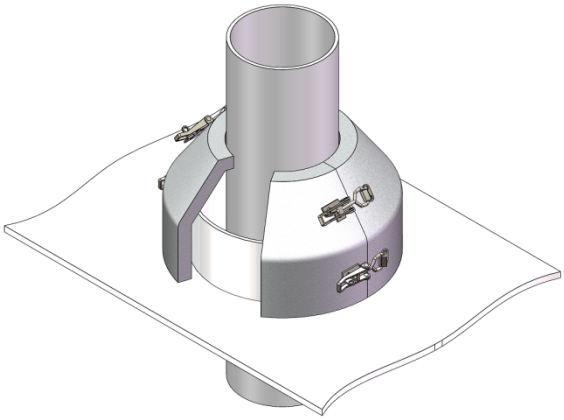


Overview

- Fire Rated : Tested in accordance with ISO 22899-1, withstands jet fire temperatures up to 1250°C with a fire resistance duration of 180 minutes (J180 rating).
- Structural Design: A durable and long-lasting solid enclosure system designed to deliver reliable fire protection in demanding environments.

- Easy Installation: Design with quick-release fasteners, Fully removable for convenient equipment inspection and maintenance.
- Weather Resistance: Resistant to UV, salt spray, and extreme temperature.
- Corrosion and Chemical Resistance: Excellent resistance to chemical splash and spill solvents, acids, alkalis, and saline environments.
- Unique Flexibility: The unique flexibility of the Jet Fire Enclosure provides enhanced resistance to cracking on flexing and vibrating structures.
- Extensive Lifespan: an extremely robust system and ensures along-service lifetime that withstands weathering and aging with little or no maintenance.

Product Construction



- Epoxy Intumescent coating on both inner and outer surfaces, with 316 stainless steel perforated plate support .
- The fixing system adopts a 316 stainless steel quick-release design.
- Top surface coating with polyurethane paint to improve surface appearance and protect against ultraviolet rays.

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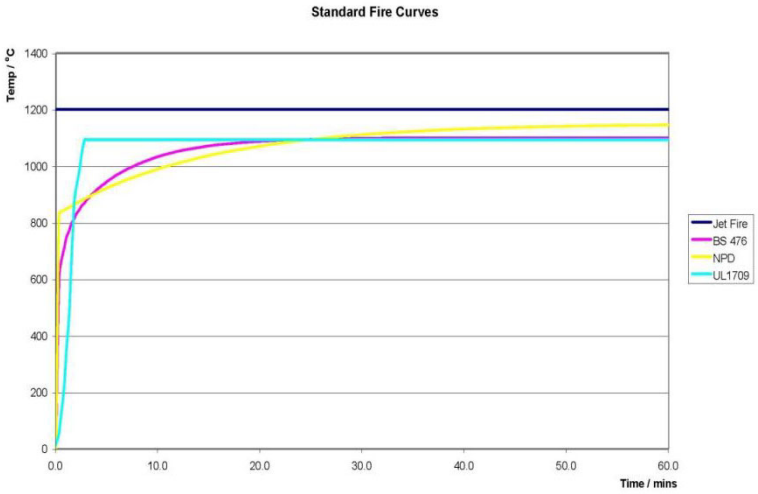
Testing

The graph below shows the temperature development curve of a jet fire to IS0 22899-1 standard.



Daken Jet Fire Penetration Cover system has been independently tested and is certified by Lloyd's Register to withstand hydrocarbon jet fire temperatures up to 1250°C for durations up to three hours.

Test Type	Standard	Result
Jet Fire	ISO 22899-1	J180 (1250°C, 180 min)
Hydrocarbon Pool Fire	UL 1709	1093°C
Epoxy Intumescent Coating	NORSOK M501 5A	passed
Water Absorption	ISO 2812-2	<0.2%
Coating Durability	UL 2431	40-year exposure equivalence

Reference Documents

Lloyd's Register Jet Fire certificated

Page 1 of 2
Certificate No: LR23404839SF-02
Issue Date: 29/09/2025
Expiry Date: 04/12/2028

Certificate Of Fire Approval

This is to certify that the product(s) detailed below will be accepted for compliance with the applicable Lloyd's Register Rules and Regulations for use on offshore units classed with Lloyd's Register, and for use on offshore units and onshore facilities when authorised by contracting governments to issue the relevant certificates, licences, permits etc.

Manufacturer	**Huludao Daken Passive Fire Proofing Co., Ltd.**
Address	12-7, Haida Road, Xingcheng, Huludao City, Liaoning Province, People's Republic of China
Type	Fire Protection Enclosure System
Description	DEC" Epoxy Coating Fire Protection Shell System for: Rapid Rise Hydrocarbon Time / Temperature exposures, for up to 60 minutes for the fire protection of actuators; jet fire exposures for up to 180 minutes for the fire protection of flat panels (fire barriers), tubular steel sections, pipes or cylindrical vessels with an outer diameter greater than 500mm, and equipment such as valves and actuators. The system is also suitable to have the following features incorporated into its design: - Corners, Joints and Edge Features - Access Door - Air Ventilation / Drainage Grill
Trade Name	DEC
Specified Standard	Generally, meets the requirements of: Fire Tests utilising the UL 1709:2017, "UL Standard for Safety Rapid Rise Fire Tests of Protection Materials for Structural Steel" Rapid Rise Hydrocarbon Time / Temperature Curve ISO 22899-1:2021 "Determination of the Resistance of Jet Fires of Passive Fire Protection Materials, Part 1: General Requirements"

This Certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid Certificate.

Keith Taylor

Keith Taylor
Process & Technical Safety Team Lead to Lloyd's Register EMEA
A member of the Lloyd's Register group

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TA03 2.0

NORSOK M-501

element

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KvK: 24170257

Certificate of Compliance

Coating system	
Coat 1	SigmaZinc 68GP at 60 µm
Coat 2	Sigmacover 280 at 25 µm
Coat 3	Pitt-Char NX at 6600 µm
Manufacturer	PPG

Tested on behalf of : PPG Coatings Europe B.V.
Oceanenweg 2
1047 BB Amsterdam
The Netherlands

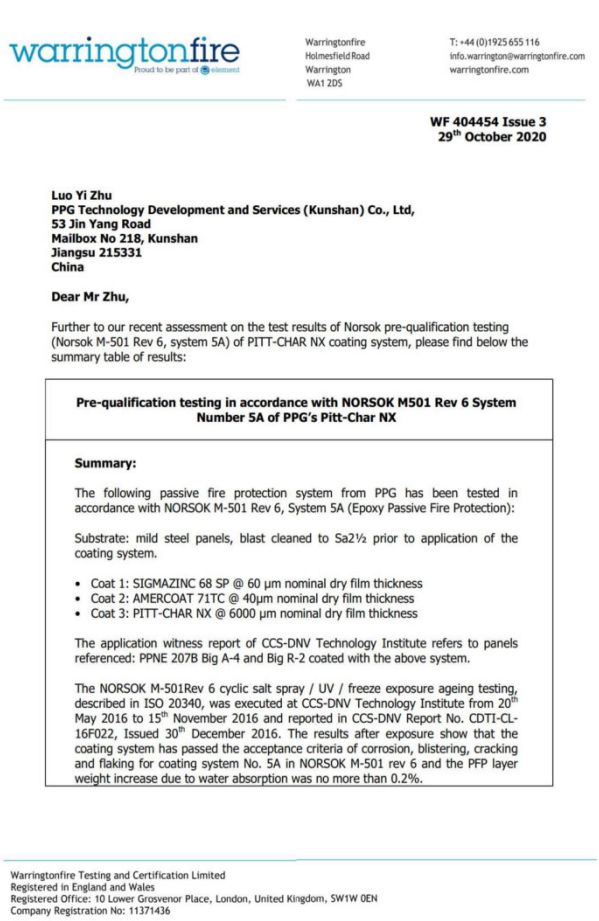
Test laboratory : Element Amsterdam, The Netherlands
Report number : ERO042153-1 Rev.0
Dated : 14-02-2025

Element hereby certify that the above-named system has been tested in accordance with NORSOK M501; edition 7 (2022); Surface Preparation and Protective Coating.

The above coating scheme passed the tests and meets the requirements for NORSOK M501; edition 7 (2022); Surface Preparation and Protective Coating. CSDS no. 5A

Author: Maxim Hopstaken
Sr. Coating Engineer

Authorised by: Nick Taditsch
Department Manager Coating



warringtonfire
Proud to be part of element

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WF 404454 Issue 3
29th October 2020

Luo Yi Zhu
PPG Technology Development and Services (Kunshan) Co., Ltd,
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Mailbox No 218, Kunshan
Jiangsu 215331
China

Dear Mr Zhu,

Further to our recent assessment on the test results of Norsok pre-qualification testing (Norsok M-501 Rev 6, system 5A) of PITT-CHAR NX coating system, please find below the summary table of results:

Pre-qualification testing in accordance with NORSOK M501 Rev 6 System Number 5A of PPG's Pitt-Char NX

Summary:

The following passive fire protection system from PPG has been tested in accordance with NORSOK M-501 Rev 6, System 5A (Epoxy Passive Fire Protection):

Substrate: mild steel panels, blast cleaned to Sa2½ prior to application of the coating system.

- Coat 1: SIGMAZINC 68 SP @ 60 µm nominal dry film thickness
- Coat 2: AMERCOAT 71TC @ 40µm nominal dry film thickness
- Coat 3: PITT-CHAR NX @ 6000 µm nominal dry film thickness

The application witness report of CCS-DNV Technology Institute refers to panels referenced: PPNE 207B Big A-4 and Big R-2 coated with the above system.

The NORSOK M-501Rev 6 cyclic salt spray / UV / freeze exposure ageing testing, described in ISO 20340, was executed at CCS-DNV Technology Institute from 20th May 2016 to 15th November 2016 and reported in CCS-DNV Report No. CDTI-CL-16F022, Issued 30th December 2016. The results after exposure show that the coating system has passed the acceptance criteria of corrosion, blistering, cracking and flaking for coating system No. 5A in NORSOK M-501 rev 6 and the PFP layer weight increase due to water absorption was no more than 0.2%.