



Passive Fire
Protection Systems
FireMaster®

Thermal Ceramics

Innovative products and systems for passive fire protection

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Thermal Ceramics FireMaster® products are used all over the world to protect people and structures against fire.

For more than 30 years, FireMaster insulation materials have provided effective fire insulation for structures exposed to cellulosic, hydrocarbon and jet fires in oil & gas, marine, transportation and construction industries.

FIREMASTER®



The wide variety of FireMaster Fire Protection Systems are comprehensively certified and extensively tested to meet national and international standards, offering our customers the security of global proven fire performance in various market sectors. Our product range includes FireMaster Marine Plus blanket developed especially for weight-sensitive applications in offshore and marine featuring:

- Lower weight designs that minimise weight contribution to structures
- Improved, simpler, installation techniques leading to easier installation
- Combined fire, thermal and acoustic insulation and explosion resistance

Complete system details and Type Approval certification can be obtained from our web site: www.morganthermalceramics.com/firemaster or USB Systems Manual (available on request).

Systems are tested to many international standards and have approvals valid worldwide for cellulosic, hydrocarbon and jet fire protection.

Providing fire protection worldwide in:

- Commercial buildings, hotels, sports stadium and airport terminals
- Industrial plants
- Petrochemical plants
- Offshore platforms and FPSO's
- Cruise ships, military vessels, mega yachts and fast ferries
- Tunnels and underground construction

High performance, certified, listed passive fire protection wherever safety is paramount.

FireMaster[®] jet and hydrocarbon fire protection of steel piping

The FireMaster pipe fire protection system offers up to 180 minutes jet fire protection for steel pipes, explosion resistance to 0.5 bar.

Alternative designs using FireMaster Marine Plus blanket alone or combined with our microporous insulation solutions allow maximum flexibility in optimizing cost and space and meeting varying pipe critical temperature limits. Tested to ISO 22899-1 for 3 hours jet fire protection. Additional hydrocarbon fire testing to EN 1338-4 for up to 200 minutes allows combined jet and hydrocarbon pool fire scenarios to be accommodated. The system has been tested at DNV-GL Spadeadam for explosion resistance up to 0.5 bar overpressure.



JetWrap system installation on flanges

FIREMASTER®

Our systems provide a lower cost alternative to custom-made jacket systems



Benefits

- Lightweight
- Easy to install
- Easy to engineer and modify on site, requiring minimal site surveying
- Cost effective

FireMaster[®] instrument cable tray fire protection

30 minute hydrocarbon fire protection

FireMaster products insulate cable trays carrying instrument control cables to ensure that the cables can operate long enough to allow process shut down during fires.

The FireMaster Cable Tray Wrap System provides 30 minutes hydrocarbon fire protection to cable trays carrying control cable wiring.

The FireMaster Cable Tray Wrap System consists of FireMaster Marine Plus Blanket fully encapsulated in aluminium foil supplied and in a roll form. It is wrapped around the exterior of the cable tray and held in place with steel banding straps. Additional weather protection can be installed if required using corrugated aluminium sheeting.

Benefits

- Can be installed in one single layer which means installation time is quick and the wrap can be easily removed from the cable tray if retrofitting cables
- Our FireMaster Cable Tray Wrap Systems have been installed in many chemical plants worldwide and are fire tested to the stringent ASTM E-1725 method
- Prevent corrosive/toxic gas emission when cable burns
- Maintain cable function in a fire
- Minimise long-term damage to cable facilities



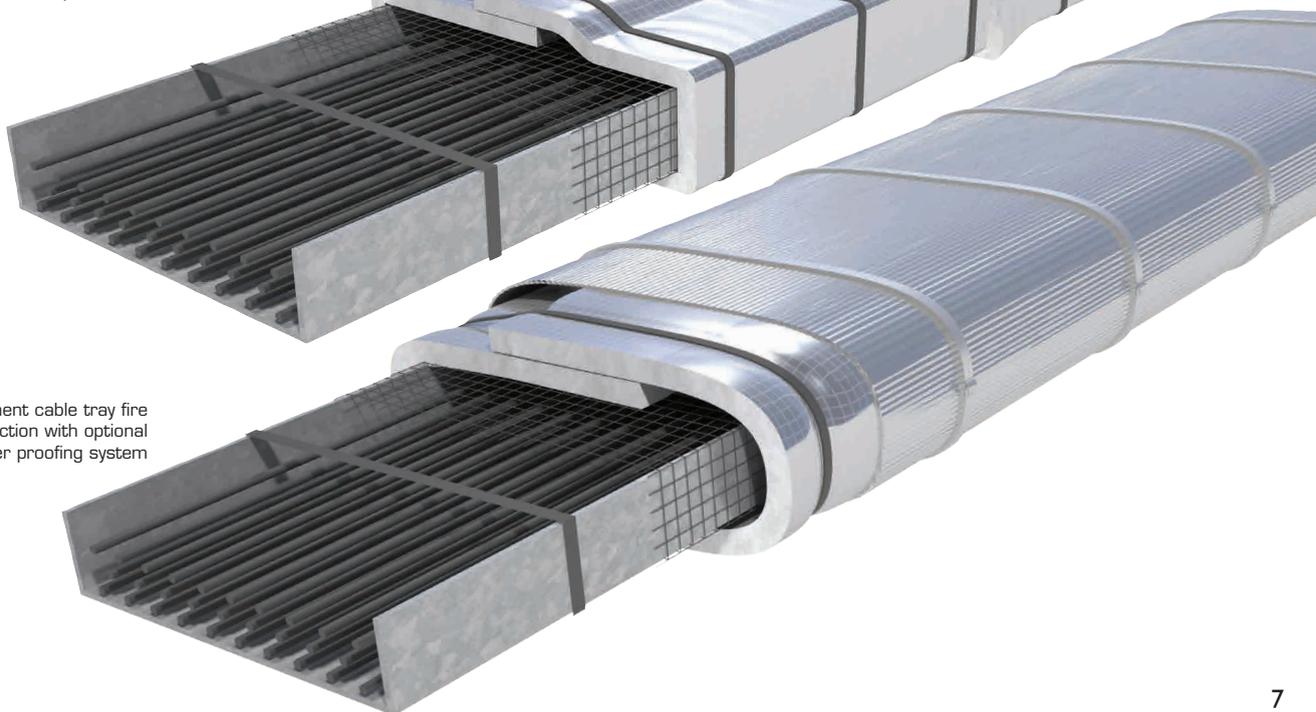
FIREMASTER®

Our FireMaster Cable Tray Wrap System provides 30 minutes hydrocarbon fire protection to cable trays carrying control cable wiring



Instrument cable tray fire protection offering 30 minute hydrocarbon fire protection

Instrument cable tray fire protection with optional weather proofing system



FireMaster® Flexible Enclosure System (FES)

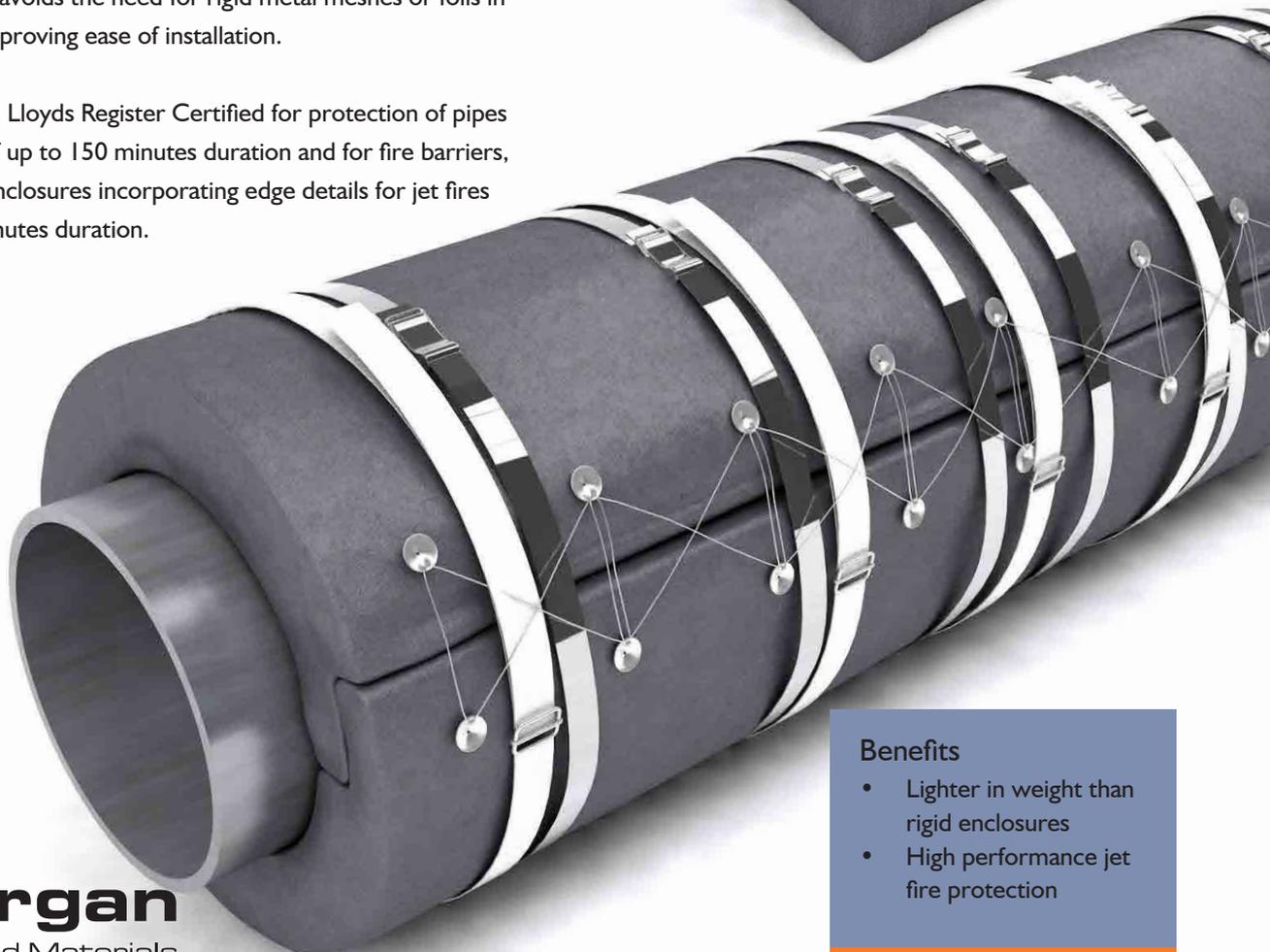
High performance jet fire protection

The FireMaster Flexible Enclosure system is specifically designed to provide high performance jet fire protection, especially for vulnerable equipment with low critical temperature limits.

Flexible systems are lighter in weight than rigid enclosures and typically used where regulations do not require metallic enclosures to be fitted but an easily removable system is still desired.

FireMaster FES contains low thermal conductivity FireMaster XLS blanket and flexible microporous insulation in an outer layer of weather and jet-fire resistant fabric. The use of a special fabric avoids the need for rigid metal meshes or foils in the jacket, improving ease of installation.

The system is Lloyds Register Certified for protection of pipes for jet fires of up to 150 minutes duration and for fire barriers, vessels and enclosures incorporating edge details for jet fires up to 175 minutes duration.



Benefits

- Lighter in weight than rigid enclosures
- High performance jet fire protection

FIREMASTER®

Our Flexible Enclosure Systems (FES) are used for jet fire protection of vulnerable equipment with low critical temperature limits



FireMaster® Rigid Enclosure System (RES)

Jet and hydrocarbon fire protection for critical components

The FireMaster Rigid Enclosure System consists of a stainless steel enclosure incorporating our high performance FireMaster insulation products.

It is fire tested for jet fire protection of valves, actuators and pipe flanges to ISO 22899-1 standard for up to 60 minutes and hydrocarbon fire protection (UL 1709) for up to 120 minutes. Very low critical temperature items can be insulated due to the high performance insulation used in the enclosure. The FireMaster RES is custom-manufactured in sections designed to fit around the item requiring protection and can incorporate water drain and inspection hatch features if required.

The system has been tested at DNV-GL Spadeadam for explosion resistance up to 0.5 bar overpressure.

Benefits

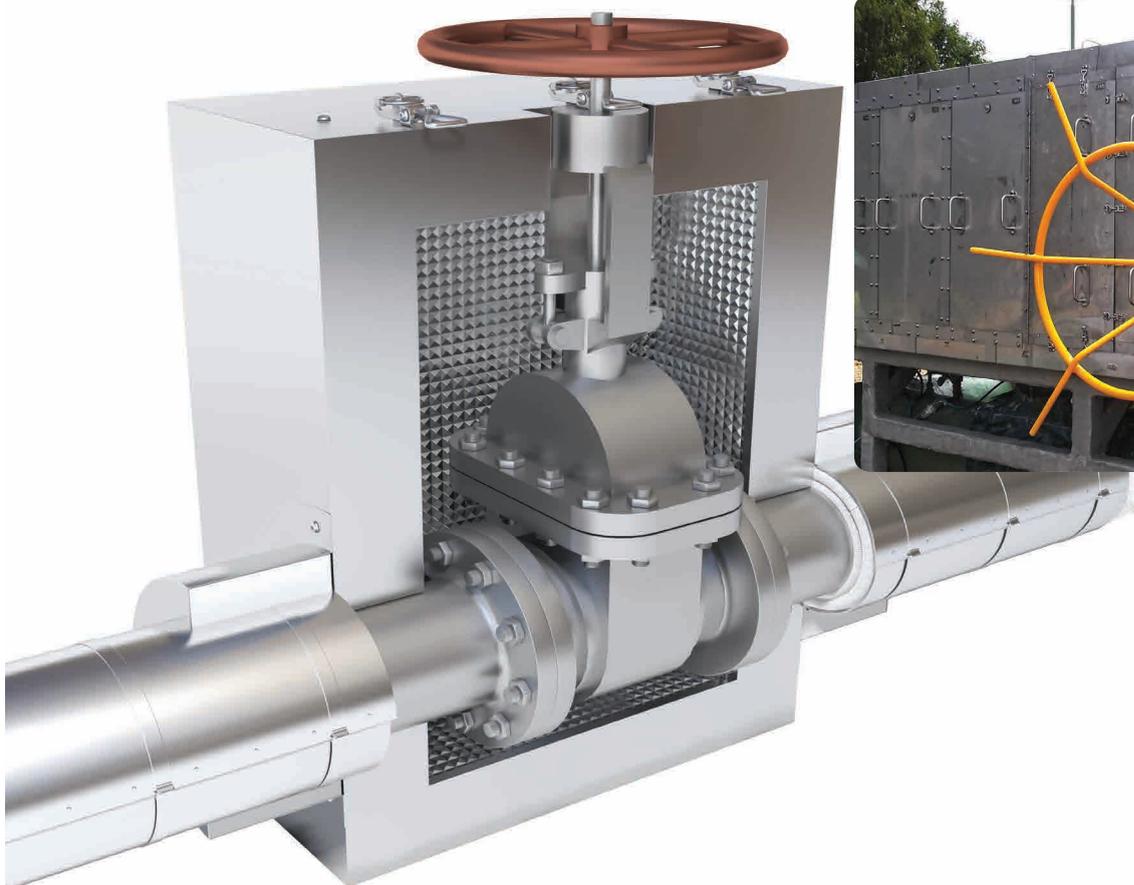
- The FireMaster Rigid Enclosure System consists of a stainless steel enclosure incorporating our high performance FireMaster insulation products
- Alternative insulation designs allow flexibility in meeting different critical temperature limits specified for flanges, actuators and valves
- Very low critical temperature items can be insulated due to the high performance insulation used in the enclosure
- Easy fitting and removal is ensured through a simple clip fixing system with fire sealing materials incorporated into the shells. The system can be engineered to fit complex or large items using a modular construction concept
- The robust stainless steel casing is especially suitable for use in weather exposed areas



FIREMASTER®



FireMaster Rigid Enclosure Systems (RES) are custom-manufactured in sections and designed to fit around the item requiring protection



Rigid Enclosure System showing stainless steel outer casing

FireMaster[®] vessel fire protection system

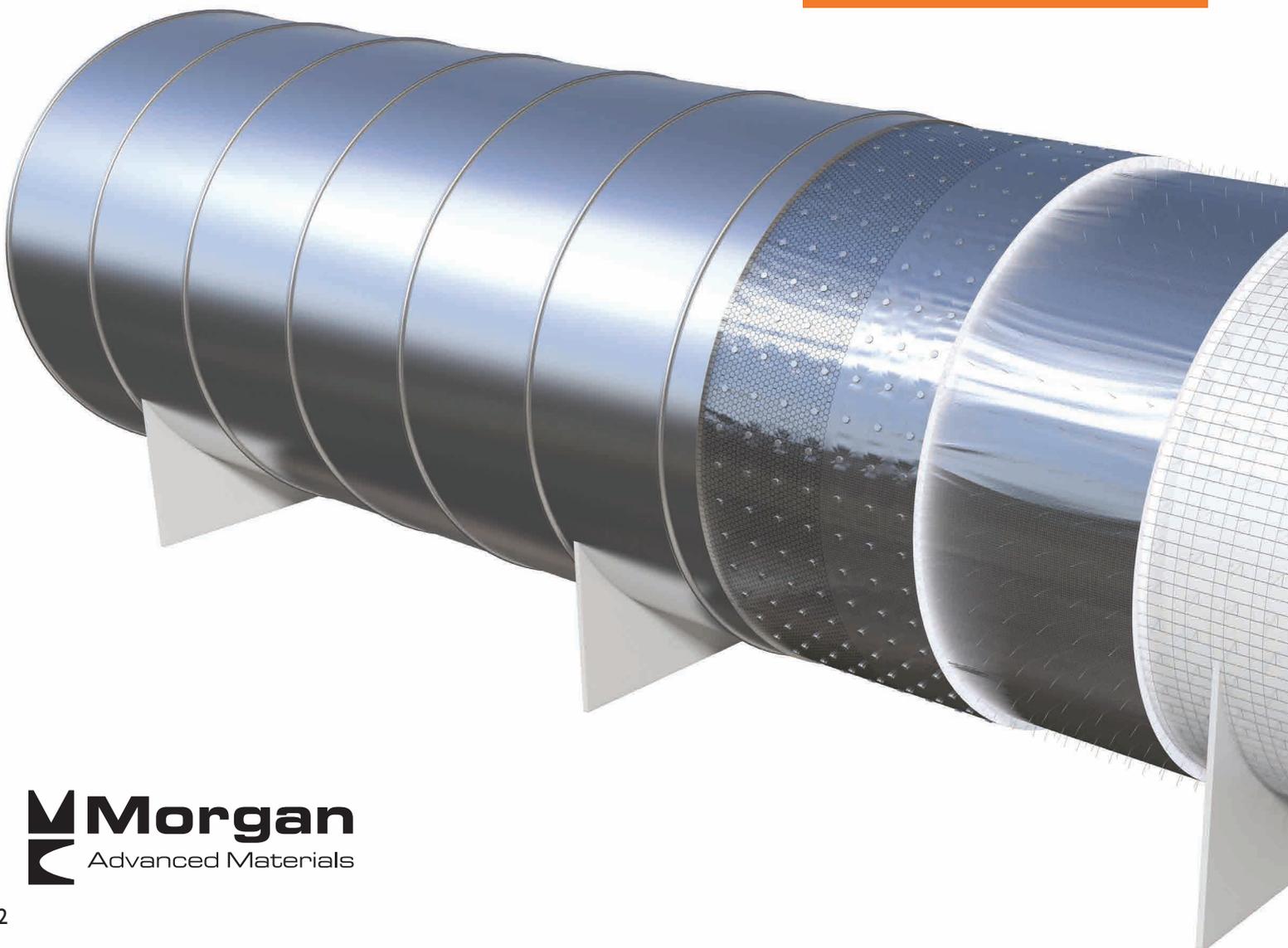
Hydrocarbon and Jet fire protection for process vessels, explosion resistance to 0.5 bar

FireMaster Marine Plus Blanket is applied to process vessels (flare drums, separator vessels etc) to ensure they retain structural integrity in hydrocarbon pool or impinging jet fires.

The system uses a substrate of wire mesh fixed to the vessel, with strands of the mesh cut to form anchor pins over which the FireMaster Blanket is impaled. The mesh is fixed to the vessel by twisting adjacent sheets together, an important feature as welded fixings are not allowed. Stainless steel cladding completes the system providing jet fire impact resistance. The system has been tested at DNV-GL Spadeadam for explosion resistance up to 0.5 bar overpressure.

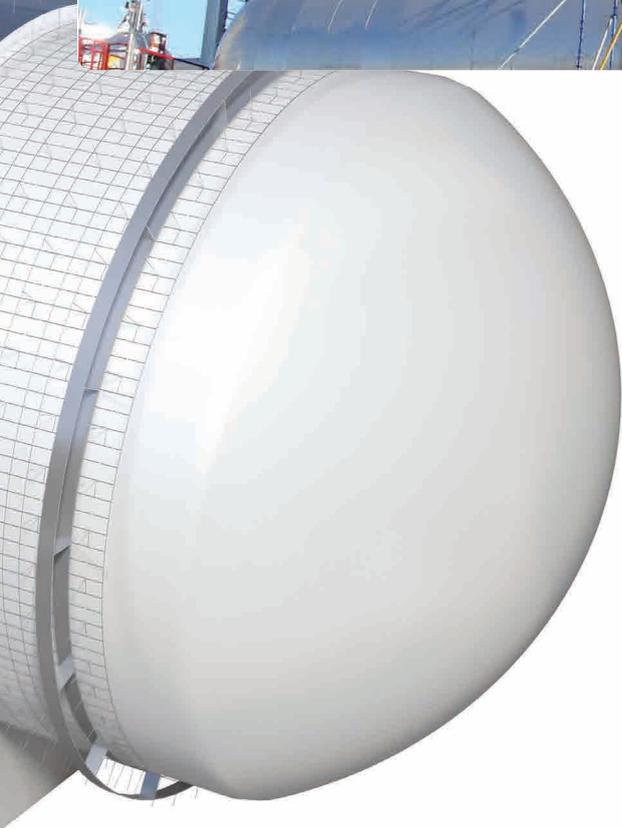
Benefits

- Fire tested in hydrocarbon and ISO 22899-1 Jet pool fires for 3 hours protection
- Combined thermal and fire insulation solution
- Ideally suited for vessels operating at above-ambient temperatures where heat-reactive fire protection materials cannot be used without secondary insulation being first applied around the vessel



FIREMASTER®

FireMaster Marine Plus blanket is applied to process vessels to ensure they retain structural integrity in jet and hydrocarbon pool fires



FireMaster[®] blanket structural steel fire protection system

Cellulosic & hydrocarbon fire insulation to steel beams and columns and jet fire protection for tubular sections

FireMaster Blanket and FireBarrier products provide fire insulation to steel beams and columns to ensure they maintain load-bearing capacity in a fire, thus preventing collapse of the structure they are supporting.

FireMaster Blanket is flexible so can easily wrap around the outer profile of I beams, columns and tubular sections.

The blanket can be applied in single or multiple layers, providing insulation to meet a variety of steel critical temperatures from 150°C upwards.

Tubular sections can be protected against jet fires for fire durations of up to 3 hours using FireMaster Blanket and microporous insulation.

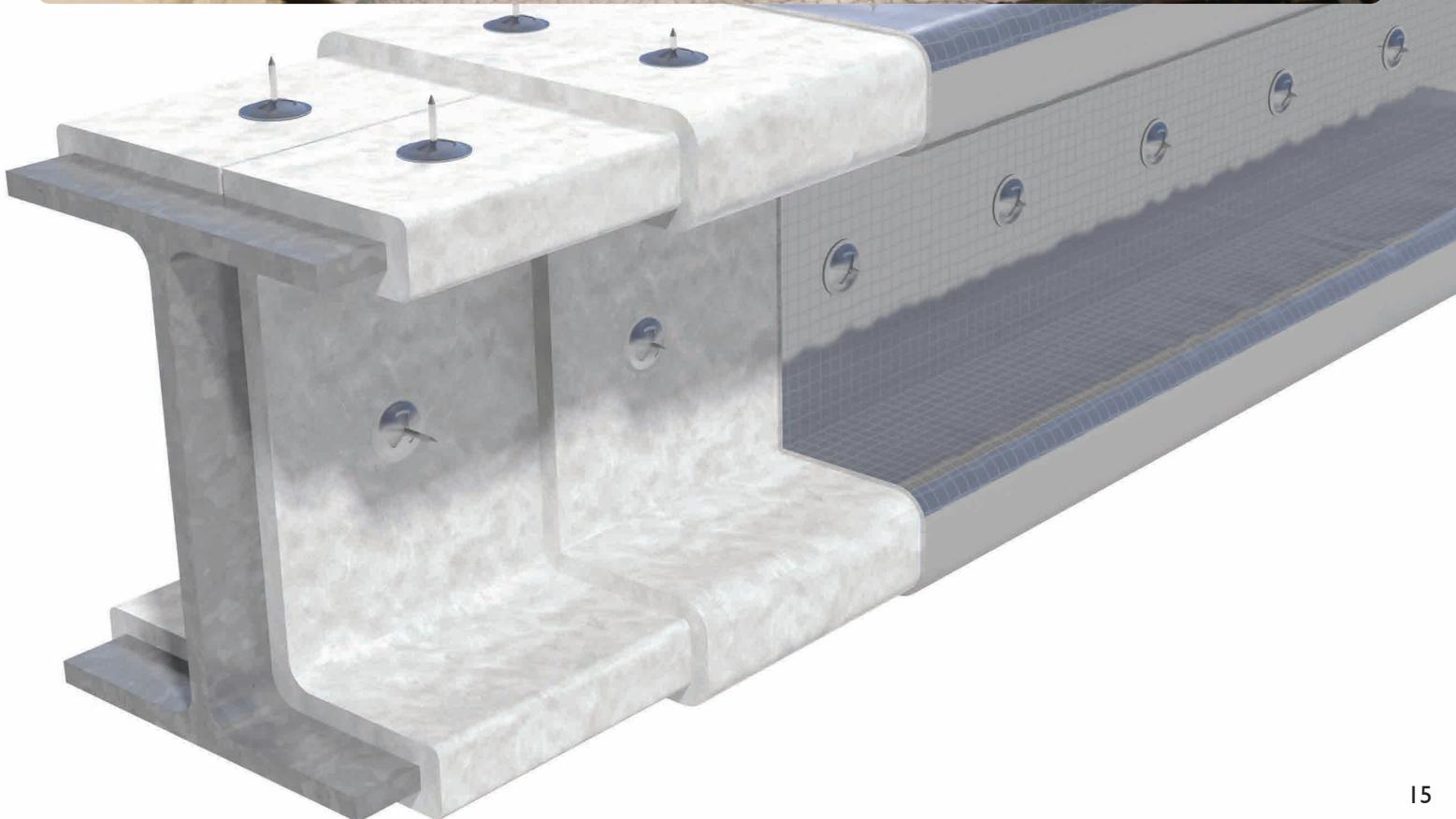
Benefits

- Simple flexible wrap system requiring no special installation equipment. Ideal for small areas as set up time is quick
- Dry application, can be installed in any ambient temperature conditions
- Tested to EN 13381-4 standard in both cellulosic and hydrocarbon fire exposure
- Fast and simple to install using welded pins. No complicated fixing or preparation work required
- Ideal for complex shapes, the blanket is flexible, wrapping around the steel profile
- Low waste due to minimal cutting required to fit around complex structures as well as low weight contribution



FIREMASTER®

Our FireMaster blanket and FireBarrier™ products provide fire insulation and protection to steel beams and columns



FireMaster® FastWrap® ductwork fire protection

Commercial kitchen exhaust ducts - pressurization and ventilation ducts

FireMaster FastWrap XL and our newest, lightweight fire rated duct wrap, FastWrap XLS are specially developed flexible encapsulated insulation wrap designed for the fire protection of ductwork within all types of buildings meeting various international and national building code and fire test standard performance requirements.

Ductwork in buildings is insulated to prevent fire spread within a building through the duct or to ensure the duct function is maintained when exposed to a fire. Fire may occur either inside or outside the duct. Stringent fire tests exist worldwide to prove the effectiveness of ductwork fire insulation systems.

FireMaster FastWrap XL and XLS ductwork fire protection can be used for heating and ventilation, kitchen grease extraction and pressurisation ductwork whilst ancillary products and systems are also available for access doors, venting duct and plastic pipe protection.

Benefits

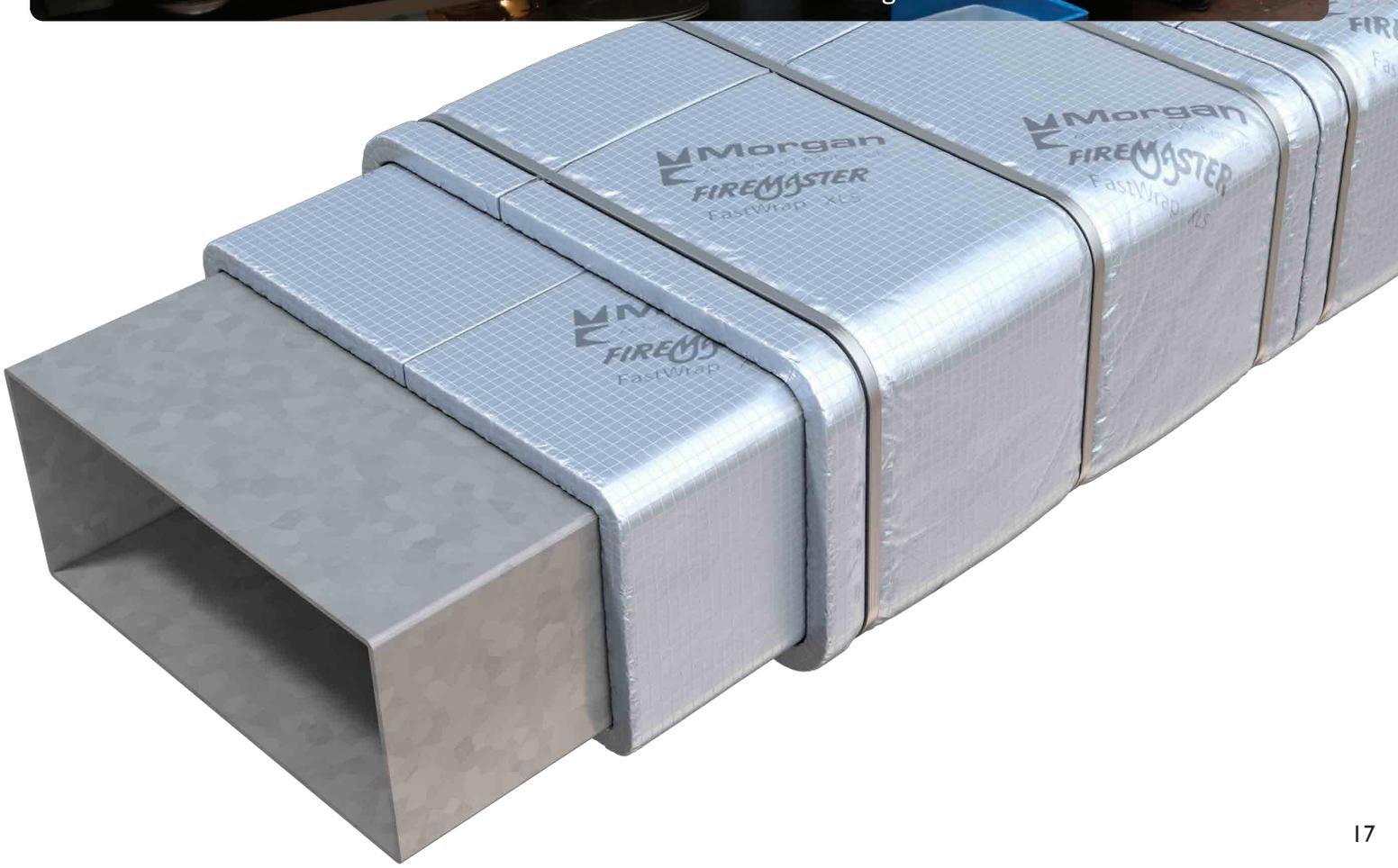
- Simple flexible wrap is fast and easy to install in one or two layers
- Easy fixing with steel banding minimizes installation time and complexity
- Insulation properties ensures zero clearance to combustable materials can be achieved
- Full encapsulation of the insulation protects against moisture or grease ingress to the insulation
- UL approved manufacturing sites worldwide



FIREMASTER®



FireMaster FastWrap® XL and XLS providing engineered solutions for heat containment problems in commercial kitchen grease and air ventilation ducts



Fire resisting divisions - cellulosic, hydrocarbon & jet fire protection

Bulkhead, deck and floor fire protection

There is a full range of FireMaster® fire protection solutions for bulkheads, decks and floors within marine environments such as ships and offshore platforms.

FireMaster Marine Plus bulkhead and deck systems

Low weight, easy installation and density as low as 48kg/m³ ensures suitability in for vessels where the weight of construction materials is critical, or for offshore structures where topside weight must be minimal.

The FireMaster FireBarrier I35 floating floor system

A60 fire protection with only 20mm thickness and lower weight than traditional cementitious floor systems.

FireMaster Marine Plus blanket

A flexible material which wraps around the structure to allow the easy insulation of even complex shapes without the need for excessive cutting of the blanket or extra supporting anchoring. Saving both installation time and material wastage.

FireMaster XLS Blanket Fire Divisions

The latest lighter weight evolution of FireMaster Blanket with time and space saving solutions for bulkhead and deck fire protection.

Benefits

- Typical weight saving of 30% compared to traditional materials
- Binder-free insulation that will not generate smoke or toxic gasses in a fire
- Tested and approved for both traditional marine (A-Class) and offshore hydrocarbon (H Class) and jet applications
- Type Approved for fire protection of steel, lightweight aluminium and FRP composite structures
- Blanket satisfies fire, thermal and acoustic insulation requirements is available from strategically DNV-approved manufacturing plants worldwide, minimising transport and warehousing logistics



FIREMASTER®

For more than 30 years, FireMaster insulation materials have provided lightweight fire insulation for structures exposed to both cellulosic and hydrocarbon fires in cruise ships, super-yachts, high speed ferries, coastal defence vessels, offshore platforms and FPSO's.



Systems

- A60 steel decks and bulkheads
- A60 corrugated steel bulkheads
- B15 wall extension system
- A60 aluminium decks and bulkheads
- Loadbearing aluminium divisions for high speed craft (HSC)
- Loadbearing FRP composite divisions for high speed craft (HSC)
- H60 & H120 steel decks and bulkheads
- Jet Fire systems

A60, H120 and J30 rated corrugated fire wall systems for Offshore Modules

Lightweight fire wall systems using thin steel plate and low density FireMaster® Marine Plus blanket provide A60, H120 and J30 protection for process modules or living quarters offshore.

Depending on the critical temperature specified for the wall, Jet fire protection up to 120 minutes can be provided.



Benefits

- Lightweight using low density insulation
- A60 with less than 5 kg/m² weight
- Combined fire, thermal and acoustic insulation

Blast resistance of FireMaster fire divisions

Blast protection for up to 1.25 bar overpressure

FIREMASTER®

On offshore structures the risk of an explosion and subsequent hydrocarbon pool or jet fire requires that fire divisions are sometimes also required to be resistant to explosion overpressure as well as fire.

FireMaster Marine Plus blanket has good blast pressure resistance, being capable of absorbing the pressure of an explosion.

A protecting mesh and anchor system ensures the integrity of the fire insulation system is not compromised when exposed to blast pressures.

Two system designs have been successfully tested at the DNV-GL Spadeadam test site with blast pressures up to 1.25 bar.



FireMaster[®] tunnel fire protection

FireBarrier[™] 135 - high performance fire protection

FireBarrier 135 is a refractory cement fire protection material specially developed for the high temperatures developed in tunnel fires. It can be applied by spraying or cast into sheets.

Unlike most other products used for tunnel fire protection, FireBarrier 135 is able to withstand repeated and prolonged exposure to high-temperature. In fire tests, when exposed repeatedly at temperatures of 1350°C FireBarrier has shown consistent performance as a protection to concrete.

Extensive tests have proven the resistance of FireBarrier 135 to environmental conditions found in tunnels. FireBarrier 135 is resistant to water jet sprays used to clean tunnel linings and will not spall when subjected to water hose sprays at high temperature providing safety for fire-fighting.

Benefits

- Refractory Product - can withstand repeated exposure to 1350°C for long cycle times
- Very low spraying wastage during installation
- Fast and easy to install - one, single layer application
- High adhesion strength - eight times greater than product weight
- Large number of fire tests to ISO 834, RABT, HCM and RWS fire curves
- High quality surface finish that can be painted



FIREMASTER®

FireBarrier™ 135 provides a high quality surface finish when applied



High quality surface finish

FireBarrier 135 can be trowelled flat to provide a high-quality surface finish that can be used as the final tunnel lining surface (with optional painting). This avoids the need for expensive secondary cladding.

High strength

FireBarrier 135 has high adhesion strength typically 8 times its weight. Like concrete, strength increases over time. Adhesion has been verified in use and in independent laboratory tests.

Ease of installation

FireBarrier is easy to install with virtually no wastage from spray re-bound.

It is installed in one single layer with quick dry times.

It can be installed onto concrete or metal substrates using standard spray equipment (Putzmeister M11 or PFT G4/G5).



FireBarrier 135 is normally installed by spraying over a mesh, which is fixed to the concrete lining using "pig tail" anchors.

Morgan Advanced Materials

Significant trends shape our modern world, accelerating the demand for new and more sustainable advanced materials.

At Morgan Advanced Materials, we use advanced carbon and ceramics materials to support the move to a more sustainable world. Our people are driven to solve complex customer problems: from managing heat and enabling greener technologies, to supporting improved medical diagnostics and protecting life.

Our purpose is 'to use advanced materials to make the world more sustainable, and to improve the quality of life'. This purpose is underpinned by our safe, ethical and inclusive culture, embraced by our 7,800 employees spanning over 25 countries. Working across many industries and in a number of markets, we deliver the materials science and technologies the world needs now.

Our Strategy

We are a global advanced manufacturing organisation with leading capabilities in three areas: materials science, application engineering and customer focus.

Our Business Model

We operate as two global divisions and five global business units. We empower our global business unit teams, giving them considerable autonomy and enabling them to act quickly and support their customer needs. Our broad manufacturing footprint enables us to supply customers locally from a short supply chain.

www.morganthermalceramics.com

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