FireMaster® fire protection systems
Fire Protection product range

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 cellulotic, hydrocarbon and jet fires in oil & gas, marine, transportation and construction industries.

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 cellulotic, hydrocarbon and jet fire protection.

Providing fire protection worldwide in:
- Commercial buildings, hotels, sports stadia 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

Products

FireMaster XLS Blanket
The new ultra lightweight fire protection blanket from Thermal Ceramics. Saving even more weight than FireMaster Marine Plus Blanket utilizing a new, innovative, low thermal conductivity fibre manufacturing process.

FireMaster Marine Plus blanket
Lightweight fire insulation designed for weight sensitive applications. Weight savings of 20 to 30% are typical compared to standard FireMaster blanket and alternative insulation solutions. Systems are available for composite, steel and aluminium structures.

FireMaster Marine Plus faced blanket
FireMaster Marine Plus blanket is available with surface coatings of aluminium or glass cloth.

FireMaster Marine Plus water repellent blanket
FireMaster Marine Plus blanket is available with a water repellent treatment through the entire blanket thickness to inhibit water ingress.

FireMaster RES system
A rigid metallic enclosure for jet fire protection of valves, actuators and flanges.

FireMaster cable tray wrap
FireMaster blanket totally encapsulated in aluminium foil. Approved by Factory Mutual for hydrocarbon fire protection of instrument and control cables.

FireMaster board
Three different grades of FireMaster board are available to offer designers a choice of products most suitable to their application. Now includes FireMaster 200 board developed especially for solid core fire doors.

FireMaster expanding felt
Expands to 3 times its original thickness to seal gaps, joints and penetration seals.

FireMaster FireFelt
Compressible felt suitable for applications where very low weight and good resilience are required.

FireMaster FireBarrier 135
Sprayed refractory cement solutions for fire protection of steelwork, vessels and floating floors in ships.

FireMaster FlexiJet
Flexible jacket system for fire protection of process equipment and structures.

BTU and WDS microporous products
Highest efficiency in thermal insulation available in rigid and flexible product forms. For use where space saving is important or for exceptional low weight.

FastWrap XL
Fully foil encapsulated flexible blanket wrap system for fire protection of commercial kitchen grease extraction or ventilation ducts.
Thermal Ceramics offers products and engineered systems for high-performance fire protection applications in a wide variety of industries world-wide.

20% Weight saving using FireMaster Marine Plus

100% Fire performance
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.

Benefits
- Lightweight
- Easy to install
- Easy to engineer and modify on site, requiring minimal site surveying
- Cost effective
Our systems provide a lower cost alternative to custom-made jacket systems.
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 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
Our FireMaster® cable tray wrap system provides 30 minutes hydrocarbon fire protection to cable trays carrying control cable wiring.
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
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.

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

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.
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® 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
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 is 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 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 combustible materials can be achieved
- Full encapsulation of the insulation protects against moisture or grease ingress to the insulation
- UL approved manufacturing sites worldwide
FireMaster® FastWrap XL 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 135 floating floor system
A 60 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
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

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
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 is a global engineering company offering world-leading competencies in materials science, specialist manufacturing and applications engineering.

We focus our resources on the delivery of products that help our customers to solve technically challenging problems, enabling them to address global trends such as energy demand, advances in healthcare and environmental sustainability.

What differentiates us?
Advanced material science and processing capabilities. Extensive applications engineering experience.
A strong history of innovation and reinvention. Consistent and reliable performance.
A truly global footprint. We find and invest in the best people.

For all enquiries, please contact our specialist sales and manufacturing sites:

**Europe**
Morgan Advanced Materials
Tebay Road, Bromborough
Wirral, Merseyside
CH62 3PH
United Kingdom
T +44 (0) 151 334 4030
E marketing.tc@morganplc.com

**North America**
Morgan Advanced Materials
2102 Old Savannah Road
Augusta
Georgia 30906
USA
T +1 (706) 796 4200
E marketing.tc@morganplc.com

**South America**
Morgan Advanced Materials
Rua Darcy Pereira 83
Distrito Industrial de Santa Cruz
23565-190 Rio de Janeiro-RJ
Brazil
T +55 (21) 3305 7400
E marketing.tc@morganplc.com

**Asia**
Morgan Advanced Materials
150 Kampong Ampat
05-06A, KA Centre
368324
Singapore
T +65 6595 0000
E marketing.tc@morganplc.com

Thermal Ceramics is a business of Morgan Advanced Materials
Quadrant, 55-57 High Street,
Windsor, Berkshire, SL4 1LP, United Kingdom

www.morganthermalceramics.com
www.morganfireprotection.com

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