



# FIRE SHIELD



**EIP**

الامارات لصناعة اللوح العازلة  
Emirates Industrial Panel



## 1. Fire Resistance

In the developing world of construction materials, higher standards in fire safety are being demanded by end users all across the application spectrum. These demands are firstly motivated by the need to preserve human life, property and products and secondly, the need to improve the quality and performance of insulated structures. Standard polyurethane and polystyrene insulated panels are vastly inefficient against fire, providing hardly any protection at all. Government legislation is now demanding higher fire resistance for insulated panels while maintaining their structural and insulation properties.



## 2. EIP Fire Shield

As a response to industry demands, Emirates Industrial Panel (EIP) has introduced a new generation of fire resistant sandwich panels: EIP Fire Shield !

EIP Fire Shield is a new sandwich panel incorporating a high grade polyisocyanurate (PIR) insulation core together with a special design, double tongue & groove fire-rated joint. EIP Fire Shield PIR core provides superior fire-resistance and the special joint further protects the core from flame ingress and enables the panel to maintain its structural integrity while exposed to fire.

EIP Fire Shield panels are the ideal fire-resistant solution for all external cladding and internal partitioning of any structure. In addition, they offer the best solution for high fire resistance in cold storage and food processing plants. EIP Fire Shield panels are not susceptible to vapour permeability and moisture condensation which affects Man-Made Mineral Fibre (MMMMF - eg. Rockwool, glasswool).

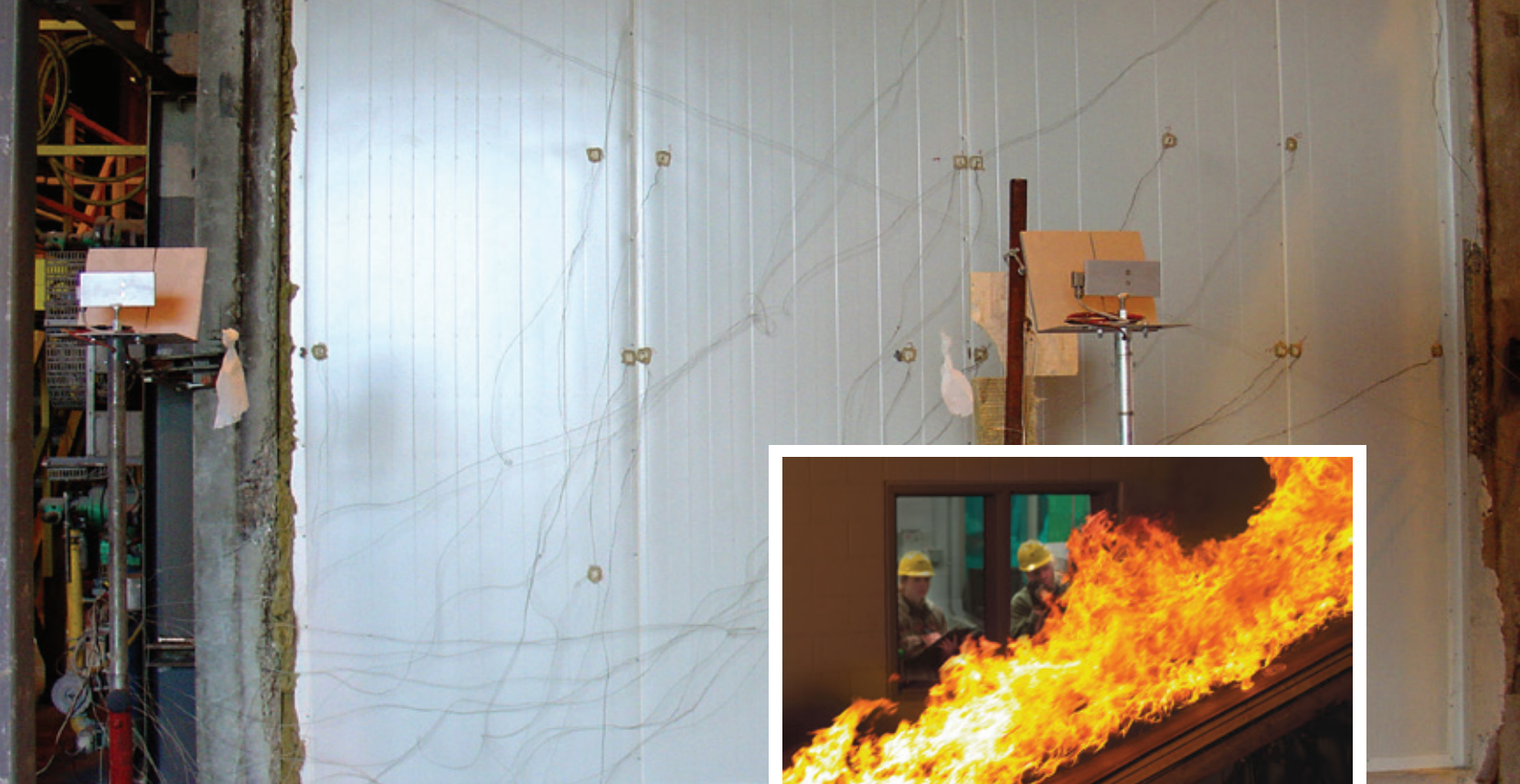
### Technical Data:

- Insulation Core: High grade PIR foam core with a density of 40 kg/m<sup>3</sup>.  
Thermal conductivity  $\lambda = 0.021$  W/mK\*
- Fire Rating : Certified according to EN 13501-2, NFPA 255, NFPA 285, FM Approvals
- Blowing Agent : Environment friendly n-Pentane 95 gas (Zero ODP)
- Facers : A) Prepainted hot-dip galvanized carbon steel of grades DX51D or S320GD, conforming to EN 10327 and EN10147 respectively.  
Dimensional tolerances as per EN10143.  
B) Stainless steel SS304 or SS316 grade.

\* Foam supplier's catalog value at 20°C

\* DCL tests indicate slight increase to 0.025 in higher temperatures





### 3. Fire Safety Testing & Certification

Panels are classified as fire-resistant when they satisfy certain performance criteria during a real fire situation. Fire resistant panels do not spread fire, contribute to it, spit out burning droplets or emit excessive smoke. Fire resistant panels preserve their integrity and heat insulation properties for a certain period of time. By successfully meeting these criteria during a fire, fire-resistant panels will provide sufficient time for occupants to safely evacuate the building and implement fire-fighting measures.



FM Global (Factory Mutual) is the world's leading commercial insurance body that provides client risk management through product certification systems to safeguard client's properties.



FM Approvals is a material testing and certification body which carefully appraise the construction methods vital to fire protection system certification. FM systems are widely recognized by investors, property insurers, designers and constructors for their superior fire engineered performance thus reducing fire risks.

Large scale fire tests such as those carried out by FM Approvals provide a better indicator of how panels will perform in a real fire situation.

EIP Fire Shield panels have received FM Approval as Class 1 insulated panels with no height restriction in accordance with FM Approvals standards 4880, 4881 and 4471. In order to achieve this certification, EIP Fire Shield panels have successfully passed vigorous testing conducted at the FM Approvals laboratories in the USA including:

- Flammability Characterisation Test
- 16ft High Parallel Panel Test
- Large Scale Room Fire Test
- Flame Spread Test- Surface Burning Characteristics
- Oxygen Bomb Test
- Static and Cyclic Pressure Test

In addition to the tests conducted during FM Approvals certifications, we have conducted additional tests in settings that include installations of panels on a large scale and exposing them to other real fire situations.



NFPA 255 (ASTM E84)	Surface Burning Characteristics of Building Materials
NFPA 285	Fire Propagation Characteristics of Exterior Non-Load Bearing Walls
EN 13501-2 (EN 1364-1)	Fire Resistance of Non-Load Bearing Elements, Part 1: Walls

NFPA 255 test validates that the tested material will not spread fire on its surface, therefore will contain the fire where it started.

NFPA 285 test determines if the tested material, when used as an external wall, will contribute to the fire and let it spread along the facade.

EN 13501-2 standard classifies building materials in minutes of resistance to fire, i.e. how long they maintain their insulation properties and structural integrity.

EIP Fire Shield panels have successfully completed and passed all these tests. All test results are available upon request.



## 4. Properties of EIP Fire Shield

With the successful results from the above tests, it is proven that when exposed to a real fire situation, EIP Fire Shield panels

- Do not contribute to the fire or act as fuel to it
- Do not spread flame on their surface
- Give off minimal smoke
- Preserve their insulation properties \*
- Preserve their structural integrity\*
- Self extinguish when the fire source is removed



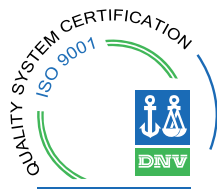
## 5. Comparison with MMMF (Man-Made Mineral Fiber a.k.a. rockwool)

EIP Fire Shield is the optimal solution when high fire resistance specifications are required. The inherent properties of PIR foam such as superior strength with a light weight, low thermal conductivity values and fibre-free closed-cell structure give it the upper edge when compared to rockwool or other similar materials.

The density of PIR foam is around 40 kg/m<sup>3</sup> as compared to the minimum possible densities of 80 to 100 kg/m<sup>3</sup> for rockwool. This means for the same thickness of materials, EIP Fire Shield panels are almost 3 times lighter than rockwool panels. This allows for a simpler steel structure, easier handling, faster installation, reduced labour time and hence less cost.

The Lambda value or thermal conductivity of PIR foam is around 0.021W/mK as compared to that of rockwool at 0.035 to 0.040 W/mK. This means for the same thermal insulation requirement, almost half the thickness is sufficient by using EIP Fire Shield.

The closed-cell structure of PIR foam renders it impervious to water and vapour whereas rockwool, with its fibrous structure, will absorb moisture. Moisture absorption will significantly decrease the thermal performance of insulation materials. In addition, the non-fibrous and closed-cell structure grants EIP Fire Shield panels protection against insects, bacterial and fungal growth, a feature not available in rockwool panels.



\* As per EN 13501-2 at a certain time limit

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