

INSULATED PANELS

Cold Store



الامارات لصناعة الالواح العازلة
Emirates Industrial Panel



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Introduction

Emirates Industrial Panel LLC (EIP) was set up in Dubai to meet the demand for quality insulated panels and has established itself as the regional leader in insulated roof, wall and cold store panel systems.

EIP has achieved consistent high quality in products and services as evidenced by landmark industrial projects in the MENA region. EIP works closely with industry regulatory bodies to continuously introduce improved systems and solutions to the market.

EIP has been at the forefront of performance based testing and certification for insulated panel products. EIP panels directly contribute to improved building performance criteria including high standards in energy efficiency, fire resistance, air infiltration and environmental impact.

EIP provides customised insulated panel solutions to meet the customers' objectives. Our sales executives together with our engineering personnel are available to provide solutions for your requirements.

Production Technology

EIP production line is a state of the art continuous production facility from Germany with a production capacity of over 3 million squaremeters of panels per annum.

The production technology, assisted by a complex automated control system, is designed to streamline the different parts of the manufacturing process enabling a minimal number of operators to run the line.

The production system consists of multiple stations, a profiling section, a foam application station, a special cut to length system, curing zone, and an automatic stacking and packaging unit. The fully automated line requires minimum operator intervention, eliminating mistakes and maximizing quality and efficiency.

The plant operates using environment friendly blowing agents meeting international standards in line with Kyoto Protocols,



“Pioneers in insulated cold store
panel systems”



EIP Panel Benefits

EIP sandwich panels offer unique features which includes:

- Light weight
- High rigidity
- High insulation properties
- Air tight fire rated joint
- High fire resistance properties
- Closed cell foam structure
- Easy to install
- Fiber free core
- Resistant to adverse weather conditions
- Hygiene surface meeting HACCP regulations
- Environment friendly - Zero ODP, low GWP



“Great buildings are all about details”

Products

EIP CSP Cold Store Panels are composite prefabricated panels, consisting of two layers of metal facers and PUR/PIR insulation core between the facers.

The CSP panel is a versatile product, allowing for use in:

- Walls
- Ceilings
- Partitions



Panel thicknesses : **55, 80, 100, 120, 140, 150, 170 and 200mm**

- System Width : 1110mm (effective coverage width)
- Panel lengths : 2000mm to 18000mm
- Thickness : 55mm to 200mm
- Joint System : Fire-Rated double tongue & groove slip joint
- Profile Options: Low Rib, Micro Lining, Micro Wave, Groove, Flat
- Suitable for wall, ceiling, partition and roof applications (with waterproofing)

The double tongue-and-groove edge geometry ensures a precise interlocking of the panels with utmost ease. This positively eliminates the risk of thermal bridging and provides an air-tight joint between the panels. The extended steel edges within the joint system provides additional strength and protection against fire by prolonging the amount of time the flames take to reach the panel core.



Material Specifications

Metal Facers

The standard substrate for Internal and external facers are prepainted and hot-dip galvanised steel to BS EN 10143 standard.

- Thickness: 0.50mm
- Steel Grade: DX51D
- Zinc Coating: Z275 or Z200
- Top coat: Polyester, PES, 25microns thick
- Colour: RAL9002 Off-White
- Surface Protection: Polyethylene film

Variations are possible in the surface material specifications to suite a wide range of specialized applications:

- Thickness options: 0.40mm to 0.80mm
- Substrate options: Aluzinc-coated steel, Stainless steel (SS 304 or 316)
- Top coat options: High Durable Polyester, Food Safe, Plastisol and PVDF
- Colour: Any colour from RAL catalogue

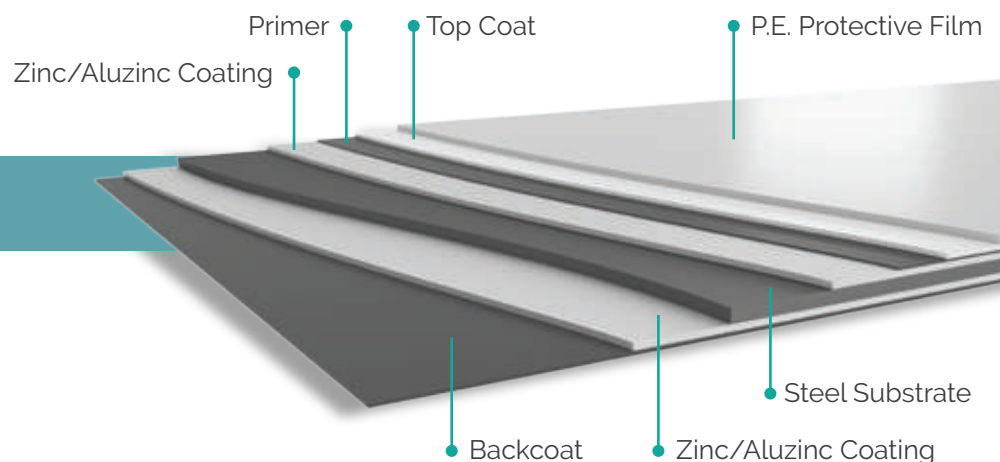
High Durable Polyester coating is suitable for increased resistance against corrosion and harsh cleaning agents.

PVDF coating is suitable for external applications where higher resistance against corrosion, colour fading and harsh environment conditions is required.

Plastisol coating is suitable for internal applications for non-contact level food safety and where higher resistance against washing of surfaces is required.

Food Safe coating is suitable for internal applications for contact level food safety with anti-microbial properties

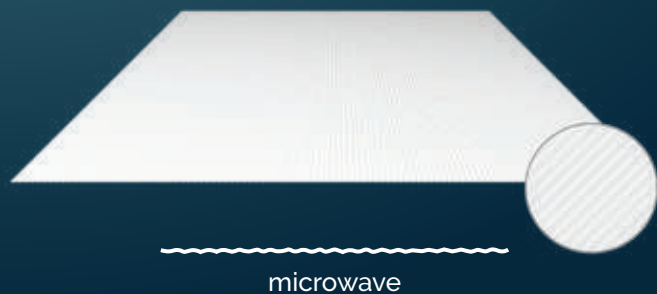
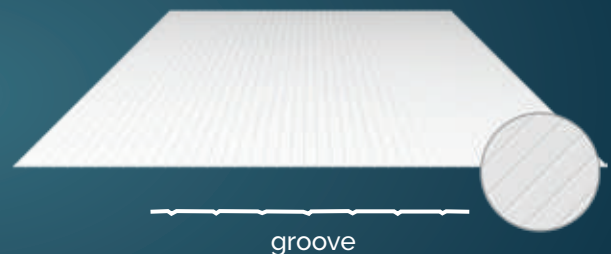
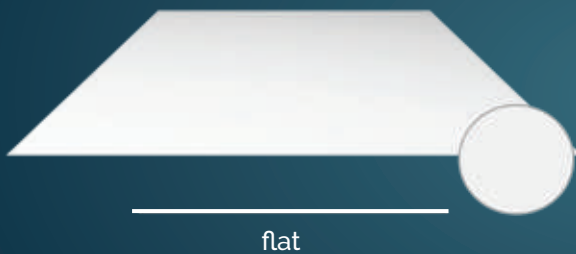
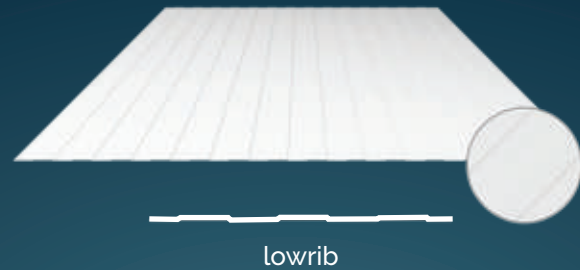
Steel Facer Detail





Surface Profiles

Internal & external facers as standard are Low Rib profile, however alternative profile options such as Micro Lining, Micro Wave, Groove and Flat are available upon request.



Insulation Core

The core of EIP CSP is an environmentally sustainable rigid PUR/PIR insulation foam, available in,

- FM Approved Fire-Resistant Polyisocyanurate (PIR) foam
- Flame retardant (PUR or PIR) B2 class
- Polyurethane (PUR) B3 class

having properties as,

- Density: $40 \pm 3 \text{ kg/m}^3$
- Thermal Conductivity: $\lambda_{\text{PUR}} = 0.023 \text{ W/mK}^1$ & $\lambda_{\text{PIR}} = 0.021 \text{ W/mK}^1$
- > 90% Closed Cell content

The blowing agent used in EIP panels is environment-friendly pentane gas with Zero Ozone Depletion Potential (ODP) and Low Global Warming Potential (GWP). It does not contain CFC and HCFC.

¹As per foam laboratory values



Applications

EIP CSP panels are used in an array of different applications.

EIP CSP panels are suitably made for different construction designs such as **single-external-box**, **box-in-a-box** or **rack supported cladding systems**.



Cold stores



Distribution centers



Meat Processing plants



Poultry



Fruit and Vegetables



Flower industry



Fish Processing



Dairy plant



EIP CSP Panel



Thermal Performance & Weight

t: Core Thickness (mm)	55	80	100	120	140	150	170	200
Weight (kg/m ²) ¹	10.40	11.40	12.20	13.00	13.80	14.20	15.00	16.20
U value - PIR (W/m ² K) ²	0.38	0.26	0.21	0.17	0.15	0.14	0.12	0.10
U value - PUR (W/m ² K) ²	0.41	0.28	0.23	0.19	0.16	0.15	0.13	0.11

¹Based on 0.50mm thick steel facers

²As per foam laboratory values

* Consult factory for improved values with different foam systems

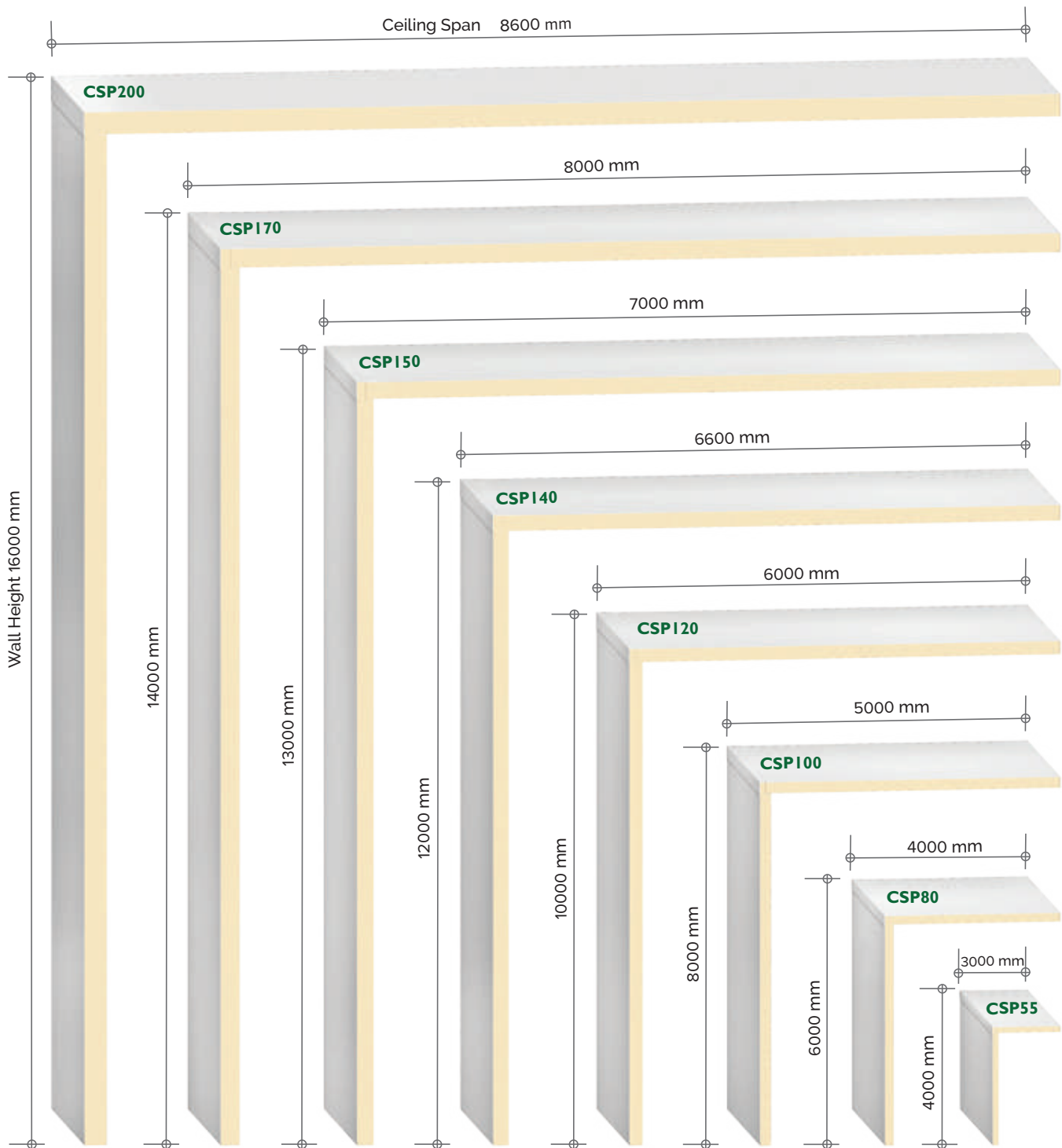


Heat Transmission Table

The max heat gain by conduction in a cold store should be limited to 10 W/m². This table shows the optimal insulation thickness to be selected for various temperature differentials (TD)

Panel Thickness (mm)	55	80	100	120	140	150	170	200
Thermal Energy Transmission (W/m ² K)	0.41	0.28	0.23	0.19	0.16	0.15	0.13	0.11
Temperature Differential (TD)								
10°C	4.181	2.875	2.300	1.916	1.642	1.533	1.352	1.150
15°C	6.271	4.312	3.450	2.874	2.463	2.299	2.028	1.725
20°C	8.362	5.750	4.600	3.832	3.284	3.066	2.704	2.300
25°C	10.452	7.187	5.750	4.790	4.105	3.832	3.380	2.875
30°C	12.543	8.625	6.900	5.748	4.926	4.599	4.056	3.450
35°C	14.633	10.062	8.050	6.706	5.747	5.365	4.732	4.025
40°C	16.724	11.500	9.200	7.664	6.568	6.132	5.408	4.600
45°C	18.814	12.937	10.350	8.622	7.389	6.898	6.084	5.175
50°C	20.905	14.375	11.500	9.580	8.210	7.665	6.760	5.750
55°C	22.995	15.812	12.650	10.538	9.031	8.431	7.436	6.325
60°C	25.086	17.250	13.800	11.496	9.852	9.198	8.112	6.900
65°C	27.176	18.687	14.950	12.454	10.673	9.964	8.788	7.475
70°C	29.267	20.125	16.100	13.412	11.494	10.731	9.464	8.050
75°C	31.357	21.562	17.250	14.370	12.315	11.497	10.140	8.625
80°C	33.448	23.000	18.400	15.328	13.136	12.264	10.816	9.200

Wall & Ceiling Span Guide



* Span table is based on panels with 0.50mm thick steel internal and external facers

* Wall panel length up to 18000mm

Fire Safety

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.



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 incorporates a high grade polyisocyanurate (PIR) insulation core together with a specially-designed, 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 when exposed to fire.

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 Approval

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

With its FM Approved fire-resistant panels, EIP panels have achieved the acceptance of Civil Defence authorities and set the standard for industrial projects.

In addition to the tests passed during FM Approvals certifications, EIP panel have passed other fire tests according to various European and American test and classification standards.

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

Properties of EIP Fire Shield

EIP Fire Shield panels contain a special polyisocyanurate (PIR) insulation core offering superior fire performance when compared to most alternative standard insulation materials. PIR is a thermosetting material, which means that it will permanently become hard and rigid when heated. It will therefore not melt or drip when exposed to fire. The foam core forms a strong carbonaceous char creating a protective layer from the fire. With these unique properties, spread of fire within the panel is prevented. EIP Fire Shield PIR panels do not contribute to the fire and have been proven to help reduce the risk of critical building loss.

With the successful results from tests, it is proven that when exposed to a real life 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 properties¹
- Preserve their structural integrity¹
- Self-extinguish when the fire source is removed



¹As per EN 13501-2 at a certain time limit



Starting from estimation of the panel requirement of any project, EIP is able to provide its customers with a range of engineering and technical advice services.

Some of the services that EIP can provide are:

- Panel estimation based on project drawings
- Preparation of shop drawings, including detail solutions
- Final BOQ to include panels, flashings & accessories
- Preparation of drawings to guide the installation team
- Site supervisor to guide the installation team
- Assistance in selecting an EIP certified contractor for installation of sandwich panels

* All or a combination of the above services are available upon assessing the requirement of each project.



EiP

“Engineered to last”



Quality Assurance

EIP Quality System meets the requirements of ISO 9001:2008 standard and is regularly audited by three separate bodies, namely; Det Norske Veritas, Dubai Central Laboratories and FM Approvals.

EIP is committed to providing clients with quality products and service through having the following systems in place:

- Well equipped laboratory with high technology content
- An effective Quality Management System
- Preset quality objectives and a system of continuous review
- A team of qualified and experienced personnel
- Extensive interaction program with customers
- A motivation program for the employees to achieve optimum results

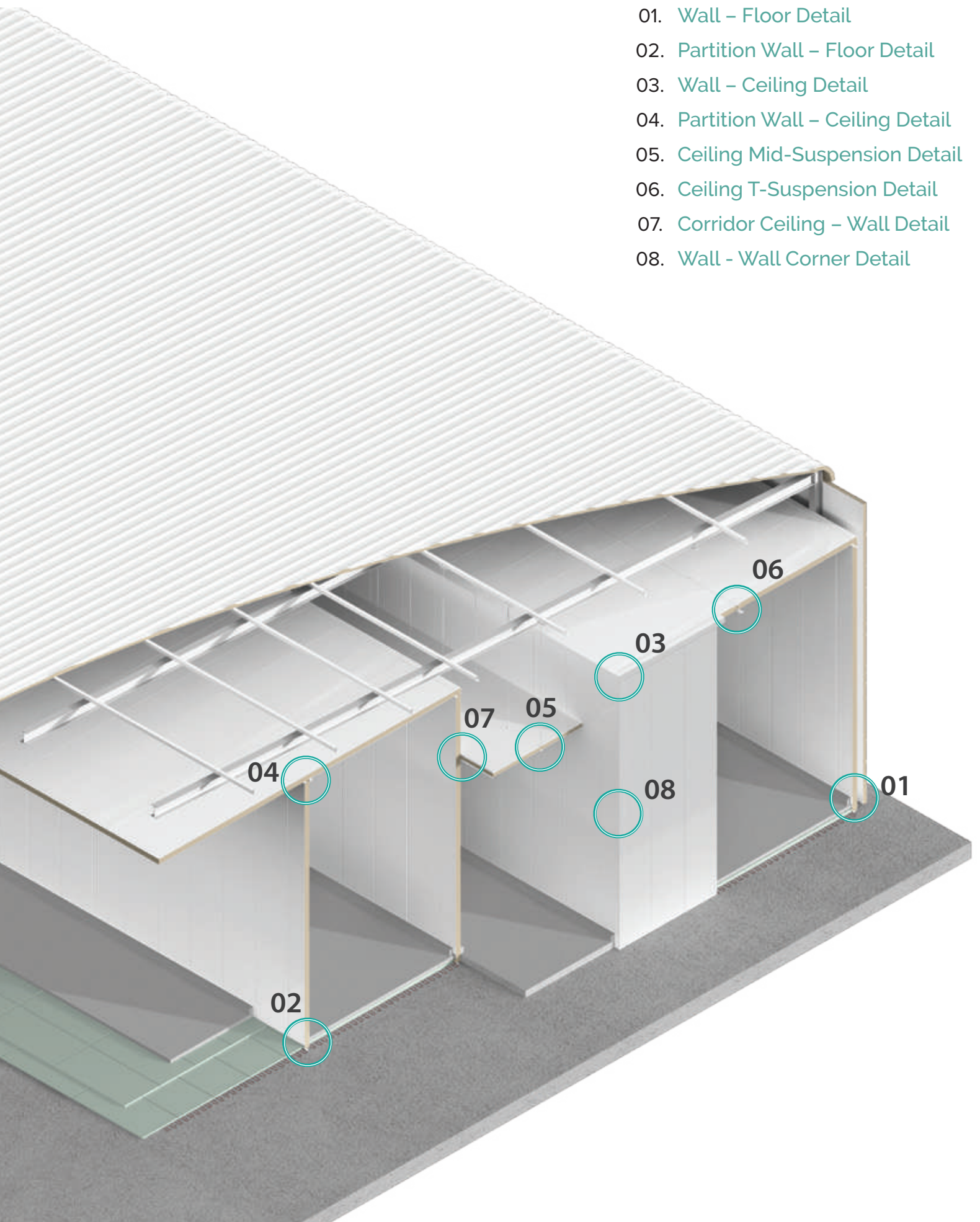


EIP quality management system stipulates numerous checks for the incoming raw materials, in-process checks during the production as well as final controls on the finished product.



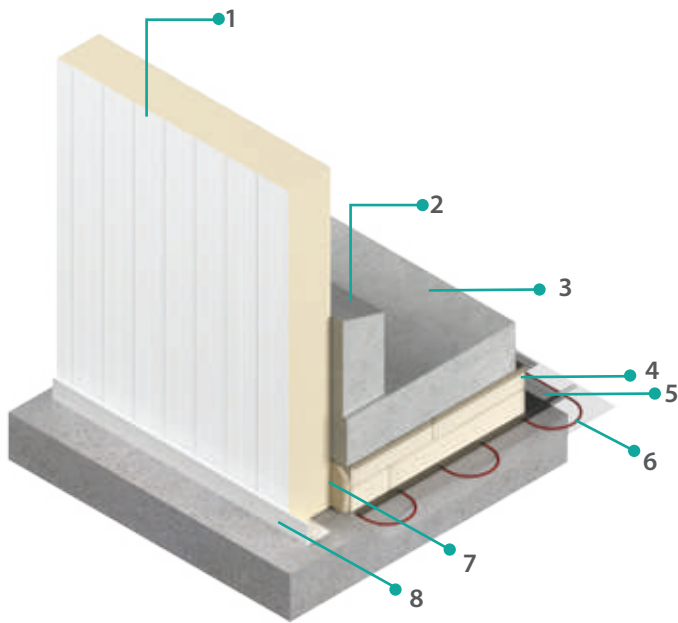
Cold Store Building Section

01. Wall – Floor Detail
02. Partition Wall – Floor Detail
03. Wall – Ceiling Detail
04. Partition Wall – Ceiling Detail
05. Ceiling Mid-Suspension Detail
06. Ceiling T-Suspension Detail
07. Corridor Ceiling – Wall Detail
08. Wall - Wall Corner Detail



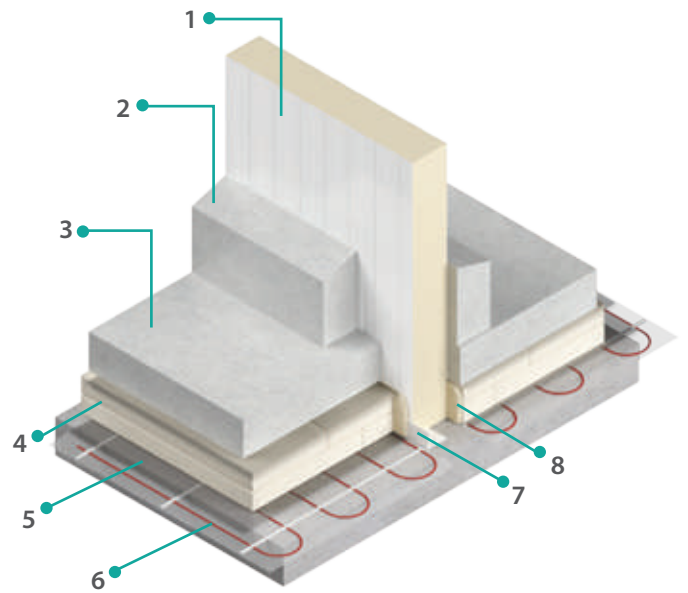
Typical Installation Details

01 Wall - Floor Detail



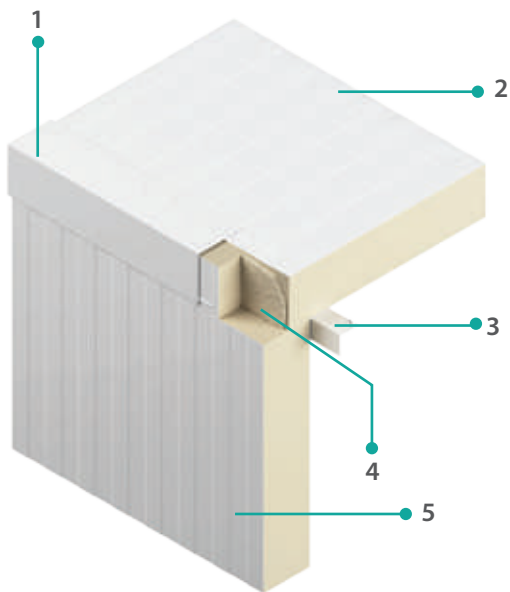
- | | |
|--------------------------------|-----------------------|
| 1 Wall Panel | 5 Vapour Barrier |
| 2 Concrete Upstand | 6 Floor Heater Cables |
| 3 Concrete Floor | 7 Spray Foam |
| 4 2 Layers of Floor Insulation | 8 Floor Angle |

02 Partition Wall - Floor Detail



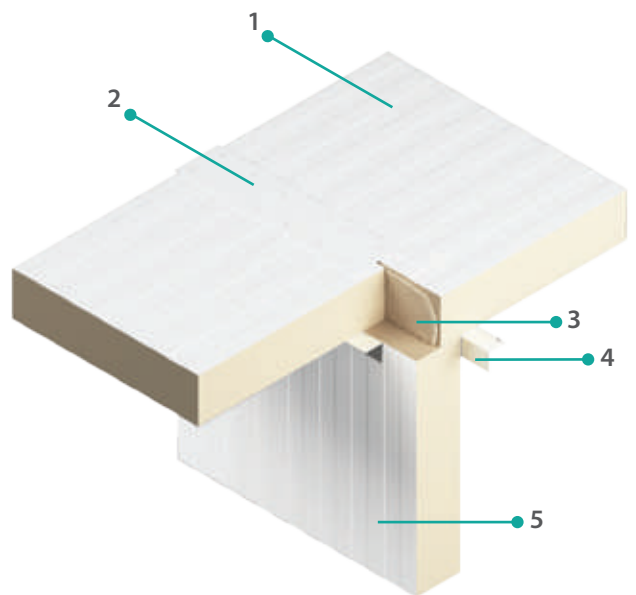
- | | |
|--------------------------------|-----------------------|
| 1 Partition Panel | 5 Vapour Barrier |
| 2 Concrete Upstand | 6 Floor Heater Cables |
| 3 Concrete Floor | 7 Floor Angle |
| 4 2 Layers of Floor Insulation | 8 Spray Foam |

03 Wall - Ceiling Detail



- | | |
|--------------------------|--------------|
| 1 Corner Flashing | 5 Wall Panel |
| 2 Ceiling Panel | |
| 3 Aluminium Corner Angle | |
| 4 Spray Foam | |

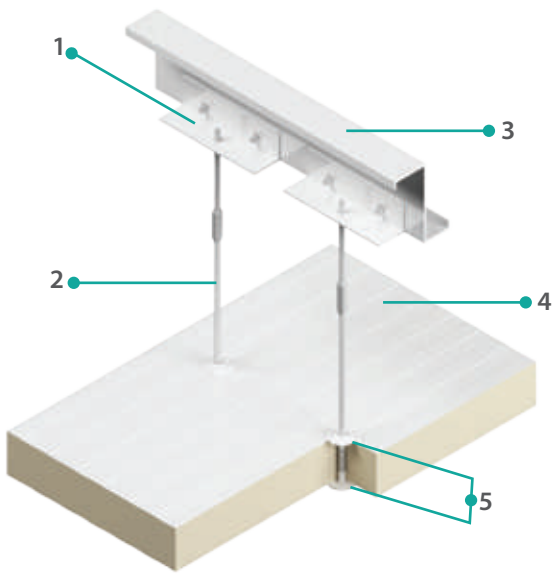
04 Partition Wall - Ceiling Detail



- | | |
|--------------------------|-------------------|
| 1 Ceiling Panel | 5 Partition Panel |
| 2 Flat Flashing | |
| 3 Spray Foam | |
| 4 Aluminium Corner Angle | |

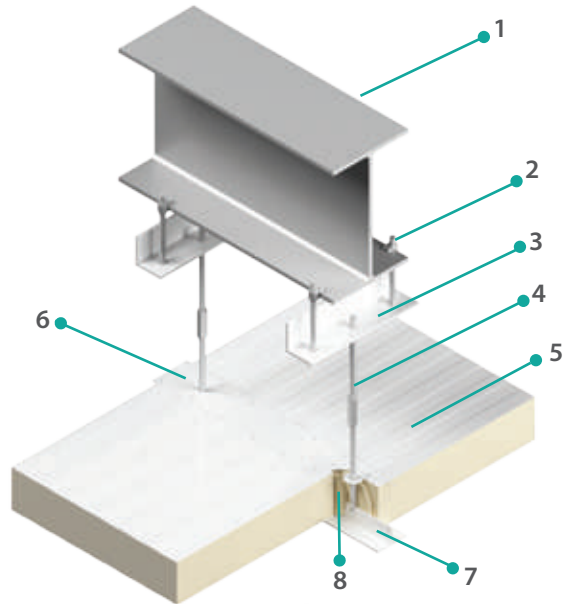
Typical Installation Details

05 Ceiling Mid - Suspension Detail



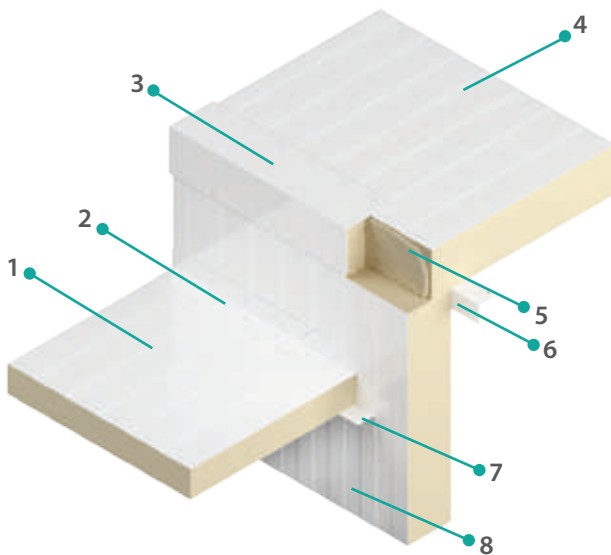
- | | |
|-----------------|----------------------|
| 1 Angle Support | 5 PVC Threaded Screw |
| 2 Threaded Rod | |
| 3 Purlin | |
| 4 Ceiling Panel | |

06 Ceiling T - Suspension Detail



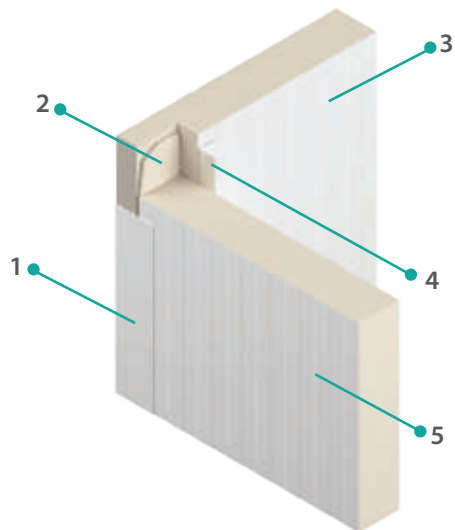
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|-----------------|--------------------------|
| 1 Rafter | 5 Ceiling Panel |
| 2 Beam Clamp | 6 Flat Flashing |
| 3 Angle Support | 7 Aluminium T-Suspension |
| 4 Threaded Rod | 8 Spray Foam |

07 Corridor Ceiling - Wall Detail



- | | |
|-------------------|--------------------------|
| 1 Ceiling Panel | 5 Spray Foam |
| 2 Corner Flashing | 6 Aluminium Corner Angle |
| 3 Corner Flashing | 7 Aluminium Corner Angle |
| 4 Ceiling Panel | 8 Wall Panel |

08 Wall - Wall Corner Detail



- | | |
|--------------------------|--------------|
| 1 Corner Flashing | 5 Wall Panel |
| 2 Spray Foam | |
| 3 Wall Panel | |
| 4 Aluminium Corner Angle | |

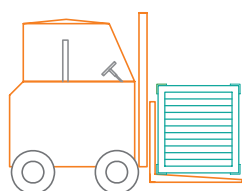
Delivery, Handling and Storage

Panels arrive at customer premises packed in "bundles". Each bundle will contain a number of panels wrapped together with transparent polyethylene film and supported at the bottom with sufficient number of polystyrene blocks. Each panel itself will have protective film on the surface to prevent scratches.

Each transport vehicle can take four rows of panels with the following panel counts in each bundle. Land and sea freight vehicle capacities differ due to dimensions of the vehicles.

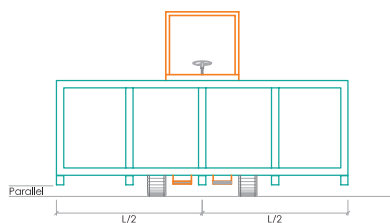
Standard Packaging

Panel Thickness (mm)	55	80	100	120	140	150	170	200
Panels per bundle (Land Freight)	21	15	12	10	8	8	7	6
Panels per bundle (Sea Freight)	19	13	10	8	7	7	6	5



Special Packaging

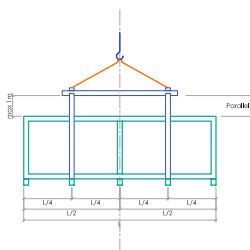
Certain destinations may require special packing. We can create reinforced packing using extra wrappings, timber elements or crates upon request. Additional charges apply.



Handling

Panel stacks are carefully loaded and strapped at factory to ensure EIP clients receive their goods in optimum condition. In order to maintain the panel quality in top condition, it is critical to pay special attention to correctly handling the panels while unloading/moving.

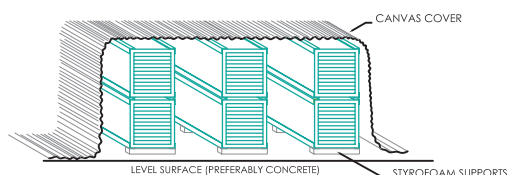
When receiving goods at the site, clients are requested to carefully inspect the panel stacks prior to unloading and to report visible damages on receipt of goods immediately.



All EIP panel bundles have "Handling, Transport and Storage Instructions" sheets on them. Please read carefully and abide by the instructions given therein.

Unloading at Site

Extreme care is advised when unloading the panels at site. A forklift or a crane equipped with a spreader beam must be used to avoid pressure on the edges of the panels which can damage the joints as well as create waviness on panel surface.



Storage

The panels should be stored in a covered area, on a clean and flat surface, with no more than two bundles on top of each other. In case no covered area is available, panels should be stored on a clean and flat surface outside, and covered with a cloth to protect from dust and rain but allow for air circulation under the cover. When stored outside, panels should be placed on a slightly inclined surface to avoid water accumulation. Panels should be kept away from sources of fire risk at all times.



Protective Film

Under normal procedure, panels must be installed soon after they are received at the site and prolonged storage times should be avoided. The surface protection film should normally be removed from the surface of panels after installation.

In case panels are not installed immediately and are kept in packed condition for extended period, the protective foil may be detrimental to the surface quality of the panels and will need to be removed. Please contact EIP for instructions if you are faced with such a situation.

Doors

Different types of doors are offered by EIP to suite a wide variety of purposes that are demanded by cold store projects.

EIP offers:

- Hinged doors
- Manual horizontal sliding doors
- Automatic horizontal sliding doors
- Automatic vertical sliding doors
- Rapid access doors for chiller & freezer applications
- Dock shelters, dock levellers and sectional doors for loading points

Doors are supplied in various thicknesses to suite the application and in off-white RAL9002 colour. Other colour options are available upon request.

Doors incorporate internal safety release for added safety as well as door and floor heating for low temperature applications.









“Today we work for a greener tomorrow”



EIP

Emirates Industrial Panel

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