PUR/PIR Sandwich Panels

Street 11, New Industrial Area, P.O. Box: 10815, Doha - Qatar
Tel: +974 44601777, Fax: +974 44603555
info@khalidsteel.com, sales@khalidsteel.com
www.khalidsteel.com
ECO FRIENDLY
Durable & Fire Stop
PUR / PIR SANDWICH PANELS
Page

Index

About Prime Insulated Panel ....................................................... 5
About Sandwich Panel ................................................................. 7
Echo Solution For Every Building ............................................... 8
Why Prime Insulated Panels? ...................................................... 10 - 13
Sandwich Panel Layers ............................................................... 14 - 17
Quality Material .......................................................................... 18
Best In Class Chemicals ............................................................... 20
Roof Panel 3 Ribs (1000PPR3) .................................................... 22
Roof Panel 4 Ribs (1000PPR4) .................................................... 23
Roof Panel 5 Ribs (1000PPR5) ................................................... 24
Wall Panel (1000PPHS) .............................................................. 25
Hidden Screw Wall Panel (1000PPHS) ....................................... 26
Hidden Screw Wall Panel Wave (1000PPHS) ............................. 27
Cold Room Panel (1000PPCS) .................................................... 29
Z & C Purlins & Accessories ....................................................... 30 - 34
Flashings & Gutter System ......................................................... 35
Accessories .................................................................................. 36 - 41
Roof Installation .......................................................................... 42
Packing & Transportation ............................................................. 43
Unloading and Lifting ................................................................. 44
Lifting Equipment ....................................................................... 45
General Recommendations ......................................................... 46
Prime Insulated Panels is one of the largest producer & supplier of Sandwich panels in Qatar. The company’s sandwich panels are exported to all Middle East & North Africa (MENA), GCC and Asian countries. Prime Insulated Panels factory is located in New Industrial Area. The company produces more than 1,500,000 square meters per year. The continuous production process on double conveyor-belt adopted by Prime Insulated Panels is considered as the most innovative process for manufacturing sandwich panels.

In addition to sandwich panels, Prime Insulated Panels also produces single skin roof and wall panels, related trims and accessories. The company also offers engineering services and turnkey solutions for the supply and installation of the roof covering and wall cladding, including the secondary members and all related accessories for new buildings as well as retrofitted buildings.

During the production of sandwich panel, no ozone depleting gases are used. Khlaid Steel uses n-Pentane as the blowing agent during production of its panels. Pentane is a Zero ODP gas with no adverse effect on the ozone layer. The hydro chlorofluorocarbon (HCFC) gases used in some older, obsolete production types have a negative effect on the ozone layer, efficiently destroying the ozone molecules in the atmosphere.

Prime Insulated Panels has become the largest panel supplier in the State of Qatar to use the environmentally friendly n-Pentane blowing agent and hence producing green panels as part of their commitment to environmental sustainability.

Prime Insulated Panel Industries is a Qatari based company, specialized in manufacturing and distributing of Sandwich Panel. Our objective is to establish long term relations and strong partnerships with the company customers, reason for which the quality of the services and the customer satisfaction are the principles that guide our daily activity.

Our products come from the newest and most modern production line for Sandwich Panels in State of Qatar. This is a 10 million USD investment, with state of the art machinery (Italian Brand) which are among the most modern sandwich panel production facilities in GCC that provides high quality to the company products. With a strategic location in the middle of the GCC, the new production line provides the best costs for the end-product, being the most logical choice.

Prime Insulated Panels Industries produces the entire range of Sandwich panels with polyurethane (PUR) & Polyisocyanurate (PIR). Moreover, it provides best fit and best researched solutions for almost any type of application, using either sandwich Panels or combined products.

We proudly carry the leadership flag of sandwich panel production in Qatar with our 60 employees and an annual total production of 3.5 million m² of sandwich panel on our production line at our facility of advanced technology.

Our products include:

- A wide range of eco-friendly products, which can be recycled for building industrial halls.
- Production centers near the market, with prompt delivery.
- Well-motivated and qualified employees who can provide specialized consultancy.
- High quality products at convenient prices.

Innovation has been a main feature of the company since its incorporation and we are currently the most modern and high-performance producer of Sandwich Panel systems in the country: PANEL MASTERS.
Together with the developing production technology and good quality materials, the sandwich panels with high bearing capacity can be manufactured. The bearing capacity depends on the form of the metal surfaces in addition to the density and thickness of the filling material of the panel, and the panels can easily carry the loads that are heavier than their own weights. With this capability, they are preferred as the coating material for the roof and walls of the buildings. In fact, it is the most ideal construction material that can be applied in all buildings with steel, wood or reinforced concrete construction.

Furthermore, by means of the purlin distances to be increased with an appropriate sandwich panel preference, it is possible to economize from both construction material and the total assembly time.

The number of the joint points will reduce in addition to the assembly workmanship of the surface being coated by using the sandwich panels, manufactured in lengths up to 12 meters, in the buildings. With the developed transportation and carriage means, the greater wall and roof surfaces can be coated in a short time, 10 min./m² assembly time for the walls and 8 min./m² assembly time for the roofs can be used as data. Whilst the sandwich panel does not restrict the volume of the structure or the height of the building, the limit values are determined according to the bearing construction.

Although the standard component and limited length opportunities of the sandwich panels, unlimited design opportunities are offered to the designers. The walls gain visual mobility by means of using variable colors or coating the panels in vertical, horizontal or angled positions. Even with the aid of the multi-purposed panels in the interior parts, the design possibilities of the designers improve. The joint details cover the points connected from panel to panel and from panel to the bearing construction. Tight joints that fulfill the insulation functions can be provided through using double lamp-bush form in the wall panels and generally using lamp-bush form in the roof panels as well as using lateral overlay. What is expected from the joint points indeed is the air-tightness, thermal insulation and easy assembly possibility. What is required with easy assembly is the full settlement of the elements to each other without difficulty. As a result of the performed searches, it has been found out that the panels have a better air-tightness capability than the most qualified windows.

**ABOUT SANDWICH PANEL**

Sandwich panels are composite materials produced of two sheet, Galvanized or Aluminum corrugated sheets filled with PIR, PUR, for thermal insulation. Used as coating materials in the roof, wall and internal partition or cold rooms of the buildings, sandwich panels provide a quite high level of thermal, water, sound insulation; prevent moisture condensation.

In addition, they are distinguished with their bearing capacity as well. Bearing capacity of the sandwich panel depends on the density, thickness of its filling material and the form of its metal surfaces. Sandwich panel is an economical solution when assessed within the context of cost-benefit analysis. Thickness of the metals and filling materials is determined in accordance with the area of usage and the amount of load they will bear.

The climate conditions of the region of usage should be taken into account while determining the thickness of the filling material. Sandwich panels set the outer shell of the buildings in an aesthetic and affordable way by providing thermal, water and sound insulation without the need for any coating such as plaster or dye. They are procured with the best prices and used in the buildings whose load-bearing system is of steel and prefabricated concrete, such as:-

- Industrial buildings.
- Military buildings.
- Social buildings.
- Agricultural buildings.
- Sports facilities.
- Construction sites.
- Silos, Hypermarkets, Shopping malls.
- Cold storage depots and market places.

The products to meet the requirements of any kind of architectural project are produced with aluminum or dyed galvanized sheet metals, in requested amounts and dimensions at Prime Insulated Panels Industries.
From factories to stadiums, from malls to swimming pools, sandwich panel is a durable and economic solution for many buildings. Along with industrial buildings and social areas, sandwich panel comes to the forefront as a product, preferred increasingly day by day with its new areas of implementation such as military buildings, agricultural buildings, prefabricate housings, worksite buildings, silos and warehouses.
Quick Installation

Contrary to the traditional systems, continuous line manufactured sandwich panels are in fully compatible and ready to assemble pieces that are prepared in the required dimensions, insulation types and colors based on the structure of your facility, with engineering and quality control processes conducted before hand at the factory. Installation of the sandwich panels is very easy with the few joints on wide surfaces. By means of advanced transport opportunities and mechanical lifting equipment, the duration of carrying and cladding is remarkably shortened. Therefore, your project is delivered in a short span of period, allowing you to save time.

Thermal Insulated

Thermal insulation means reducing the energy spent in winter for warming and in summer for cooling; and taking measures to prevent heat transmission with the objective to live in comfortable environments. Sandwich panel is a building material, which is very suitable for thermal insulation. Sandwich panel provides high thermal insulation by means of PUR and PIR insulation materials. Thermal insulation with sandwich panels prevents problems such as mold and humidity resulting from heat and condensation, and ensures your building to be robust and long lasting. Thickness of the insulation material in the sandwich panel varies according to the load bearing capacity, regional conditions, the usage purpose of the building, and the thermal insulation value.
In many types of buildings, you can save up on both building and installation time by selecting the appropriate sandwich panel. Thanks to its feature of easy mounting, you can conduct expansion and renovation works without interrupting everyday activities in the building. Moreover, the panels are both economic and practical as they can be disassembled and reused. The lightweight of sandwich panels allows you to gain advantage with regards to transport and main building costs. Also, their maintenance costs are low thanks to their durable structure. In brief, sandwich panel is both a fast and aesthetic solution and budget-friendly for its longevity.

Thanks to their perfect joint detail, Prime Insulated Panels sandwich panels prevent air and water leakage. While they ensure the continuity of thermal insulation, heat is not lost at any point of your building. Therefore, you take the heating and cooling in your building under control and ensure energy efficiency. With a watertight structure, sandwich panels ensure active hydro-insulation against natural conditions such as snow and rain, and prevent humidity and mold. As they hinder corrosion on the load-bearing structures, they provide a healthy and comfortable environment in your building. Your building becomes stronger and more durable.
If you choose a sandwich panel fit for your building in terms of fire insulation, you will be able to slow down the spreading of fire within the building and its surroundings, and to ensure the safety of life and property in the building. While choosing sandwich panels for fire insulation, you should take into consideration the factors such as fire resistance and its duration, as well as the size and height of your building, and prefer sandwich panels with PUR and PIR-cores.

Sound insulation is a must in order to minimize the harmful effects of noise on humans, to leave out the unwanted sounds, and to reduce the sound spreading around from noisy areas. PU sandwich panels used on the roof and walls increase productivity by creating healthy and comfortable spaces free from noise and prevent workplace accidents.
The outlook of your building is just like the mirror of your dreams. That is why we add new ideas to our sandwich panels every day for the aesthetic of your buildings. You can enliven the outer walls of your building and obtain an aesthetic appearance with the sandwich panels designed in different colors and in a structure that enables them to be positions horizontally, vertically or angular. Thanks to their feature to be used in the internal sections as well, you can create different designs with the sandwich panels.
Ensuring thermal insulation, sound insulation and waterproofing, as well as fire and load resistance for your buildings, sandwich panels are produced in 3 layers. Inner Sheet, Insulation Core, Outer Sheet.

**Sandwich Panel Layers**

- Insulated
- Prepainte
- Galvanized Steel
- Aluminium
Polyurethane Polyisocyanurate
Prepainted Galavanized Steel
Aluminium
Polyurethane (PUR)
Polyisocyanurate (PIR)
Ensuring thermal insulation, acoustic insulation and waterproofing, as well as fire and load resistance for your buildings, sandwich panels are produced in 3 layers. Inner Sheet, Insulation Core, Outer Sheet.

**Insulated Sandwich Panel Layers**

FSK (Foil Scrim Kraft)
QUALITY RAW MATERIAL
Around The World
We have a bunch of suppliers from around the world who provide best in quality, such as from Europe, India, China.

- RAL 1014 (Ivory)
- RAL 9002 (Off White)
- RAL 5012 (Light Blue)
- RAL 9003 (White)
- RAL 1001 (Beige)
- RAL 3002 (Red)
- RAL 9003 (Signal White)
- RAL 6021 (Pale Green)
Best In Class Chemicals
We import top quality chemicals and raw materials in order to provide best quality sandwich panels.
Polyurethane Density (EN 1602) | 40 (±2) kg/m³
---|---
Polyurethane Thickness | 30-40-50-60-75-100 mm
Heat Resistance | -200 /+110 °C
Thermal Conductivity (EN 13165) | 0.022-0.024 W/mK
Vapor Diffusion Resistance (EN 12086) | 30-100
Closed cell rate (EN 14509) | 95%
Water Absorption (EN ISO 354) | 2% by volume (168 hrs)
Reaction to Fire (EN 13501) | PUR: B, S2, d0 / PIR: B, S1, d0
Dimensional Stability (EN 13165) | Level DS (TH) 11

Roof Panel 3 Rib (1000PPR3)

Thickness are available as per the requirement

<table>
<thead>
<tr>
<th>Product</th>
<th>Sandwich Panel PU</th>
<th>Sandwich Panel PIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulation core</td>
<td>Polyurethane (PUR)</td>
<td>Polyisocyanurate (PIR)</td>
</tr>
<tr>
<td>Core Thickness (mm)</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td>Density</td>
<td>38-40 kg/m³ (Standard)</td>
<td>40-42 kg/m³ (Standard)</td>
</tr>
<tr>
<td>Fire Class</td>
<td>(B.s2.d0 EN 13501-1)</td>
<td>(B.s1.d0 EN 13501-1)</td>
</tr>
<tr>
<td>U Value (W/m²K)</td>
<td>0.33</td>
<td>0.43</td>
</tr>
<tr>
<td>R Value (h-ft²·°F/Btu)</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>External Sheet</td>
<td>Preprinted Galvanized Steel/Aluminum</td>
<td></td>
</tr>
<tr>
<td>Internal Sheet</td>
<td>Preprinted Galvanized Steel/Aluminum/Paper craft aluminum foil</td>
<td></td>
</tr>
</tbody>
</table>
**Roof Panel 4 Rib (1000PPR4)**

Thickness are available as per the requirement

<table>
<thead>
<tr>
<th>Product</th>
<th>Sandwich Panel PU</th>
<th>Sandwich Panel PIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulation core</td>
<td>Polyurethane (PUR)</td>
<td>Polyisocyanurate (PIR)</td>
</tr>
<tr>
<td>Core Thickness (mm)</td>
<td>30  40  50  75  100</td>
<td>30  40  50  75  100</td>
</tr>
<tr>
<td>Density</td>
<td>38-40kg/m³ (Standard)</td>
<td>40-42kg/m³ (Standard)</td>
</tr>
<tr>
<td>Fire Class</td>
<td>(B.s2.d0 EN 13501-1)</td>
<td>(B.s1.d0 EN 13501-1)</td>
</tr>
<tr>
<td>U Value (W/m²K)</td>
<td>0.53  0.43  0.31  0.22</td>
<td>0.53  0.43  0.31  0.22</td>
</tr>
<tr>
<td>R Value (h-ft²°F/Btu)</td>
<td>11  13  18  26</td>
<td>11  13  18  26</td>
</tr>
<tr>
<td>External Sheet</td>
<td>Prepainted Galvanized Steel/Aluminum</td>
<td></td>
</tr>
<tr>
<td>Internal Sheet</td>
<td>Prepainted Galvanized Steel/Aluminum/Paper craft aluminum foil</td>
<td></td>
</tr>
</tbody>
</table>

- Polyurethane Density (EN 1602): PUR: 39 (±2) kg/m³ / PIR: 41 (±2) kg/m³
- Polyurethane Thickness: 30-50-75-100 mm
- Heat Resistance: -200 /±110 °C
- Thermal Conductivity (EN 13165): 0.022-0.024 W/mK
- Vapor Diffusion Resistance (EN 12086): 30-100
- Closed cell rate (EN 14509): 95%
- Water Absorption (EN ISO 354): 2% by volume (168 hrs)
- Reaction to Fire (EN 13501): PUR: B. S2 . d0 / PIR: B. S1 . d0
- Dimensional Stability (EN 13165): Level DS (TH) 11

![Roof Panel 4 Rib (1000PPR4)](image)
## Product: Roof Panel 5 Rib (1000PPR5)

**Thickness are available as per the requirement**

<table>
<thead>
<tr>
<th>Product</th>
<th>Sandwich Panel PU</th>
<th>Sandwich Panel PIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulation core</td>
<td>Polyurethane (PUR)</td>
<td>Polyisocyanurate (PIR)</td>
</tr>
<tr>
<td>Core Thickness (mm)</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td>Density</td>
<td>38-40kg/m³ (Standard)</td>
<td>40-42kg/m³ (Standard)</td>
</tr>
<tr>
<td>Fire Class</td>
<td>(B.s2.d0 EN 13501-1)</td>
<td>(B.s1.d0 EN 13501-1)</td>
</tr>
<tr>
<td>U Value (W/m²K)</td>
<td>0.33</td>
<td>0.43</td>
</tr>
<tr>
<td>R Value (h-ft²·°F/Btu)</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>External Sheet</td>
<td>Prepainted Galvanized Steel/Aluminum</td>
<td></td>
</tr>
<tr>
<td>Internal Sheet</td>
<td>Prepainted Galvanized Steel/Aluminum/Paper craft aluminum foil</td>
<td></td>
</tr>
</tbody>
</table>

### Polyurethane Density (EN 1602)
- PUR: 39 (±2) kg/m³
- PIR: 41 (±2) kg/m³

### Polyurethane Thickness
- 30-40, 50-60, 75-100 mm

### Heat Resistance
- -200 /+110 °C

### Thermal Conductivity (EN 13165)
- 0.022-0.024 W/mK

### Vapor Diffusion Resistance (EN 12086)
- 30-100

### Closed cell rate (EN 14509)
- 95%

### Water Absorption (EN ISO 354)
- 2% by volume (168 hrs)

### Reaction to Fire (EN 13501)
- PUR: B. S2 . d0 / PIR: B. S1 . d0

### Dimensional Stability (EN 13165)
- Level DS (TH) 11
### Wall Panel (1000PPHS)

**Polyurethane Density (EN 1602)**
- PUR: 39 (±2) kg/m³ / PIR: 41 (±2) kg/m³

**Polyurethane Thickness**
- 40-50-75-100 mm

**Heat Resistance**
- 40-50-75-100 mm

**Heat Resistance**
- -200 /±110 °C

**Thermal Conductivity (EN 13165)**
- 0.022-0.024 W/mK

**Vapor Diffusion Resistance (EN 12086)**
- 30-100

**Closed cell rate (EN 14509)**
- 95%

**Water Absorption (EN ISO 354)**
- 2% by volume (168 hrs)

**Reaction to Fire (EN 13501)**
- PUR: B. S2 . d0 / PIR: B. S1 . d0

**Dimensional Stability (EN 13165)**
- Level DS (TH) 11

### Product Specifications

<table>
<thead>
<tr>
<th>Product</th>
<th>Sandwich Panel PU</th>
<th>Sandwich Panel PIR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Insulation core</strong></td>
<td>Polyurethane (PUR)</td>
<td>Polysisocyanurate (PIR)</td>
</tr>
<tr>
<td><strong>Core Thickness (mm)</strong></td>
<td>50</td>
<td>75</td>
</tr>
<tr>
<td><strong>Density</strong></td>
<td>38-40kg/m³ (Standard)</td>
<td>40-42kg/m³ (Standard)</td>
</tr>
<tr>
<td><strong>Fire Class</strong></td>
<td>(B.s2.d0 EN 13501-1)</td>
<td>(B.s1.d0 EN 13501-1)</td>
</tr>
<tr>
<td><strong>U Value (W/m²K)</strong></td>
<td>0.43</td>
<td>0.31</td>
</tr>
<tr>
<td><strong>R Value (h·F²/F/Btu)</strong></td>
<td>13</td>
<td>18</td>
</tr>
<tr>
<td><strong>External Sheet</strong></td>
<td>Prepainted Galvanized Steel/Aluminum</td>
<td></td>
</tr>
<tr>
<td><strong>Internal Sheet</strong></td>
<td>Prepainted Galvanized Steel/Aluminum</td>
<td></td>
</tr>
</tbody>
</table>

Thickness are available as per the requirement.
### Polyurethane Density (EN 1602)
- PUR: 39 (±2) kg/m³ / PIR: 41 (±2) kg/m³

### Polyurethane Thickness
- 40-50-75-100 mm

### Heat Resistance
- -200 /+110 °C

### Thermal Conductivity (EN 13165)
- 0.022-0.024 W/mK

### Vapor Diffusion Resistance (EN 12086)
- 30-100

### Closed cell rate (EN 14509)
- 95%

### Water Absorption (EN ISO 354)
- 2% by volume (168 hrs)

### Reaction to Fire (EN 13501)
- PUR: B. S2 . d0 / PIR: B. S1 . d0

### Dimensional Stability (EN 13165)
- Level DS (TH) 11

### Sandwich Panel PU

<table>
<thead>
<tr>
<th>Core Thickness (mm)</th>
<th>Density (kg/m³)</th>
<th>Fire Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>38-40</td>
<td>(B.s2.d0 EN 13501-1)</td>
</tr>
<tr>
<td>75</td>
<td>0.43</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>0.31</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>0.22</td>
<td></td>
</tr>
</tbody>
</table>

### Sandwich Panel PIR

<table>
<thead>
<tr>
<th>Core Thickness (mm)</th>
<th>Density (kg/m³)</th>
<th>Fire Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>40-42</td>
<td>(B.s1.d0 EN 13501-1)</td>
</tr>
<tr>
<td>75</td>
<td>0.43</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>0.31</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>0.22</td>
<td></td>
</tr>
</tbody>
</table>

### Hidden Screw Wall Panel (1000PPHS)

### Product

<table>
<thead>
<tr>
<th>Product</th>
<th>Sandwich Panel PU</th>
<th>Sandwich Panel PIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulation core</td>
<td>Polyurethane (PUR)</td>
<td>Polysocyanurate (PIR)</td>
</tr>
<tr>
<td>Core Thickness (mm)</td>
<td>50 75 100</td>
<td>50 75 100</td>
</tr>
<tr>
<td>Density</td>
<td>38-40kg/m³ (Standard)</td>
<td>40-42kg/m³ (Standard)</td>
</tr>
<tr>
<td>Fire Class</td>
<td>(B.s2.d0 EN 13501-1)</td>
<td>(B.s1.d0 EN 13501-1)</td>
</tr>
<tr>
<td>U Value (W/m²K)</td>
<td>0.43 0.31 0.22</td>
<td>0.43 0.31 0.22</td>
</tr>
<tr>
<td>R Value (h-ft²·°F/Btu)</td>
<td>13 18 26</td>
<td>13 18 26</td>
</tr>
<tr>
<td>External Sheet</td>
<td>Prepainted Galvanized Steel/Aluminum</td>
<td></td>
</tr>
<tr>
<td>Internal Sheet</td>
<td>Prepainted Galvanized Steel/Aluminum</td>
<td></td>
</tr>
</tbody>
</table>

Thickness are available as per the requirement.
**Polyurethane Density (EN 1602)**

**Polyurethane / T_hickness**

- 40-50-75-100 mm

**Heat Resistance**

- -200 /+110 ºC

**Thermal Conductivity (EN 13165)**

- 0.022-0.024 W/mK

**Vapor Diffusion Resistance (EN 12086)**

- 30-100

**Closed cell rate (EN 14509)**

- 95%

**Water Absorption (EN ISO 354)**

- 2% by volume (168 hrs)

**Reaction to Fire (EN 13501)**

- PUR: B. S2 . d0 / PIR: B. S1 . d0

**Dimensional Stability (EN 13165)**

- Level DS (TH) 11

---

<table>
<thead>
<tr>
<th>Product</th>
<th>Sandwich Panel PU</th>
<th>Sandwich Panel PIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulation core</td>
<td>Polyurethane (PUR)</td>
<td>Polysisocyanurate (PIR)</td>
</tr>
<tr>
<td>Core Thickness (mm)</td>
<td>50 75 100</td>
<td>50 75 100</td>
</tr>
<tr>
<td>Density</td>
<td>38-40kg/m³ (Standard)</td>
<td>40-42kg/m³ (Standard)</td>
</tr>
<tr>
<td>Fire Class</td>
<td>(B.s2.d0 EN 13501-1)</td>
<td>(B.s1.d0 EN 13501-1)</td>
</tr>
<tr>
<td>U Value (W/m²K)</td>
<td>0.43 0.31 0.22</td>
<td>0.43 0.31 0.22</td>
</tr>
<tr>
<td>R Value (h·ft²·°F/Btu)</td>
<td>13 18 26</td>
<td>13 18 26</td>
</tr>
<tr>
<td>External Sheet</td>
<td>Prepainted Galvanized Steel/Aluminum</td>
<td></td>
</tr>
<tr>
<td>Internal Sheet</td>
<td>Prepainted Galvanized Steel/Aluminum</td>
<td></td>
</tr>
</tbody>
</table>

Thickness are available as per the requirement
Cold Room Panel (1000PPCS)

Thickness are available as per the requirement

<table>
<thead>
<tr>
<th>Product</th>
<th>Sandwich Panel PU</th>
<th>Sandwich Panel PIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulation core</td>
<td>Polyurethane (PUR)</td>
<td>Polysocyanurate (PIR)</td>
</tr>
<tr>
<td>Core Thickness (mm)</td>
<td>75 100 150</td>
<td>75 100 150</td>
</tr>
<tr>
<td>Density</td>
<td>38-40kg/m³ (Standard)</td>
<td>40-42kg/m³ (Standard)</td>
</tr>
<tr>
<td>Fire Class</td>
<td>(B.s2.d0 EN 13501-1)</td>
<td>(B.s1.d0 EN 13501-1)</td>
</tr>
<tr>
<td>U Value (W/m²K)</td>
<td>0.31 0.22 0.15</td>
<td>0.31 0.22 0.15</td>
</tr>
<tr>
<td>R Value (hr·°F/Btu)</td>
<td>13 18 38</td>
<td>13 18 38</td>
</tr>
<tr>
<td>External Sheet</td>
<td>Prepainted Galvanized Steel/Aluminum</td>
<td></td>
</tr>
<tr>
<td>Internal Sheet</td>
<td>Prepainted Galvanized Steel/Aluminum</td>
<td></td>
</tr>
</tbody>
</table>
Prime Insulated Panels manufacture a complete range of structural C and Z section purlins and girts for a wide range of applications. Made from quality, high tensile galvanized steel, Prime Insulated Panels purlins and girts can be supplied plain or punched.
PURLINS

General Data
The "Z"- and "C"-shaped sections of Prime Insulated Panels are accurately roll-formed via cold forming from high-strength zinc-alloy coated steel in order to provide an efficient, lightweight and cost efficient roofing, cladding and walling support system, for framed structures. (Purling and girt system)

Applications
The Prime Insulated Panels "Z" shaped section may be used over single spans, un-lapped continuous spans and lapped continuous spans in multi-bay buildings. Lapped spans result in a considerable load bearing capacity increase in the system. The Prime Insulated Panels "C" shaped section may be used over single spans and un-lapped continuous spans in multi-bay buildings. They are ideal as eave purlins or where compact sections are required. The "C" shaped section cannot be used in overlapping structures.

Range of products and services
- The full range of "Z" and "C"-shaped profiles.
- Technical information for cleat less connections.
- Bolting systems to suit all project requirements.
- Corrosion protection warranty.
- Technical advice on improving the life expectancy of purling systems in corrosive environments.
- Access to a network of experienced engineers.

Material specifications - standards
The "Z" and "C" shaped section structural elements are manufactured through cold forming procedure from zinc-alloy coated steel Zinc-hi-ten® which minimum yield stress is by 60% higher than the respective profiles formed through hot forming. This means that we can use sections of minimum thickness and weight, resulting in reduction of the time and the cost of the construction. They are classified as "thin gauge member" profiles and the study as well as the analysis concerning their application is conducted according to the provisions of the European standard EN 1993-1-3.

Steel Quality: G450 (according to AS 1397-93) or S450GD (according to EN 10147-2000) with guaranteed minimum yield stress of 450 N/mm².

Base Metal Thickness (BMT) 1.5mm - 2.0mm - 2.5mm - 3.0mm
Steel Quality: G450 (according to AS 1397-93) or S450GD (according to EN 10147-2000) with guaranteed minimum yield stress of 450 N/mm².

Corrosion protection
In standard production the material used is hot-dipped galvanized, type Z275, zinc-alloy coated (with a minimum coating density of 275 gr./m² ) steel (according to AS 1937-93 & EN 10147-100). Upon request, purlins can also be manufactured from hot dipped galvanized, type Z350, zinc-alloy coated (with a minimum coating density of 350 gr/m² ) steel, for applications in aggressive and severely corrosive environments.

Dimensions
The Prime Insulated Panels "Z" and "C" shaped section are produced in standard dimension and length upon request from 2.000mm to 12.000mm according to the engineering design data. Are produced according to the desired hole punching with the following restriction:
- Minimum distance from the end section 35mm.
- Minimum centre holes distance in perpendicular axe 65mm.

"Z"-shaped profiles
The "Z" shaped sections structural elements of Prime Insulated Panels feature two flanges of different width so that two elements with the same static height can overlap, fitting perfectly to each other. In this way, we achieve to bridge multiple spans with continuous purlins. This purlin fixing method is called continuous and provides the advantage of practically doubling the purlin thickness at its fixing points, where bending moments and shear forces have maximum values, thus improving the load bearing capacity as well as the rigidity of the system. The structural elements of "Z" profiles with the same static height but different thickness can be overlapped in any combination.

Other fixing methods:
- Sleeve system
- Freely supported continuous fixing

"C" shaped sections
The "C" shaped sections structural elements of Prime Insulated Panels feature two equally sized flanges and are ideal for use as purlins, girths as well as door and window frames. They cannot be overlapped and they are only installed freely supported over single spans or continuous spans with the ends butted.
C Purlin

C Purling are horizontal structures that are used to support the load from the roof deck or the sheathing. The plane surface of this purling on one side has made it a preferred material for cladding due to its easy installation on concrete structures or steel. Our range purling are light in weight and perfect for simple span construction.

### SPECIFICATION

<table>
<thead>
<tr>
<th>Web</th>
<th>Flange</th>
<th>Lip</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>50</td>
<td>20</td>
<td>1.5 to 2mm</td>
</tr>
<tr>
<td>140</td>
<td>70</td>
<td>20</td>
<td>1.5 to 2mm</td>
</tr>
<tr>
<td>180</td>
<td>70</td>
<td>20</td>
<td>1.5mm/2mm/2.5mm</td>
</tr>
<tr>
<td>210</td>
<td>80</td>
<td>20</td>
<td>1.6 to 3mm</td>
</tr>
<tr>
<td>250</td>
<td>80</td>
<td>20</td>
<td>1.6 to 3mm</td>
</tr>
<tr>
<td>300</td>
<td>80</td>
<td>20</td>
<td>1.6 to 3mm</td>
</tr>
</tbody>
</table>

Z Purlin

Z Purlin are made using cold-formed or rolled sheets for supporting roof. The flexible shape of these beams facilitates various designs solutions. These purling are extensively used in huge roofing solutions such as godowns, workshops, industrials sheds and many more. The range is known for saving up to 50% on structural sheet in comparison with hot rolled angles. Our purling are crisp and clean in design and do not allow the scope of inaccurate lengths.

### SPECIFICATION

<table>
<thead>
<tr>
<th>Web</th>
<th>Flange</th>
<th>Lip</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>50</td>
<td>54</td>
<td>1.5 to 2mm</td>
</tr>
<tr>
<td>140</td>
<td>70</td>
<td>60</td>
<td>1.5 to 2mm</td>
</tr>
<tr>
<td>180</td>
<td>70</td>
<td>60</td>
<td>1.5mm/2mm/2.5mm</td>
</tr>
<tr>
<td>210</td>
<td>80</td>
<td>70</td>
<td>1.6 to 3mm</td>
</tr>
<tr>
<td>250</td>
<td>80</td>
<td>70</td>
<td>1.6 to 3mm</td>
</tr>
<tr>
<td>300</td>
<td>80</td>
<td>70</td>
<td>1.6 to 3mm</td>
</tr>
</tbody>
</table>
**Z & C Purlins Rail Cleats data sheet**

Purlins, Both C and Z, are available in various sizes rolled. They can be ordered plain or with Holes pre-punched, as per standard end punching or punched to any layout required. The standard maximum length for delivery of purlins is 12 meters. Lengths that are greater than 12 meters long are obtainable. However they then require special delivery vehicles, pre-arranged delivery times and on-site handling capabilities.

C PURLINS: Sections have flanges which are equal in size and are commonly used for simple supported spans. C sections are not lapped together, for continuous spans they are end butted.

Z PURLINS: Sections are made with one flange broader than the other. When one purlin is rotated 1800 two sections can be bolted together enabling them to be lapped. Lapping the purlins over interior supports improves the load capacity and rigidity of the purlins. Z sections purlins can also be used, like C sections, in the application of simple spans.

Standard Purlin/Rail Cleats
All holes 14 mm for 12 mm bolts.
Standard cleats are normally supplied back bare metal suitable for welding to rafters. By arrangement cleats can be supplied with additional holes in the base leg of angle cleats for bolting to rafters on site and supplied with a finish hot dipped galvanized/or painted with standard primer.

![Diagram of cleat with additional holes for bolting to rafters](image)

### Z & C Fastners data sheet

**SET SCREWS - ZINC PLATED CLASS 8.8 METRIC FINE**

<table>
<thead>
<tr>
<th>Name</th>
<th>ASTM F593 bolt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>M4-M100 1/4 - 4&quot; or non-standard (as request &amp; design)</td>
</tr>
<tr>
<td>Finish</td>
<td>Plain, Zinc Plated, Black Oxide, Hot Dip Galv.et</td>
</tr>
<tr>
<td>Head Type</td>
<td>Hex head</td>
</tr>
<tr>
<td>Material</td>
<td>Carbon steel, stainless steel, alloys steel etc.</td>
</tr>
<tr>
<td>Grade</td>
<td>a2,a4,4.8,8.8,10.9,12.9, A2 -70, A4 -80 etc.</td>
</tr>
<tr>
<td>Standard</td>
<td>GB, DIN, ISO, ANSI/ASTM, BS, BSW, JIS etc.</td>
</tr>
<tr>
<td>Non-Standards</td>
<td>OEM is available according to drawing or samples</td>
</tr>
</tbody>
</table>

#### SIZE

<table>
<thead>
<tr>
<th>SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>M12 X 35</td>
</tr>
<tr>
<td>M12 X 40</td>
</tr>
<tr>
<td>M12 X 45</td>
</tr>
<tr>
<td>M12 X 50</td>
</tr>
<tr>
<td>M12 X 60</td>
</tr>
<tr>
<td>M12 X 90</td>
</tr>
<tr>
<td>M12 X 100</td>
</tr>
</tbody>
</table>
FLASHINGS & GUTTER SYSTEM

Flashings are made using cold-formed or rolled sheets for supporting roof. The flexible shape of these beams facilitates various designs solutions. These purling are extensively used in huge roofing solutions such as godowns, workshops, industrials sheds and many more. The range is known for saving up to 50% on structural sheet in comparison with hot rolled angles. Our purling are crisp and clean in design and do not allow the scope of inaccurate lengths.

Panel joint, bare section without filling 300 mm with compriband sealing tape.

A ridge capping (NP170) is mounted on a seal profile. A fill-in insulation strip between the two panels and an interior ridge plate (NP1200) under the panels.

Behind the KFK fascia bracket are a front flashing (SFB) and a z-shaped eaves profile (STFP), and a sill flashing (SUBL) up against the wall panel on the outside.

From left to right: gable flashing (SGB) as bargeboard with angled gable flashing (SVG) underneath, and at the point where the wall and roof panels meet sill flashing (SUBG) mounted externally and sill flashing (TFB) mounted internally.

Corner flashing (SHBY) and a gable

Wall panels mounted on steel framework with compriband sealing tape. A fill-in insulation strip between the panels and sealing tape on the outside. A pilaster (SPL) is mounted on the panels with compriband sealing.

Below: an exterior base cover flashing (SUSB). A 10 mm thick seal in the sill runner (S20) with a 10 mm sill seal underneath. On the inside an interior base cover flashing (SISB).
Prime Insulated Panel

Accessories

NP170  Ridge capping

NP1200  Interior ridge plate

Eaves profile
(1.2 mm galv)

Front flashing

Corner flashing
Prime Insulated Panel

Accessories

Sill flashing long side

Gable flashing

Angled gable flashing

Base cover flashing interior

Sill flashing interior
Prime Insulated Panel
Accessories

Pilaster

Base cover flashing exterior

Case flashing

Drip flashing

Sill ledge
### Gutter Details

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thickness</td>
<td>Gauge 22</td>
</tr>
<tr>
<td>Length</td>
<td>1000 mm</td>
</tr>
<tr>
<td>Flashing manufactured from same material of roof and wall panels</td>
<td></td>
</tr>
</tbody>
</table>

### Mechanical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile Strength</td>
<td>80 Mpa</td>
</tr>
<tr>
<td>Flexural Strength</td>
<td>120 Mpa</td>
</tr>
<tr>
<td>Impact Strength (Izod notched)</td>
<td>45 KJ/m²</td>
</tr>
<tr>
<td>Tensile Modulus</td>
<td>8000 Mpa</td>
</tr>
<tr>
<td>Flexural Modulus</td>
<td>7000 Mpa</td>
</tr>
<tr>
<td>Hardness (Barcol 934 - 1)</td>
<td>40-45</td>
</tr>
<tr>
<td>Tensile Elongation</td>
<td>1.8%</td>
</tr>
</tbody>
</table>

### Thermal Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-efficient of Linear Expansion</td>
<td>26 x 10⁻⁶ / °C</td>
</tr>
<tr>
<td>Thermal Co-efficient (k)</td>
<td>0.2 W/ mk</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>Up to 80°C</td>
</tr>
</tbody>
</table>

### Physical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Absorption (7 Days)</td>
<td>31 mg.</td>
</tr>
<tr>
<td>(BS 2782, Part 4: Method 430 A-83)</td>
<td></td>
</tr>
<tr>
<td>Dimensional tolerance</td>
<td>120 Mpa</td>
</tr>
<tr>
<td>Internal Finish</td>
<td>Plain semi gloss UV resistant gelcoat finish to grey/ white colour</td>
</tr>
<tr>
<td>External Finish</td>
<td>Resonably smooth flow coat finish</td>
</tr>
</tbody>
</table>
FASTENERS

PRIMARY FASTENERS

These fasteners are designed to transfer all loads on the cladding system back to the supporting structure so their strength is particularly important. If the fasteners are exposed they must also provide a weather tight seal. They are normally used in the valley of the profile. If crown fixing is recommended by the manufacturers, saddle washers are usually required.

<table>
<thead>
<tr>
<th>TYPE</th>
<th>APPLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self- Drilling &amp; Tapping</td>
<td>Mini-zed to purlin through ferrule</td>
</tr>
<tr>
<td>Self- Drilling &amp; Tapping</td>
<td>Bracket to purlin</td>
</tr>
<tr>
<td>Self- Drilling &amp; Tapping</td>
<td>Outer sheet to spacer</td>
</tr>
<tr>
<td>Self- Drilling &amp; Tapping</td>
<td>Composite and site-assembled composite</td>
</tr>
<tr>
<td>Self- Drilling Stitcher Screws</td>
<td></td>
</tr>
<tr>
<td>Self- Drilling &amp; Tapping</td>
<td></td>
</tr>
</tbody>
</table>
SECONDARY FASTENERS

These fasteners are used to connect side laps, flashings etc. and they are not normally considered as structural. However, where the fasteners are providing lateral restraint or in a stressed skin design, their strength would have to be considered in the structural calculations.

<table>
<thead>
<tr>
<th>TYPE</th>
<th>APPLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Tapping</td>
<td>Metal sheet to hot rolled steel</td>
</tr>
<tr>
<td>Self-Tapping</td>
<td>Metal sheet to timber</td>
</tr>
</tbody>
</table>

METAL CAP

STOM WASHER + SEALING WASHER APPLICATION

INSTRUCTION FOR CORRECT TIGHTENING

LOOSE  CORRECT  OVER-TIGHTENED
In addition to primary fixing (securing panels on structure), secondary fixing elements should also be applied along panels’ joint, in order to improve joint tightness, and ensure a uniform effect of panels. Such fixing elements (e.g. 6.3x25mm plus saddle cap), are placed on joint rib, between supporting purlins, and at maximum distance 1200mm.
1. PACKING

Panels are delivered in packages, each of them consisting of a certain number of piled-up panels. The number of panels per package is defined taking into consideration:

- Panel’s type
- Panel’s thickness
- Panels’ length
- Type of transportation means
- Optimization of loading plan

Each package is supported by polystyrene spacers thickness 70mm, along package’s length, every 900/1000mm. Packages are wrapped – together with the polystyrene spacers – with several layers of polyethylene film, and are labeled with the necessary information (package identification number, packing list, handling instructions, etc.).

2. TRANSPORTATION

Loading and off-loading packs by crane or fork-lift should be carried out with care to avoid damage to the outermost sheets or panels in the pack. Never off-load with chains, use only wide soft slings for lifting. Use lifting beams, if recommended by the manufacturer. Loading and off-loading packs by crane or fork-lift should be carried out with care to avoid damage to the outermost sheets or panels in the pack. Some sheets and panels are supplied with a protective plastic film on the weather face to help prevent minor damage to the coating. This must be removed as soon as possible after the cladding has been installed because if it is left in place for long periods the film will become very difficult to remove.

3. HANDLING

Panels’ packages handling (unloading and movement) and storage at project site is a delicate phase during which panels might get damaged. For this reason, the following instructions should be thoroughly observed:

**UNLOADING WITH FORKLIFT**

- Recommended only for short (<6.00m) and light packages, and only in case of leveled and smooth terrain.
- Forks should be longer than packages width.
- Forks should be spread apart as much as possible.
- Forks’ upper surface should be clean and smooth, in order to avoid damages on panels’ surface.
- Never unload more than one package at a time.
**Prime Insulated Panel**

**Unloading and Lifting**

**UNLOADING WITH CRANE**

- Lift the packages with at least 2 nylon straps/belts.
- Make sure straps are not twisted.
- Make sure straps remain at their position (one apart from the other) by using a spreading truss of adequate length.
- Protect panels’ edges (tongue and groove joint configuration) from getting damaged by the straps, by placing wooden planks between package and straps, both at bottom and top of the package. Wooden planks should be of adequate strength, width minimum 200mm, and longer than packages’ width by approx. 2cm.
- Never unload more than one package at a time.

**LIFTING**

The manual handling of the single element must be made by at least two persons, and held on their side as illustrated. The handling must be done by using appropriate protective equipments (gloves, safety shoes, coveralls, etc), in conformity with the applicable standard. The manual handling of the single element must be done by elevating the element without slithering it on the lower one and turning it sideways beside the panel. Handling equipments, like gloves, should be cleaned to not cause damage to the panels.
For panels of a certain dimension (over 4 meters for a 80-100 mm thick panel), the handling must be done with a special hoist or crane (as the excessive weight of the panel makes it impossible for the manual handling).

The panel is anchored to the handling mechanisms provided by lifting beam with two or more clamps, connected with ropes, agents on the side of the panel. A valid alternative is also the handling by lifting beams equipped with suction cups.

N.B.: For anything not expressly stated, you should apply the AIPPEG rules.

Moving long and heavy panels on the roof by hand, could be difficult or even dangerous. In such cases it is recommended that packages are not lifted on the roof structure, but left on the ground, and panels are lifted one by one on the structure, by means of crane and special lifting clamps.

Lifting clamps should be applied on the full rib of the panels. Lifting clamps are connected with ropes on a spreading truss, which is lifted by crane. At least two (2) clamps should be used. In this way, roof panels are transferred directly to their final installation position.

4. STORAGE

Stacks should be carefully positioned and stored on site to prevent damage or deterioration. Particular attention should be paid to the following points:

- Position away from vehicle and pedestrian routes
- Site on bearers on firm flat ground
- Cover and ventilate
- Ensure labeling is intact

Some sheets and panels are supplied with a protective plastic film on the weather face to help prevent minor damage to the coating. This must be removed as soon as possible after the cladding has been installed because if it is left in place for long periods the film will become very difficult to remove. Individual manufacturers’ instructions should always be followed.
General Recommendations

As in all building work, good safety standards are essential to prevent accidents. In accordance with the Health and Safety at Work Act and the Construction (Design and Management) or CDM Regulations, the building should now be designed with safety in mind, not only for the construction period itself but also throughout the normal life of the building. This must include considering the safety of people involved in maintenance, repair and even demolition. It might mean providing permanent access to the roof via a fixed ladder and hatch, walkways and parapets, for example.

Inspection and Maintenance

Construction of the roof is one of the most hazardous operations because of the potential for falls or material dropping onto people below. The contractors must plan and document a safe system of work before starting construction. This would take the fragility of the cladding materials into account, but initially, safety nets are normally used. Whilst fully fixed metal roof sheeting is regarded as non-fragile, roof lights and profiled metal liners must be treated with more care.

In addition to the basic safe system of working the following specific precautions should be taken when using metal cladding:

- Take care when handling sheets to avoid cuts from the edges of the sheets. Wear gloves to protect hands.
- Take normal precautions when lifting heavy awkward objects to avoid lifting injuries, in accordance with the manual handling operations regulations.
- When cutting wear goggles and dust masks.

The strength and visibility of some roof lights can deteriorate during the normal life of a building and present a hazard to maintenance workers, particularly if they have not been trained. The roof lights are usually fixed with fasteners with red plastic heads, to highlight their positions. This sort of information must now be detailed in a safety file prepared by the planning supervisor (using information provided by the designer) and passed on to the client at handover. If in doubt about safety issues, guidance can be obtained from the construction section of the local Health and Safety Executive.

Roof cladding and gutters should be inspected at regular intervals and any deposits such as leaves, soil or litter must be removed. Any areas of corrosion or damage should be repaired in accordance with the manufacturer’s maintenance manual.

Roof traffic should be kept to a minimum and must be restricted to authorised trained personnel only, using appropriate safety measures.
Product Features

- CFC / HCFC free
- High load bearing capacity
- Excellent and durable thermal insulation
- Absolute water and vapor barrier
- Excellent air tightness
- Easy installation
- Low maintenance cost
- Good sound insulation
- Fire resistance
- Re-locatable
- Energy saving

Benefits

- High thermal resistance
- Mechanical resistance
- Dimensional stability
- Lightweight
- Aesthetically pleasing appearance
- Durability
- Easy and speed on installation
FROM DOHA TO THE WORLD

Prime Insulated Panel
Street # 11, New Industrial Area, Doha - Qatar
Tel: +974 44601777, +974 44602777, Mob: +974 5009 9584, Fax: +974 40603555
info@khalidsteel.com, www.khalidsteel.com