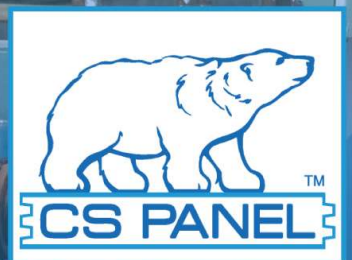




Made with high quality Elastopir®
insulation material with effective
fire protection by

■ BASF
We create chemistry



SANDWICH PANEL

ROOF AND WALL PANEL GREEN SOLUTIONS

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COMPANY INTRODUCTION

CS Panel Sdn Bhd is a POLYISOCYANURATE (PIR) sandwich Panel manufacturer in Malaysia with fully automated continuous assembly line since 2013.

CS Panel provides wide range of steels, PPGL (Pre Painted Galvanised Steel), PPGL (Pre Painted Galvalume Steel), aluminium and stainless steel faced sandwich Panels with POLYISOCYANURATE (PIR) core marked with CS trade names.

CS Panel is able to fulfill high requirements concerning thermal insulation, high load bearing capacity and our high quality performance sandwich panel systems are ideal for use within temperature controlled and hygiene safe environments for food industry construction such as cold storage freezers and coolers, refrigerated warehousing (cold storage logistics), industrial and commercial buildings, sports halls and office. Our sandwich Panels may be used as walls of buildings, both external and internal, roofs and ceilings.

CS Panel provides customized insulated panel solutions to meet customer's needs. Customer satisfaction is our highest priority.



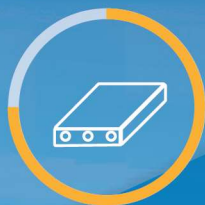
WALL PANEL



CEILING PANEL



FLOOR PANEL



PIR SLAB

POLYISOCYANURATE **PIR**

❄ Air-cond Room

❄ Cold Room

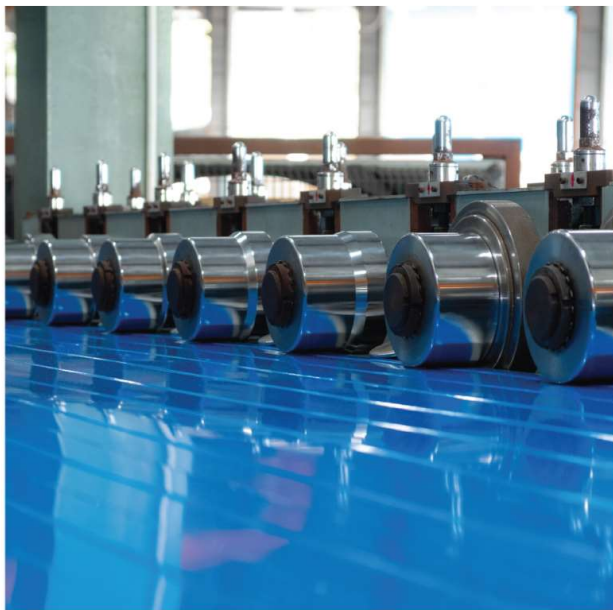
❄ Chiller Room

❄ Freezer Room

❄ Blast Freezer Room & Other

TECHNOLOGY OF PRODUCTION

Modern Continuous Lamination Double Belt Production Technology



Our business value revolves around our care towards the people and environment. In addition to stringently selected materials, the fully automated assembly line has allowed us to progress efficiently and customise the products to meet your specific requirements.

Some of our innovative approaches include:

1. Using eco-friendly material, ie. Pentane (CFC & HCFC Free) as the forming agent.
2. Continuous lamination double belt production technology.
3. High pressure injection of mixed components.
4. Special cut to length system.
5. Automation for stacking and packaging process.
6. Achieving high quality and fixed repeatability of technical parameters.



BENEFITS & ADVANTAGES

Sandwich Panel Fire Performance (PIR)

CERTIFICATION

SIRIM PRODUCT CERTIFICATE

BS 476:PART 6:1989 + A1:2009
BS 476:PART 7:1997

BOMBA CERTIFICATE

TUV TEST REPORT-
BS EN 13501

TOXICITY TEST
BS EN 45545-2

PERFORMANCE

Fire Propagation Index < 12 & Class 1

Class 0

B-S1-d0 & B-S2-d0

CIT < 0.75

R Value & U Value for PIR Panel Table

PIR Panel Thickness (mm)	R _s (m²K/w)	U _s (w/m²K)
25	1.370	0.730
30	1.620	0.617
40	2.120	0.472
50	2.620	0.382
75	3.870	0.258
100	5.120	0.195
125	6.370	0.157
150	7.620	0.131
175	8.870	0.113
200	10.120	0.099
250	12.620	0.079

Note:

1. k value - 0.20 w/mK
2. R value included the surface resistances

The Merits & Advantages



Durable



Termite Proof



Cut-to-length



Min Wastages



Environmentally Friendly



Price Stability



Strength & Safety



Easy Fabrication & Erection



Fire Resistant



Uniform Quality



Dimensionally Stable



Warranty



CAD Design



Testes & Proven

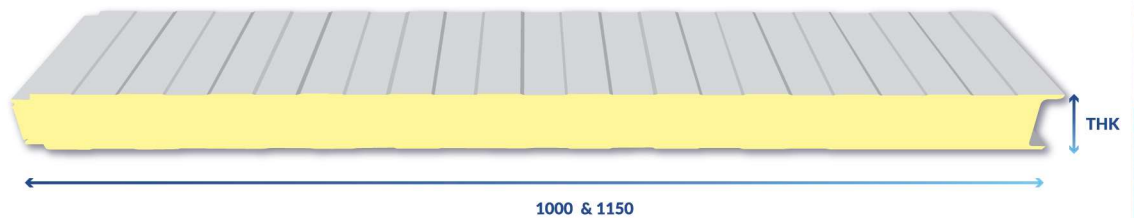
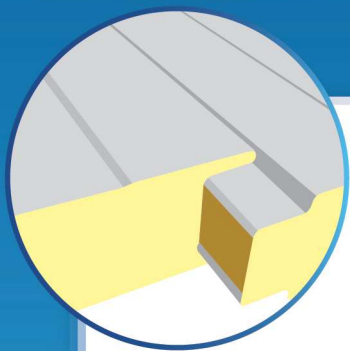
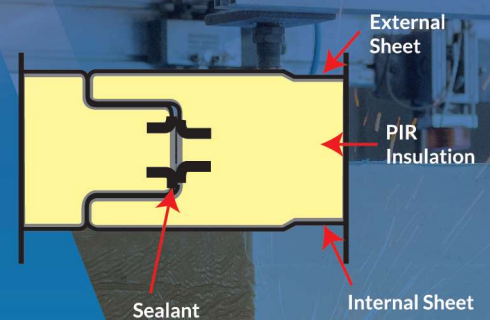


CFC & HCFC Free

CS WALL & ROOF PANEL OF TECHNICAL SPECIFICATION

Standard Joint

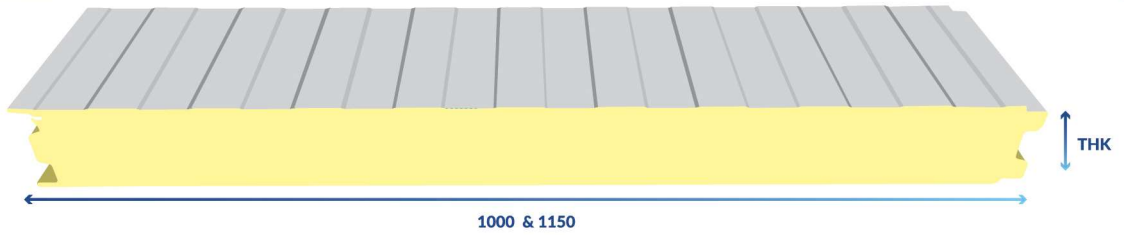
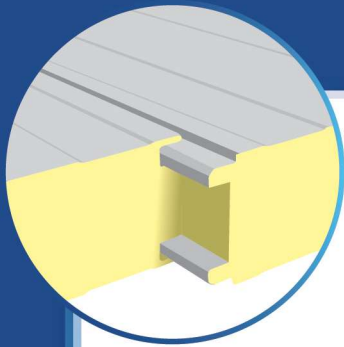
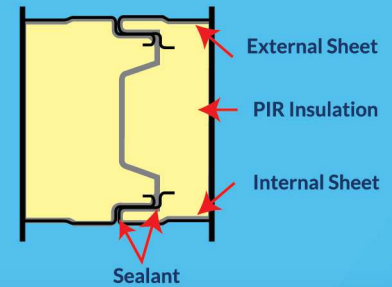
Wall Panel "Standard Joint" THK (mm) 40 / 50 / 75 / 100



Type of Sandwich Panel	Panel Thickness(mm)	Standard Thickness of Facing(mm)		Panel Weight (kg/m)	
		External	Internal	1000mm	1150mm
CS-PIR-W-40-SJ	40	0.50	0.50	10.16	11.52
CS-PIR-W-50-SJ	50	0.50	0.50	10.56	12.00
CS-PIR-W-75-SJ	75	0.50	0.50	11.56	12.96
CS-PIR-W-100-SJ	100	0.50	0.50	12.56	14.28

Fire Rated Joint

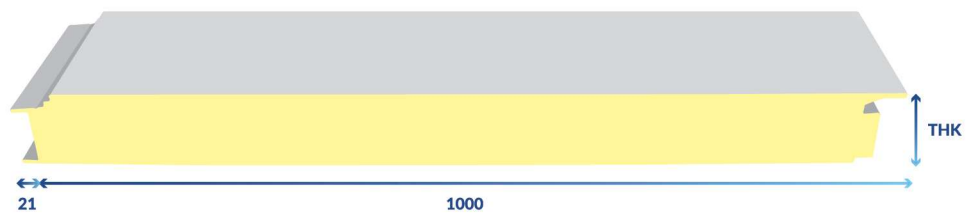
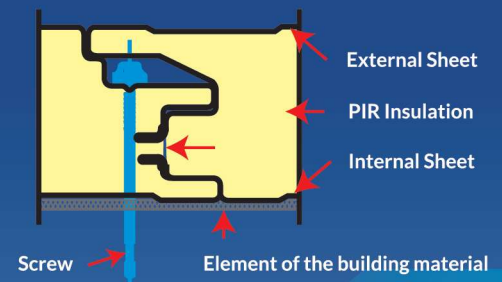
Wall Panel "Fire Rated Joint" THK (mm) 100 / 125 / 175 / 200



Type of Sandwich Panel	Panel Thickness(mm)	Standard Thickness of Facing(mm)		Panel Weight (kg/m)		
		External	I	Internal	1000mm	1150mm
CS-PIR-F-100-FR	100	0.50		0.50	12.52	14.36
CS-PIR-F-125-FR	125	0.50		0.50	13.48	15.52
CS-PIR-F-150-FR	150	0.50		0.50	14.52	16.68
CS-PIR-F-175-FR	175	0.50		0.50	15.52	17.80
CS-PIR-F-200-FR	200	0.50		0.50	16.52	18.96

Hidden Fix

THK (mm) 50 / 75 / 100



Type of Sandwich Panel	Panel Thickness(mm)	Standard Thickness of Facing(mm)		Panel Weight (kg/m)		
		External	I	Internal	1000mm	1150mm
CS-PIR-W-50-HF	50	0.50		0.50	11.00	-
CS-PIR-W-75-HF	75	0.50		0.50	12.00	-
CS-PIR-W-100-HF	100	0.50		0.50	13.00	-

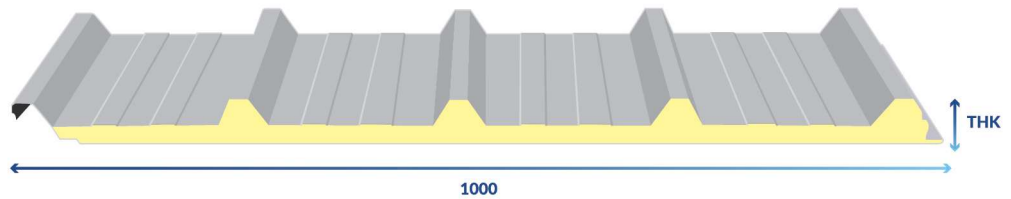
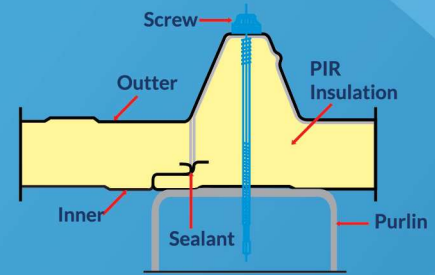
① Facing thickness is available from 0.35mm to 0.60mm.

② Max Sandwich Panel length will subject to the transport limitation but not over 15m.

③ Facing material are GI and PPGL(Aluminum and Stainless Steel is subject to minimum quantities ordered) Sandwich Panel weight is calculated based on facing 0.50mm THK and PIR density is $40 \pm 2 \text{ kg/m}^3$

Roof Panel

Roof Panel THK (mm) 30 / 50 / 75 / 100 / 150



Type of Sandwich Panel	Panel Thickness(mm)	Standard Thickness of Facing(mm)		Panel Weight (kg/m)
		External	Internal	1000mm
CS-PIR-R-30	30	0.50	0.50	10.68
CS-PIR-R-50	50	0.50	0.50	11.48
CS-PIR-R-75	75	0.50	0.50	12.48
CS-PIR-R-100	100	0.50	0.50	13.48

R Value & U Value for PIR Roof Panel Table

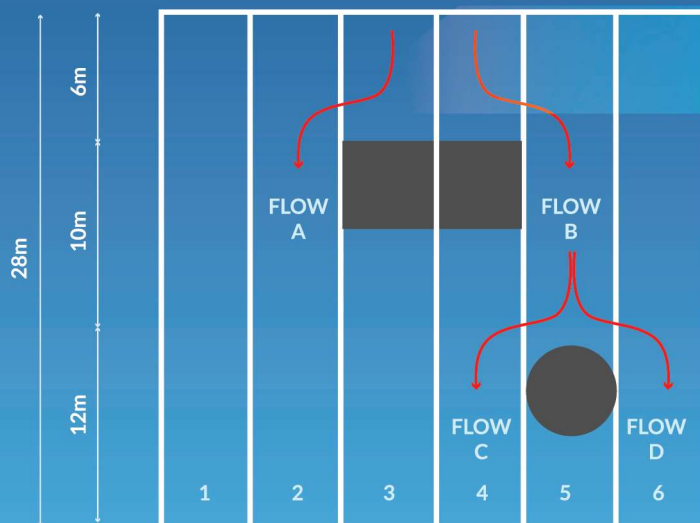
Roof Panel Thickness(mm)	R ₁ min (m ² K/w)	R ₁ max (m ² K/w)	R ₁ average (m ² K/w)	U ₁ min (w/m ² K)	U ₁ max (w/m ² K)	U ₁ average (w/m ² K)
30	1.62	3.52	1.92	0.62	0.28	0.52
50	2.62	4.52	2.92	0.38	0.22	0.34
75	3.87	5.77	4.17	0.26	0.17	0.24
100	5.12	7.02	5.42	0.20	0.14	0.18

Roof Run Length Design Table

Recommended Maximum Roof Run Length (m)						
Rainfall Intensity (mm/hr)	Roof Pitch					
	3°	5°	8°	10°	12°	15°
100	80	104	128	144	160	176
150	52	68	88	96	104	120
200	40	52	64	72	80	88
250	32	40	52	56	64	72
300	24	32	44	48	52	60
350	20	28	36	40	44	48
400	16	24	32	36	40	44

Roof Run Length

The roof run length is the combined length of roofing run contributing to water flow in any one sheeting run at the lowest edge. If roof penetrations or spreader are present it is likely that the maximum roof run length will exceed the distance from the ridge to eaves.



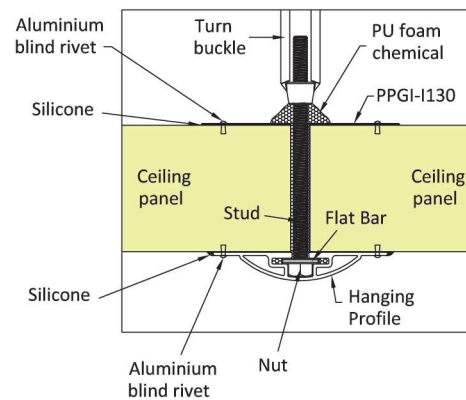
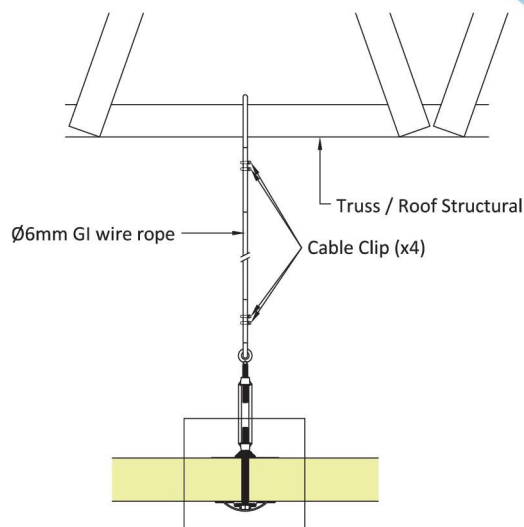
*Example of calculating roof run lengths (effective lengths) where penetrations alter the flow of water on a roof

Valley	Effective Length (m)
1	28
2	28 + Flow A(6)=34
3	22
4	22 + Flow C (11)=33
5	12
*6	28 + Flow D (11)=39

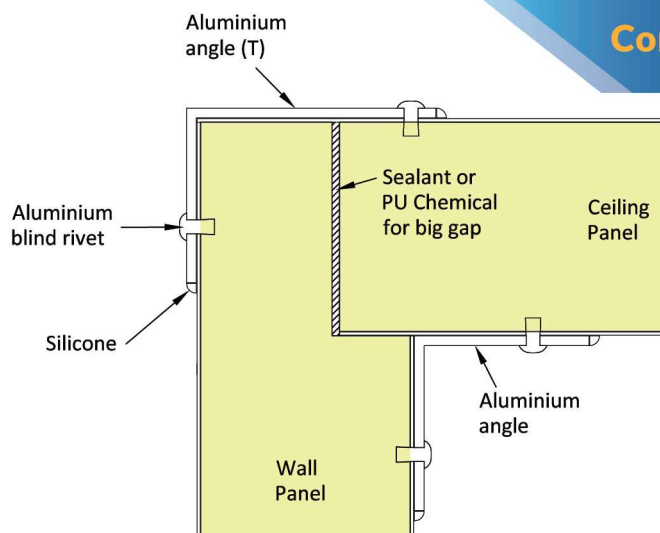
* Worst case used for design

TYPICAL PHYSICAL DETAIL

Hanging Profile Detail



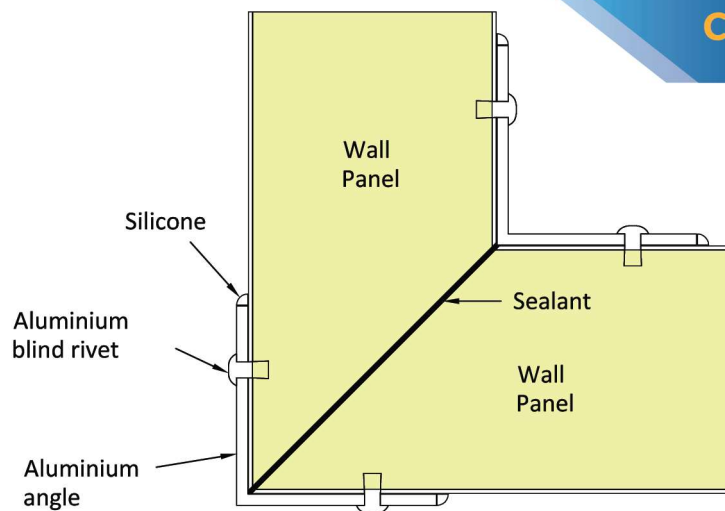
Connection Wall & Ceiling Panel



(Side View)

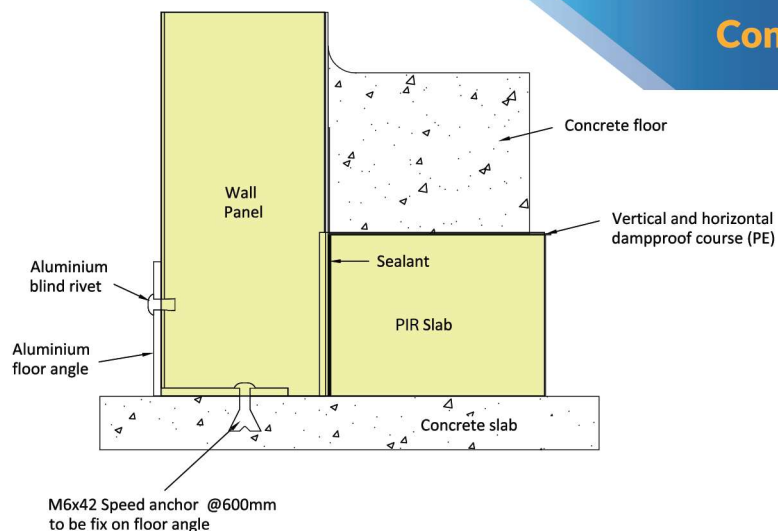
TYPICAL PHYSICAL DETAIL

Connection Wall & Wall Panel



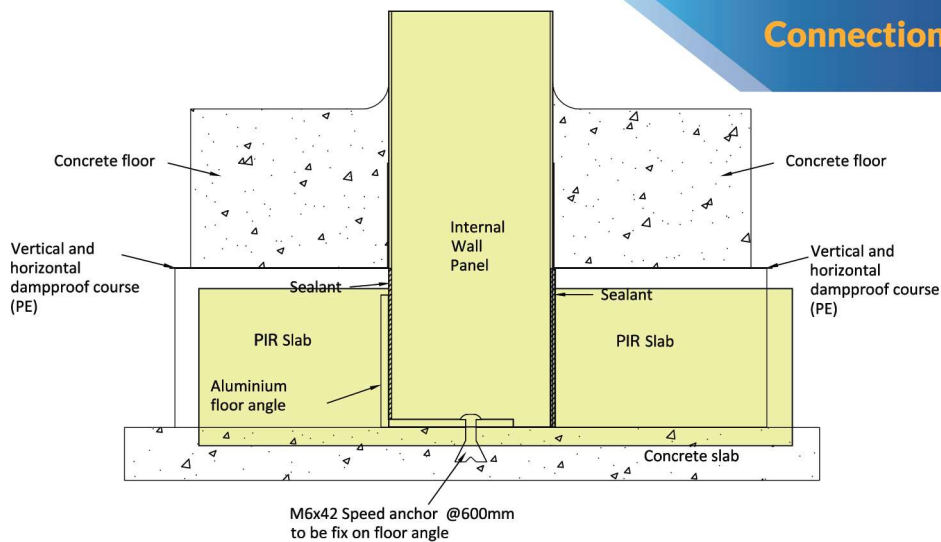
(Plan View)

Connection Wall & PIR Slab



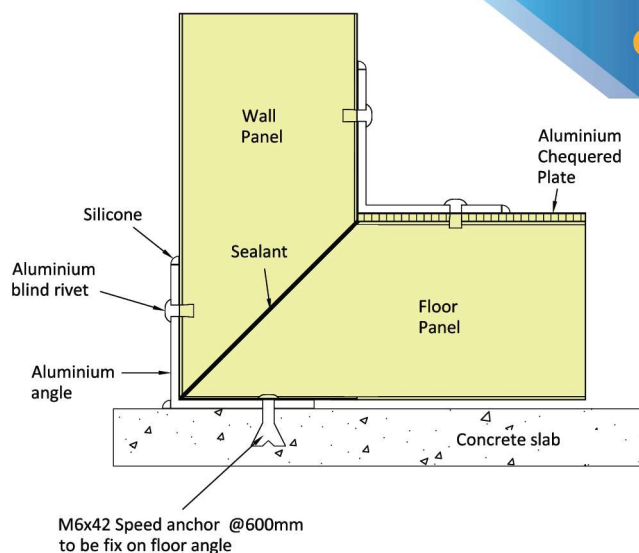
(Side View)

Connection Internal Wall & PIR Slab



(Side View)

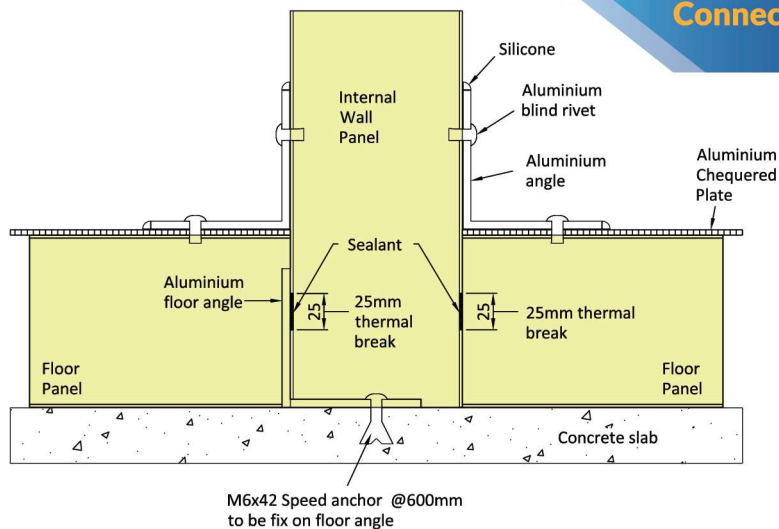
Connection Wall & Floor Panel



(Side View)

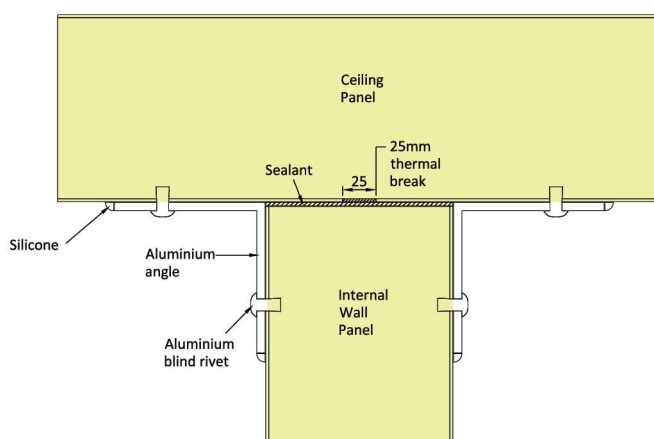
TYPICAL PHYSICAL DETAIL

Connection Internal Wall & Floor Panel



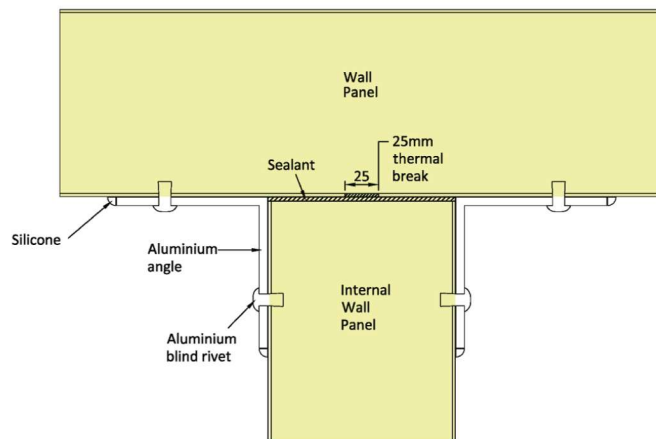
(Side View)

Connection Internal Wall & Ceiling Panel



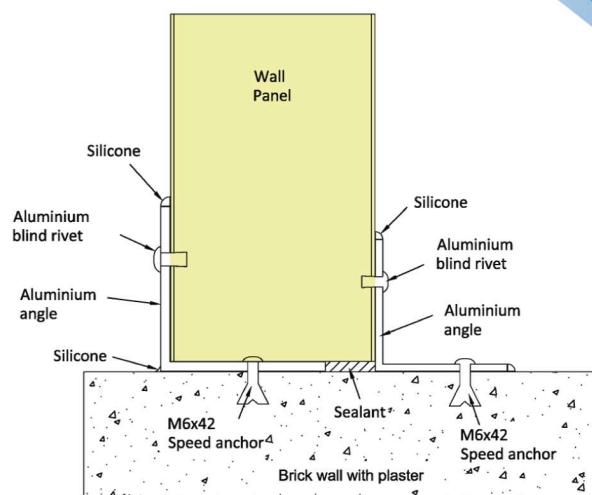
(Side View)

Connection Internal Wall



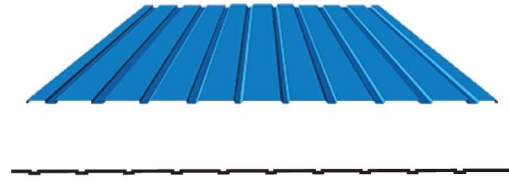
(Plan View)

Connection Wall & Brick Wall With Plaster-(1)

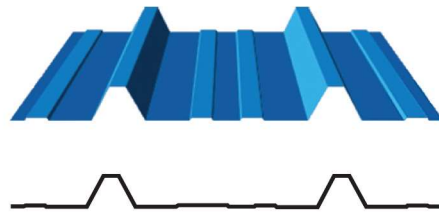


(Plan View)

Sandwich Panel Available Facing Profiles



Micro (M)



Rib (R)



Mesa (L)



Flat (F)

Sandwich Panel Typical Physical Properties

Property	Test Method	Unit	Typical Value
Overall Density	EN ISO 845	kg/m ³	40-42
Thermal Conductivity	ASTM C518 + 24°C Initial	mW/m·K	20-22
Closed Cell Content	EN ISO 4590	%	≥ 90
Operating Temperature Limits	Upper Limit Lower Limit	°C °C	+60 -40
Compressive Strength	ISO 844 Parallel Perpendicular	kPa kPa	≥ 150 ≥ 110
Linear Dimensional Stability	EN 1604 +70°C for 48 hours -30°C for 48 hours	% %	≤ 1 ≤ 1
Water Absorption	DIN 53428	%	≤ 3

CS INSULATED DOOR

Insulated Door Range

CS Panel offers various insulated doors for commercial and refrigeration use, with each being produced and equipped with high quality components.



Insulated Door Range



Dock Leveler



Manual Sliding Door



Automatic Sliding Door



Automatic Double Leaf Sliding Door



Automatic Vertical Sliding Door



To N Pro / Cowboy Door



Spiral Roll Fast Door



PVC Curtain Swing Door



PVC Curtain Strip

Our made to measure doors include but does not limit to these. You may consult our technical team based on your customization and requirement.

CERTIFICATES



As we constantly embrace improvement, our effort has been recognised by various organisations and we will continue surging forward to achieve another level of excellence.



SIRIM PRODUCT LISTING CERTIFICATE

BS 467 : PART 6 & PART 7



SIRIM PRODUCT LISTING CERTIFICATE

BS 467 : PART 22



FIRE AND RESCUE DEPARTMENT OF MALAYSIA

**Certified Class 'O' Material
BS476: Part 6 & 7**



CERTIFICATE OF CONFORMITY
Fire Rated 1 hour



CERTIFICATE OF CONFORMITY
Non Fire Rated

OUR PORTFOLIO

Solar Panel



Medical Production



Flour Production



OUR PORTFOLIO

Pharma



External Cladding



Processing Plan



OUR PORTFOLIO

Production Room



Cleanroom



Logistic Warehouse



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Bukit Mertajam, Penang, Malaysia.



CS PANEL SDN BHD

WWW.CSPANEL.COM



CERTIFICATION TO ISO 9001 : 2015
CERT NO: QMS 03485



PRODUCT LISTING
CERTIFICATE



TUV TEST REPORT
BS EN 13501
BS EN 45545
BS 6853



FIRE DEPARTMENT OF MALAYSIA
(BOMBA) CERTIFICATE



CONSTRUCTION INDUSTRY
DEVELOPMENT BOARD