



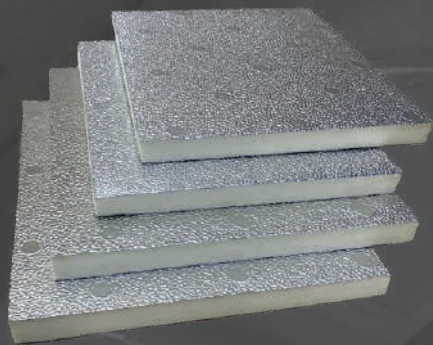
PIR Pre - Insulated Panel

Pre-Insulated Panel



Prudential ENGINEERING SDN. BHD.
(173056-U)

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Introduction

PrudentAire Pre – Insulated Panel (embossed + embossed) Embossed both side with $50 \pm 2 \text{ kg/m}^3$, 20mm thickness, coated on both side with 80 micron embossed aluminium foil and coupled with layers of corrosion resistance paint.

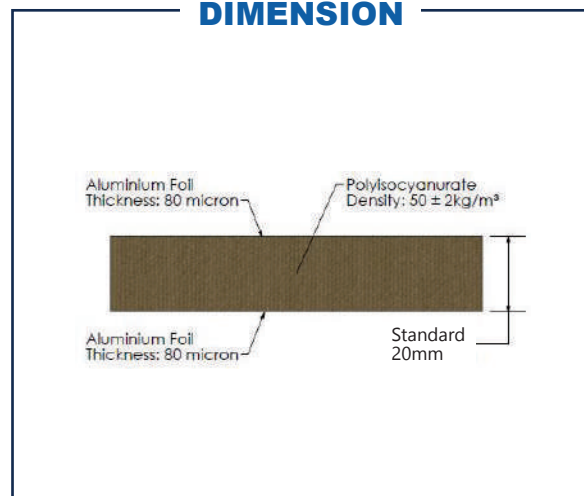


Anti - bacterial and fungal

PRODUCT SPECIFICATION

Thickness of panel	Standard 20mm (Available Optional 30mm & 50mm)
Density of panel	$50 \pm 2 \text{ Kg/m}^3$
R Value	-0.8
Fire Retardant	Class O
Friction loss Coefficient	0.0135
Weight	1.48 Kg/m^3
Working Temperature	-60 to 80°C
Maximum Pressure in duct	1000 Pa
Maximum Airflow in duct	12 m/s
Thermal Conductivity	$< 0.025 \text{ W/m}^\circ\text{C}$

DIMENSION



TECHNICAL PERFORMANCE DATA

FUNCTION DESCRIPTION

- Prudent Aire Pre – Insulated Panel is predicted as option to the standard air conditioning duct system. It is manufactured from Polyisocyanurate (PIR) foam is wrapped with coated aluminium foil for protection against moulds and bacteria. The characteristic of PIR is decent in aesthetic, minimum air leakage, does not use HCFC, not rusty, non-fibrous and zero penetrability, does not absorb humidity and easy installation.
- Prudent Aire Pre – Insulated Panel complies with Industrial Construction System (IBS) and wastages shall be reduced by completing all the pre-production work before being delivered to the site for installation.
- Prudent Aire Pre – Insulated Panel technically 6 times lighter compare to Galvannized Steel duct, thus, can minimized the building and ceiling load. Therefore, the installation of the duct will be quicker. The duct is commonly used at factories, malls and office buildings.
- Prudent Aire Pre - Insulated Panel can withstand up to 1kPa pressure and suitable for AHU connection as it has high rigidity to overcome vibration and damping effect, thus provide better soundproofing. It is easy to assemble and disassemble for maintenance.
- Thermal conductivity for the duct is $< 0.025 \text{ W/m}^\circ\text{C}$ without any mechanical joints on the longitudinal duct area. Hence, the duct shall provide lower leakage and thermally better compare to standard duct system.
- Prudent Aire Pre - Insulated Panel is suitable for expose type ducting and shall be enclosed with paint for architectural purposes.

ADVANTAGES COMPARED WITH GI DUCTING



TECHNICAL PERFORMANCE DATA

TESTING COMPLIANCE

- BS 476: Part 6: 1989+A1:2009
- Fire Test on Building Materials and Structures
- Part 6: Method of Test for Fire Propagation for Product
- BS 476: Part 7: 1997
- Fire Test on Building materials and Structures
- Part 7: Surface Spread of Flame Test.

Classification of Surface Spread of Flame

Classification	Flame Spread at ½ min		Final Flame Spread	
	Limit (mm)	Tolerance for one specimen in sample (mm)	Limit (mm)	Tolerance for one specimen in sample (mm)
Class 1	165	25	165	25
Class 2	215	25	455	45
Class 3	265	25	710	75
Class 4	Exceeding Class 3 limits			

ACOUSTIC DATA

Insertion loss for straight duct

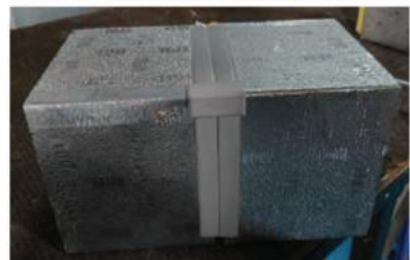
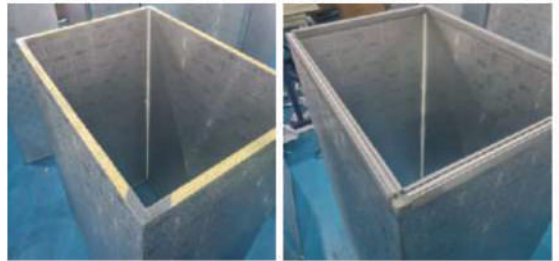
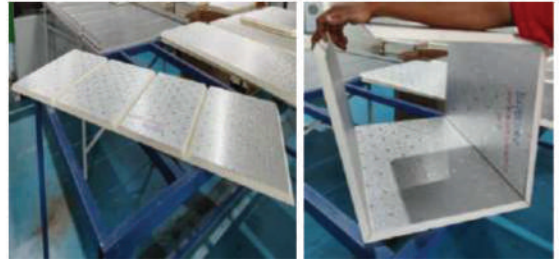
Test Specimen			Octave band (dB)						
No.	Cross section (mm)	Length (mm)	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
1	200 x 200	1.0	-0.6	0.1	1.5	7.1	6.0	4.4	4.4
2	300 x 300	1.5	-0.9	3.6	5.1	3.7	4.8	3.0	3.3
3	300 x 460	1.0	4.0	4.8	4.1	1.2	3.4	1.9	2.3
4	380 x 380	1.0	0.5	4.2	2.5	2.3	2.4	2.4	2.5
5	380 x 380	1.5	-0.7	4.2	1.1	2.5	3.0	2.4	2.4

Insertion loss for elbow duct

Test Specimen			Octave band (dB)						
No.	Cross section (mm)	Radius (mm)	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
1	300 x 300	300	0.3	3.1	3.1	3.7	3.1	2.7	3.4
2	460 x 300	300	4.9	6.5	6.6	0.7	2.2	1.7	2.6
3	460 x 460	460	3.1	4.9	1.1	1.2	1.6	0.6	2.2

Flange Joint

1. Panel with dimension 1200mm x 4000mm x 20mm is cut using cutting machine into desired dimension.
2. After cutting, glue will be apply at each of 45° intersection side and wait for 10 minutes for the glue to dry.
3. The panel is fold into duct shape and silicone will be apply on each corner of the inner part.
4. For flange joint, each duct end is glue and zinc coated is placed on each corner. Then, invisible flange will be insert.
5. For connection of 2 or more duct, a bayonet is insert at the joining part of the duct and silicone is apply at the intersection. Later, covering angle is attached at the corner

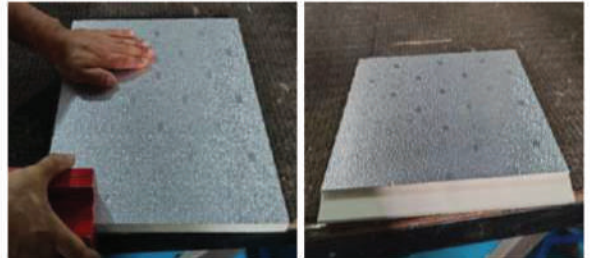


Male-Female Joint

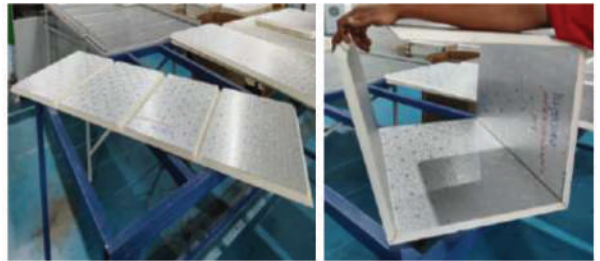
1. Panel with dimension 1200mm x 4000mm x 20mm is cut using cutting machine into desired dimension for male and female joint.



2. After cutting by machine, the joint part will be cut following male and female joint design. Glue will be apply at each of 45° side and wait for 10 minutes for the glue to dry.



3. The panel will be fold into duct shape and silicone will be apply on each corner of the inner part.



4. Tiger claw will be attached at the inner part while c clamp at outer part of the duct.



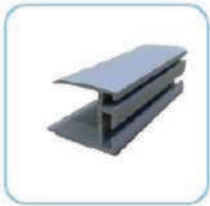
5. For connection of 2 or more duct, slot in the male and female joint and attached aluminium tape at the outer joining part of the duct.



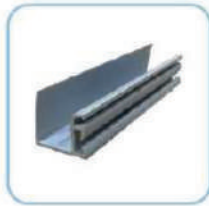
Dimension, mm	Joining Method	Support
0 - 500	Male-Female Joint	Tiger Claw, C Clamp, Aluminium Tape
501 - 900	Flange Joint	Invisible Flange
901 - above	Flange Joint	Invisible Flange, Stiffener

- For length exceed 2 meter, additional aluminium tape will be applied

PRODUCT ACCESSORIES



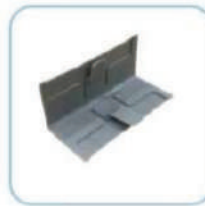
Invisible Flange



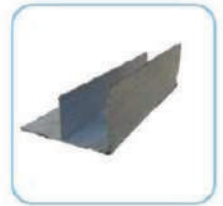
Tee Connector
Flange



Bayonet



Covering Angle



Chair Section Bar



Shaped Disc



Reinforcement



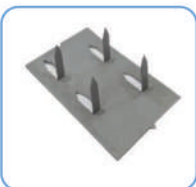
Ball Joint Damper



Aluminium Tape



Zinc Coated (90°)



Tiger Claw



C Clamp

PRE INSULATED PANEL INSTALLATION INSTRUCTION

APPLICATION

The Prudent Aire Pre Insulated Panel model PIR are usually installed to standard air conditioning duct system. It is manufactured from Polyisocyanurate (PIR) which are light and easy for installation. The panel can withstand high pressure up to 1000 Pa with maximum velocity in duct 12 m/s. Working temperature for PIR is from -60°C to 80°C and class O rating fire retardant.

PRE INSULATED PANEL SIZE

Rectangular / Square – All size available

Circular – Minimum Ø180mm

MATERIAL & ACCESSORIES

- Pre Insulated Panel
- Tiger Claw, C Clamp
- Invisible flanges, Bayonet, zinc coated
- Silicone, Special Glue, Aluminium tape

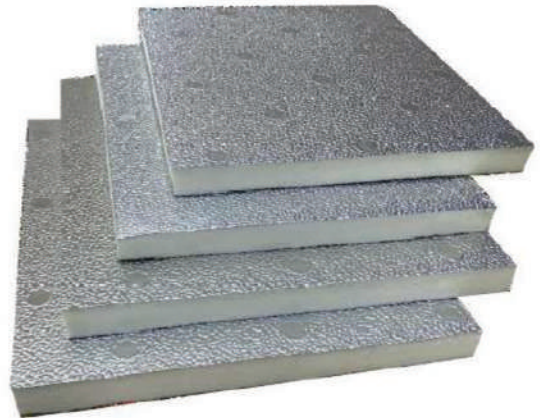
Method

Storage

1. During off-loading process, carefully lift the panel to avoid damage to the surface.
2. All panel shall be place in enclosed area to protect from dust.

Assembly

1. All pre cutted panel will be assembled at site. Preparation for assembly including accessories such as tiger claw, c clamp, aluminium tape, invisible flanges and silicone
2. Panel shall be assembled together on the floor or any flat surfaces to form manageable lengths.



CNC ROUTING CUTTING MACHINE



Safety Note

- After installation, kindly do not step on the duct to avoid any damage and serious injuries

No. Fail: JBPM.IP.RNP.700-7/2/7-959 (4)
(BAHARU)

SIJIL PEPASANGAN KESELAMATAN KEBAKARAN

APPROVAL CERTIFICATE

Jabatan Bomba dan Penyelamat Malaysia
dengan ini memperakukan
Fire and Rescue Department of Malaysia
hereby certify

BAHAN KELAS 'O'
(PRE-INSULATED PANEL, Thickness: 20.5mm)

Berdasarkan Piawaian
Complying with

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

Syarikat Berdaftar
Registered company

PRUDENT AIRE ENGINEERING SDN BHD (657301-P)
Lot 2102 Jalan KPB 12, Off Jalan Suria Park 1,
Kampung Baru Balakong,
43300 Seri Kembangan,
Selangor DE.

Tempoh sah perakuan: 22/12/2023 hingga 21/12/2025


(KAMARULZAMAN MALIK ABDULLAH)

Pengarah
Bahagian Perancangan dan Penyelidikan,
b.p. Ketua Pengarah
Jabatan Bomba dan Penyelamat Malaysia.

Tarikh: 28 Disember 2023

** Peringatan:

Sila patuhi sepenuhnya syarat-syarat dan had kegunaan seperti dalam Lampiran A1



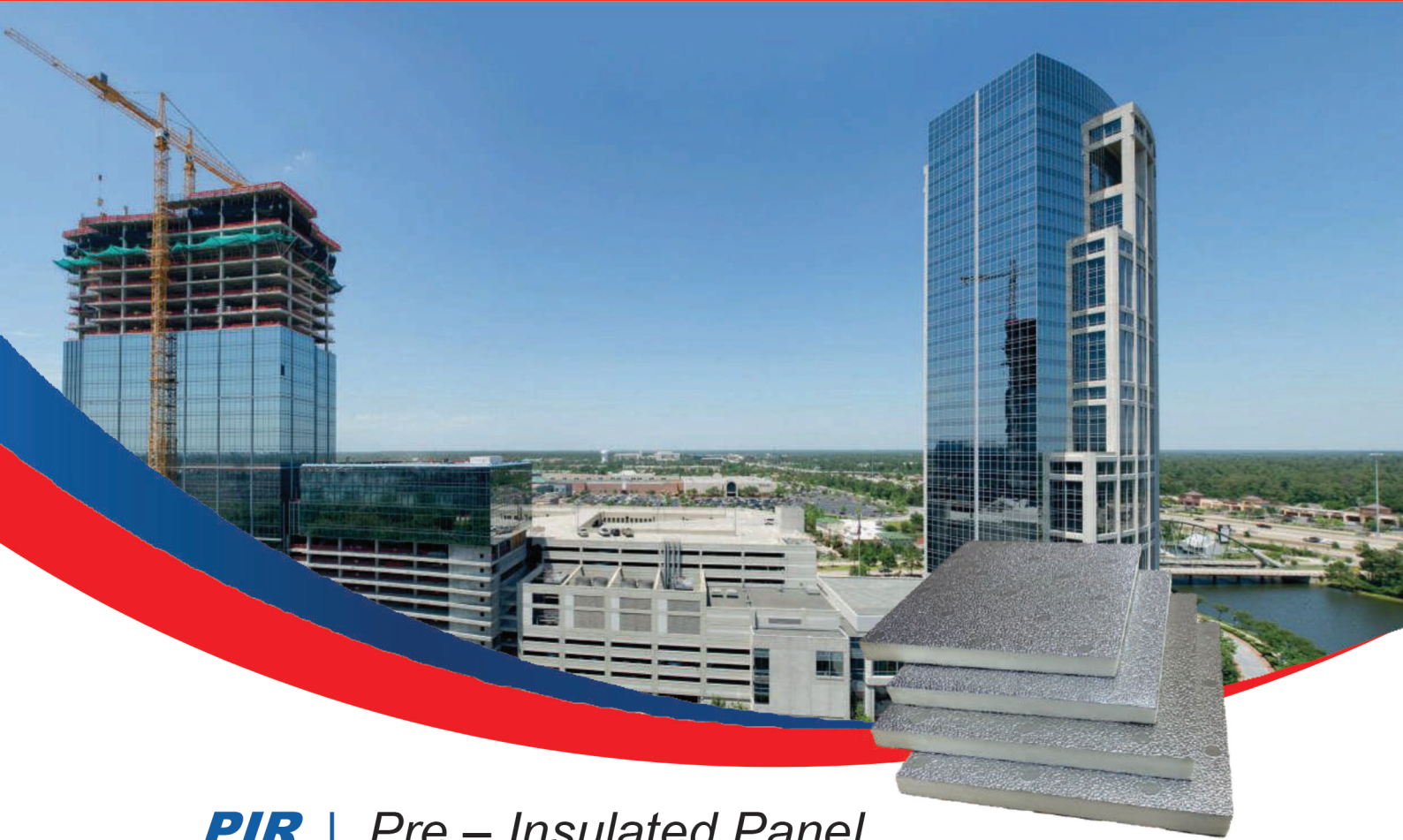
CERTIFIED TO ISO 9001:2015
CERT. NO QMS 02101



CERTIFIED TO ISO 37001:2016
CERT. NO ABMS 00216



PEMENANG ANUGERAH
EMAS AIGA 2022



PIR | *Pre – Insulated Panel*

Products Range

Grilles



Diffusers



Dampers



Fire & Smoke Protection



VAV



Others



Accessories



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