Asawa insulation®

"Presenting India's First Eco Friendly Pre-Insulated Panels"

Manufacturer of Pre-Insulated (PIR) Panels for

HVAC Ducting System / Underdeck & Overdeck Insulation

False Ceiling / Cold Storage / Cavity wall Insulation

Smart Panels®

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1 Company Profile

Asawa Insulation Pvt. Ltd. (AIPL) is the first company in India (Mumbai) to manufacture Pre-Insulated PIR (Polyisocyanurate) Panels and Accessories under the brand name of SMART Panels. AIPL is an ISO 9001:2008 Quality Certified Manufacturer having a state-of-the art manufacturing facility with an installed capacity of 15,00,000 sq.m per annum. AIPL is also an ISO 14001:2004 certified company which signifies our focus on preserving our environment by adopting Environment Management Systems.

Our contemporary equipment, rigorous quality control processes and commitment to international quality standards allow us to provide outstanding services to each of our valuable and esteemed clients. AIPL understands the dynamics and intricacies of different Industries and has the expertise to provide optimised solutions for industry specific requirements and flexibility to deliver solutions quickly and cost-effectively.

Manufactory

AIPL factory located at Khopoli (Mumbai) has an area of 1,60,000 sq. ft. It houses state-of-art manufacturing facility having an installed capacity of 15,00,000 sq. m per annum.

Smart Systems

Range of products manufactured by AIPL

- Smart PIR Panels
- Smart Metal Duct
- Smart Spiral Duct
- Smart Cable Trays
- Smart In-line Fans
- Smart Supporting System & Accessories

Services

AIPL has employed more than 250 trained fabricators for doing Pre Insulated Duct work. Installation being the most crucial part in achieving efficiency of the product, AIPL has taken an initiative in maintaining the quality by making skilled fabricators and service engineers a part of the company for PAN India operations

Certificates

Company has all necessary Certifications from various National and International Laboratories. The products have been tested for atleast 40 of its parameters by various Laboratories. For some of the specifications AIPL is the only company in the world to achieve the product properties.

Projects

With completion of more than 1600 projects in the last 4 years, AIPL has captured all the sectors including Hospitals, Pharma, Hotel, Industrial, Textile, Commercial and Residential sector. AIPL is capable to timely execute any size of project with quality workmanship.

Awards & Achievements

- Honoured the best SME in Maharashra district.
- Accredation from Textile Association for innovation in Textile industry.
- Applied Patent for SMART Accessories.

2 Introduction to SMART (PIR) Panels

SMART Panels are manufactured of CFC & HCFC free closed cell Polyisocyanurate foam "sandwiched" between Aluminium foil or Kraft Paper with standard size of 4 m x 1.2 m and thickness varying from 10 mm to 75 mm.

SMART Panels are used in the construction of HVAC Ducting System, Underdeck & Overdeck Insulation, Wall Insulation, Roof Insulation, Cold Storages, Glass Facade, Floor Insulation, Cavity Insulation and False Ceiling etc.

SMART Panels are economical with energy saving upto 20%, having lowest Thermal Conductivity (0.019 W/m.K), Environment Friendly (Green Building Product), Fire retardant (BS 476, Class 0 Product certified by Exova Warringtonfire – US & UK and CBRI Roorkee - India), Anti Rodent, Negligible Water Absorption, No Water Vapour Transmission, Acoustic, Fast track Fabrication & Installation.

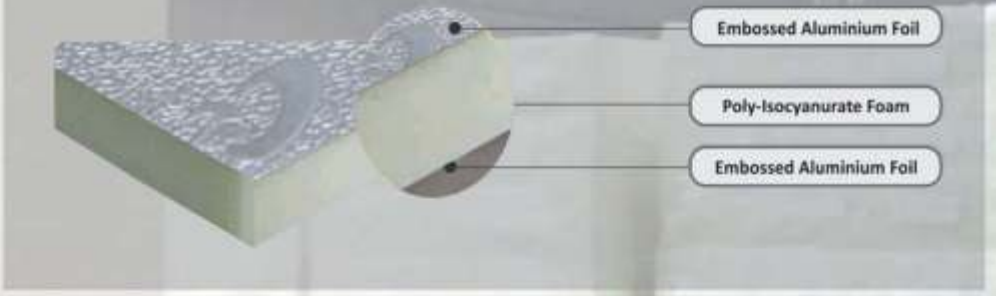
SMART Panels are technically and commercially, the best replacements of:-

- GI Duct with Nitrile /XPE/ Glasswool Insulation for HVAC Ducting System.
- Thermocol / Glasswool / Nitrile / Phenotharum for Underdeck & Overdeck Insulation.
- Calcium Silicate tiles for False Ceiling.
- Nitrile / XPE for floor insulation.

With AIPL's **SMART** pre-insulated panels, an extremely high quality insulation can be achieved as a direct result of the combination of the Aluminium foil and unique insulation material (PIR). This combination provides an excellent internal air quality, a fine external finish and long life material with the added advantage of being light weight. The panels can also be easily transported, fabricated and erected.

3 SMART Panels – Applications

SMART Panels are used worldwide in Commercial, Residential, Hospitals and Industrial applications for HVAC Ducting System, Underdeck & Overdeck Insulation, Wall Insulation, Roof Insulation, Cold Storage, Glass Facade, False Ceiling etc. In industries where high level of quality and hygiene is vital for their business processes such as food processing, pharmaceuticals, laboratories, electronics, and medical centres, SMART Panels provide an excellent insulation solution to ensure the same.



Thickness and surface of SMART Panels will differ as per the requirement, application and project specifications. Various Applications of SMART PIR Panels are as follows:

3.1 Cavity Wall Insulation

SMART Panels can easily be fixed to any surface and prevents any possibility of thermal or cold bridge formations. We offer three variants for this application:

- PIR Foam sandwiched between Aluminium foil on both sides.
- PIR Foam sandwiched between Aluminium foil and Kraft Paper.
- PIR Foam sandwiched between Kraft Paper on both sides.

3.2 HVAC Ducting System

The Panels covered with Aluminium foil on both sides are 20mm thick panels for indoor application and 30mm thick for outdoor application with a foam density of atleast 48 kg/m³. The panels are later cut, shaped, fabricated and glued into different profiles to form the final duct. The duct is later connected to other ducts via Aluminium profile / PVC flanges to complete the system.

The Ducts are manufactured as per standard EN13403 which are CNC machine cut and are assembled by AIPL Employed Fabricators.

There are 3 different types of Ducting Systems offered by AIPL based on the requirement of the client and the necessary application of the project.

3.2.1 Comfort Cooling

This type of system is provided for comfort cooling application projects, where the client is looking for a budget solution for their HVAC systems.

The system comes with improvised accessories of polymers as available globally.

3.2.2 Flanged System

This type of system is widely used for application areas where there is no false ceiling and where the system demands for higher stability and pressure.

The system uses flanged connection for branches, collars, dropper connection instead of just foam to foam joint.

3.2.3 Low Leakage Flange System

This type of system is widely recommended for Pharma, Hospitals, OT, Clean Room & Critical Applications.

The system uses flanged joint with new rubber based connecting profile which reduces the leakages by 3 times as against other options.

3.3 Underdeck / Overdeck Insulation

SMART Panels are fixed to the surface of the roof to prevent heat transfer. The thickness of panels varies from 10 mm to 75 mm. We offer three variants for this applications:

- PIR Foam sandwiched between Aluminium foil on both sides.
- PIR Foam sandwiched between Aluminium foil and Kraft Paper.
- PIR Foam sandwiched between Kraft Paper on both sides.

3.4 False Ceiling

SMART Panels are used as False Ceiling to prevent heat and sound transfer as it has better Insulation and acoustic property as compared to Calcium Silicate Tiles. It is also four times lighter in weight as compared to Calcium Silicate tiles thus it requires less structural support and eliminates sagging.

3.5 Floor Insulation / Roof Insulation

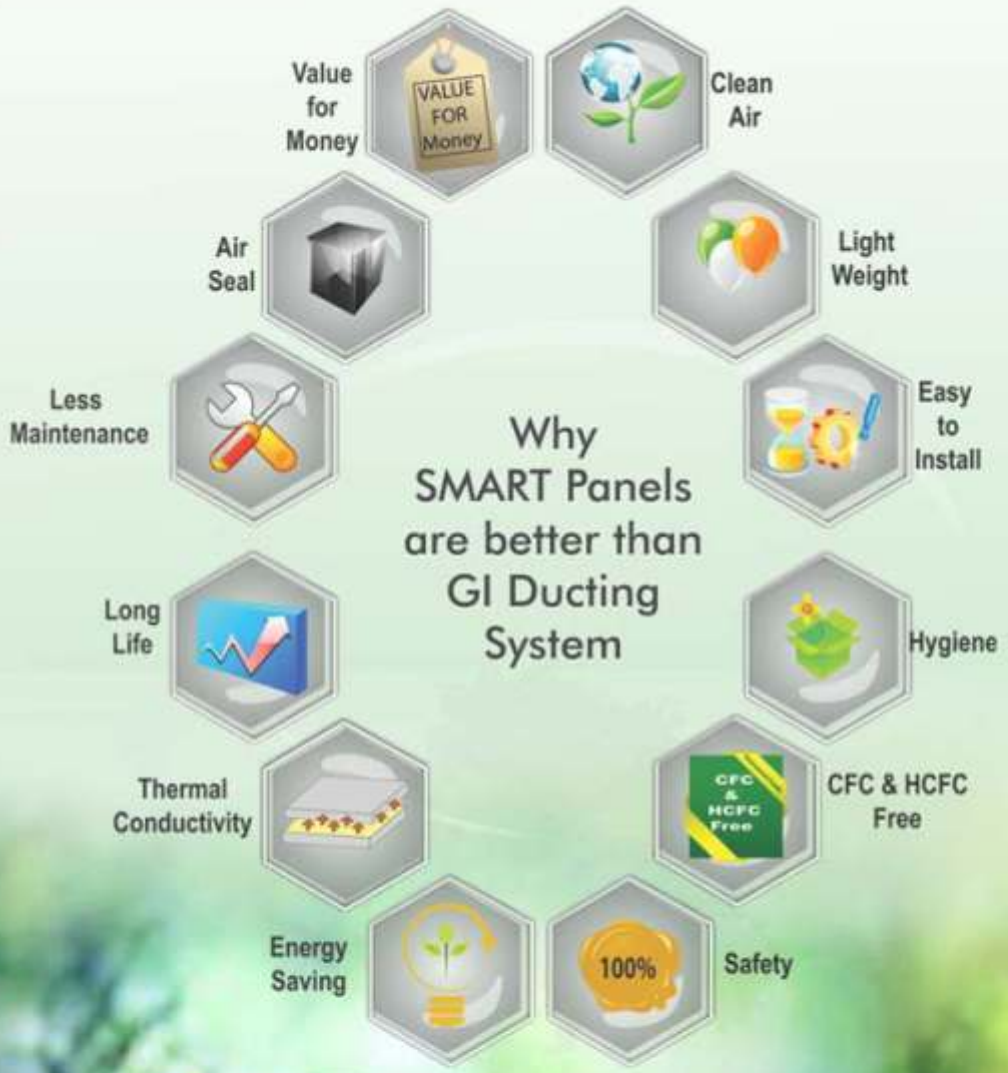
SMART Panels are applied seamlessly on the underside of the floor to prevent heat transfer & seals the floor in contrast to the other systems. Similarly it is used for Roof Insulation.

4 Benefits of SMART Panels

- Low "U" value.
- Highest "R" value.
- Lowest Thermal Conductivity.
- Cleanable and Hygienic
- Fire Resistance, BS 476 Part 5, 6 & Part 7 of Class O.
- Environment Friendly, CFC and HCFC Free.
- Energy saving up to 20% annually.
- No Water-Vapour Transmissions.
- No Water Absorption.
- Anti Rodent.
- No Fungus growth.
- Uniform Insulation Density.
- More than 95% closed cell.
- Economically priced than GI Ducting with Insulation material.

- Excellent Dimensional Stability.
- Damps Maximum noise.
- No Corrosion.
- Clean Air, contains no Microfiber.
- Light Weight, Only 15 % of GI Ducting System with Insulation.
- Space Saving.
- Fully Sealed systems.
- Low handling costs.
- Low Structural Support requirement.
- Site Fabrication capability.
- Fine aesthetics; visually more appealing.
- No flaking of Insulation.
- No limit to duct sizes.
- High-Compressive Strength.

5 Advantages of Smart PIR Ducting System



6 Comparison With Other Insulation Materials

6.1 - SMART (PIR) Ducting System V/s GI Duct With Glasswool

DESCRIPTION	SMART PANEL DUCTING SYSTEM	GI DUCT WITH GLASSWOOL
Insulation	Uniform, Self Insulated.	Insulation is not uniform and needed additionally.
Thermal Conductivity	0.019W/m.K	0.036 W/m.K
Leakage	Fabrication methodology and joinery system lead to negligible air leakage.	Higher chances of air leakage because of contraction and expansion over a period of time.
Energy	Electricity saving upto 20% due to minimal air leakage and better Thermal Conductivity of Insulation.	Higher electricity costs.
Noise	PIR Panels ensure sound proofing & acoustic performance.	Additional acoustic Insulation is required to reduce noise.
Water Absorption	Negligible water absorption (0.03% after immersion in water for 24 hrs).	Water absorption exists at a very higher rate.
Material Handling Precautions	Not Required.	Required as Glasswool causes skin irritation and affects the respiratory system.
Repair & Maintenance	No maintenance and very easy to repair if physical damage occurs, no need to replace the entire system, only damaged part is repaired.	Requires periodic maintenance and if damage occurs the complete section of the duct needs to be replaced.
Cost	Comparable	-
Fire Property	No fire hazards.	No fire hazards.
Space	Less space is required as duct can be installed closer to ceiling.	More space is required for fixing Insulation & Cladding.
Weight	1/6th of GI Duct.	6 times heavier in weight.
Product Life	More	Less due to corrosion.
Appearance	Nice and appealing.	Less appealing.
Site Fabrication	Possible. Six times faster.	Possible but time consuming.
Corrosion	No Corrosion.	Corrosion due to humidity.

6.2 - SMART (PIR) Ducting System V/s GI Duct With Nitrile Insulation

DESCRIPTION	SMART (PIR) PANELS	NITRILE RUBBER	REMARKS
Insulation Property	Higher	Lower	Higher is Better.
Thickness to achieve similar properties	20 mm	28 mm	20 mm SMART PIR Panel is equivalent to 38 mm Nitrile.
Thermal Conductivity	0.019 W/m.K	0.028 W/m.K	Lower is Better.
Water Vapour Transmission	No	Yes	Lower is Better.
Water Absorption	0.03%	0.90%	Insulation Property is affected by water absorption.
Surface Facing	Both side Embossed Aluminium foil	No facing	Aluminium foil facing is Better.
Apparent Closed Cell	More than 95%	Upto 90%	Higher is Better.
Fire Propagation Properties	BS 476, Part 6, Class 0	BS 476, Part 6, Class 0	SMART PIR Panels have better fire retardant properties.
Flame Spread As Per ASTM E 84	Less	More	Lesser is Better
Acoustic Property	Higher	Lower	SMART PIR Panels have noise reduction as well as acoustic properties.
Product Life	More	Less	SMART PIR Panels have better product life.
Performance Reduction	Not seen even in the longer run	Cracks are seen after 2 to 3 Years	Uniform Performance is observed in SMART PIR Panels.

6.3 - SMART (PIR) Ducting System V/s PUR Ducting System

DESCRIPTION	POLYISOCYANURATE (PIR) PANELS	POLYURETHANE (PU /PUR)	REMARKS
Effect of Temperature	PIR will not become supple or melt away even at increased temperatures of above 200°F.	PU will start softening & dripping at temperature above 165°F and melts above 200°F.	More service temperature of PIR Foam
Effect of Ultraviolet Light	No affect.	UV Light degrades PU.	-
Effect of Construction Material	PIR is not affected by solvents in adhesives, paints, strain, water repellent and preservatives.	PU can be affected with many solvents in adhesives, paints, strain, water repellent and preservatives.	-
Water Vapour Transmission	No	Water will penetrate and condense the cells thus reducing Insulation Value	-
Fire Propagation Properties	BS 476, Part 6, Class 0, with better Fire retardant properties.	BS 476, Part 6, Class 0	-
Insulation Property	Higher	Lower	Higher is better
Density	More than 40 Kg/m³	More than 28 Kg/m³	Higher is Better
Thermal Conductivity	0.019 W/m.K	0.024 W/m.K	Lower is Better
Water Absorption	0.03 %	2.23 %	Lower is Better
Apparent Closed Cell	More than 95%	More than 95%	Higher is Better
Thermal Performance	More R Value per inch	Less R Value per inch	More is Better

6.4 - SMART (PIR) Panels V/s Phenolic Foam

PROPERTIES	SMART PIR PANELS	PHENOLIC FOAM	REMARKS
Surface	80 Micron Embossed Aluminium Foil	25 Micron Aluminium Foil	Higher thickness, thus more impact resistant.
Thermal Conductivity	0.019 W/m.K	0.022 W/m.K	Lower is Better
Water Vapour Transmission	0.00	1.15 ng.N.s	Lower is Better
Water Absorption	0.03%	More than 1.9 %	Lesser is Better
Temperature Range	-40° to 150°C	-20° to 90°C	More service temperature of PIR.
Apparent Closed Cell	More than 95%	Upto 90%	Higher is Better
Fire Propagation Properties	BS 476, Part 6, Class 0	BS 476, Part 6, Class 0	SMART PIR Panels have better fire retardant properties.
Flame Spread As Per ASTM E 84	Less	More	Lesser is Better
Weight	1.1± 0.1 Kg/m³	1.3 ± 0.1 Kg/m³	PIR is Light Weight
Product Life	More	Less	SMART PIR Panels have more product life.
Effect of Fire	Charred Surface	Cracks are seen on Fire	-
Maximum Allowable wind Velocity	Upto 35 m/s	Upto 25 m/s	-

6.5 - SMART (PIR) Panels V/s Extruded Polystyrene (XPS)

PROPERTIES	SMART PIR PANELS	EXTRUDED POLYSTYRENE (XPS)	REMARKS
Thickness	10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75 mm	25, 50, 75, 100 mm	-
Length	Upto 4000 mm	upto 2000 mm	More length, thus faster installation.
Width	1200 mm	1000 mm	More width, thus faster installation.
Density	More than 45 Kg/m³	Less than 35 Kg/m³	Higher is Better
Surface	With Aluminium Foil or Kraft Paper	Nil	Surface act as water barrier
Fire Retardant Rating	BS 476, Part 6 Class 0	Class 1	Class 0 is Better
Thermal Conductivity	0.019 W/m.K	0.038 W/m.K	Lower is Better
Water Absorption	0.03%	More than 1%	Lower is Better
Biological	No fungus growth	Fungus growth	-
Green Building Product	CFC Free	CFC Free	-
Service Temperature	-40°C to 150°C	-10°C to 110° C	More service range of PIR.

6.6 - SMART (PIR) Panels V/s Expanded Polystrene(Thermocol)

DESCRIPTION	SMART PIR PANELS	THERMOCOL	REMARKS
Thickness	10 mm	25 mm	-
Length	Upto 4000 mm	Upto 2000 mm	More length, thus lead to faster installation.
Width	1200 mm	1000 mm	More width, thus faster installation.
Density	More than 48 Kg/m^3	Less than 18 Kg/m^3	Higher is Better
Thermal Conductivity	0.019 W/m.K	0.040 W/m.K	Lower is Better
R Value	0.750 (m^2.K)/W	0.625 (m^2.K)/W	Higher is Better
U Value (1/R)	1.333 W/(m^2.K)	1.60 W/(m^2.K)	Lower is Better
Fire Retardant Rating	BS 476, Part 6 Class 0	Class 1	Class 0 is Better
Water Absorption	0.03%	More than 2%	Lower is Better
Biological	No fungus growth	Fungus growth	-
Green Building Product	Yes	No	-
Service Temperature	-40°C to 150°C	-10°C to 110° C	More service range of PIR.
Surface	With both side Kraft Paper or with Aluminum Foil on either side.	Nil	-

6.7 - SMART (PIR) Panels V/s Calcium Silicate Tiles

PROPERTIES	SMART PIR PANELS	CALCIUM SILICATE TILES	REMARKS
Thickness	Maximum upto 75 mm	Maximum upto 25mm	-
Length	Upto 4000 mm	610, 1220, 1830 & 2440 mm	-
Width	600 , 1200 mm	600, 1200 mm	-
Density	48 Kg/m^3	> 800 Kg/m^3	-
Surface	With Aluminium Foil	Nil	PIR is better as surface acts as water barrier
Fire Retardant Rating	Class 0	Class 0	-
Material Class	B1	Non Combustible	-
Surface Spread of Flame	Class 1	Class 1	-
Fire Propagation Index	I > 7.8 R	I < 4.0 R	BS 476 Part 6
Thermal Conductivity	0.019 W/m.K	0.15 W/m.K	Lower is Better
Thermal Resistance	0.90 m^2K/W for 20 mm	0.04 - 0.08 m^2K/W for 6 -25 mm	Higher is Better
Moisture Content	0.03% by Volume	Upto 15% by volume	Lower is Better
Shrinkage Dimension	No Change	0.10%	Lower is Better
Length Change	Not affected	0.15%	-
Weight	Very Light Weight	Four Times Heavier	Less support is required
Service Temperature	-40°C to 150°C	0°C to 150°C	-
Effect of Condensation	Not affected	Patches occurs on tiles	-
Underdeck Insulation	Not Required	Required	-
Visual Appearance	Not Affected	Fading & Discoloration	On contact with water

7 Certifications

DESCRIPTION	STANDARD FOLLOWED	CERTIFICATION BODY / LABORATORY	RESULTS
Thickness	UNI EN 823:2013	Istituto Giordano	Meets UNI EN 13403
Length & Width	UNI EN 823:2013	Istituto Giordano	Meets UNI EN 13403
CE	89/106/EEC	ECA	CE Certified
Fire Safety	BS 476, Part 6 & Part 7	Warringtonfire	As per Building Regulation 2000
Flame Spread Index	ASTM E 84	Warringtonfire	Class "1" or "A"
Water Absorption	ASTM C 209:1998	Dubai Central Laboratory	0.03%
Odor Emission	ASTM C 1304-08	Dubai Central Laboratory	No Odor Emission
Eco Warranty	ICL	Management Standard	Awarded
Oxygen Index	ASTM D 2863	Bharat Test House	<29.0
Horizontal Flammability	UL 94	Bharat Test House	V - 0
Fire Propagation Index	BS 476, Part 6 & Part 7	• Warringtonfire • CBRI Roorkee, India	Class "0"
Ignitability Test	BS 476, Part 5 /Part 12	•Warringtonfire •CBRI Roorkee, India	"P" Not Easily Ignitable
Surface Spread of Flame	BS 476, Part 7	• Warringtonfire • CBRI Roorkee, India	Class "1"
Smoke Development Index	ASTM E 84	Warringtonfire	Class "1" or "A"
Water Vapour Transmission	ASTM E 96 - 00	Dubai Central Laboratory	0.00 perms
Flexural Strength of Thermal Insulation	ASTM C 203-05a	Dubai Central Laboratory	More than 650 kPa
Compressive Strength	ASTM D 1621:00	Dubai Central Laboratory	More than 160kPa
Green Building Product	Norms of IGBC	Indian Green Building Council	Approved
Sound Absorbing Material	IS: 8225 - 1987	National Physical Laboratory	NRC = 0.3
Overall Migration Test	IS 9845	Bharat Test House	1.1
Heavy Metals (Cd, Hg, Pb, Cr)	AAS	Bharat Test House	Under Material Regulation
Sound Transmission Loss	IS: 9901, Part 3 DIN 52210, Part 4 ISO: 140, Part 3	National Physical Laboratory	STC = 0.32
Bacteria Resistance Fungus Resistance Mold Growth	ASTM G 22 ASTM G 21 IS 3144:1992	Bharat Test House	No Growth Found

DESCRIPTION	STANDARD FOLLOWED	CERTIFICATION BODY / LABORATORY	RESULTS
ISO	9001:2008	URS	ISO Certified
ISO	14001:2004	ICL	ISO Certified
Thermal Resistance	UNI EN 12667:2002	Istituto Giordano	1.05 m^2K/W
Horizontal Burning	IS 11239 (Part-12) 1988	ARAI	Approved
Compressive Strength	IS 11239 (Part-11) 1985	ARAI	143.4 kN/m^2
Microbial Growth Test	Clause 7.4 (EN 13403:2003)	Istituto Giordano	No Growth
Dimensional Stability	IS 11239 (Part-3) 1985	ARAI	-0.1%
Effect of Rh	EN 13403:2003	Istituto Giordano	No Change in k value at 97% Rh
Leakage Test	DW 144	BSRIA	Class C
Effect of salty atmosphere	ISO 9227	Istituto Giordano	No Corrosion
Density	ASTM D 1622:03	BS EN 823:95	50 Kg/m^3
Thermal Conductivity	UNI EN 12667:2002	Istituto Giordano	0.019 W/mk
Thermal Conductivity	ASTM C 518:2010	Dubai Central Laboratory	0.021 W/m.K
Resistance to High Temperature	EN 13403:2003	Istituto Giordano	No Change upto 110°C
Pressure Drop due to Friction	EN 13403:2003	Istituto Giordano	0.008 z/m at 16m/s
Resistance against pressure	EN 13403:2003	Istituto Giordano	No Rupture from ±2000 Pa
Preformed Rigid (PIR) for Thermal Insulation	IS 12436:1988	ARAI	Approved
Physical & Chemical Analysis of Polymer Profile	Elemental Analysis	CML	Passed
Leakage Test for Non metallic ducts	BS EN 13403	Istituto Giordano	Class C
Thermal and Humid Aging	ASTM D 2126:09	Dubai Central Laboratory	No major Deviation
Thickness of Thermal Insulation	BS EN 823:95	Dubai Central Laboratory	21 mm
Water Vapour Transmission	UNI EN 12086:2013	Istituto Giordano	0.0008 $mg/(m^2.h.Pa)$
Water Vapour Resistance	UNI EN 12086:2013	Istituto Giordano	>1430 $(m^2.h.Pa)/mg$

8 Technical Data Sheet

8.1 - SMART Panels : Ducting Solution

GENERAL CHARACTERSTICS :
SMART Panels are manufactured of CFC & HCFC free closed cell Polyisocyanurate (PIR) foam "sandwiched" between Aluminium foil on each side.

DIMENSIONAL & TECHNICAL CHARACTERSTICS :

Dimensions of Panel (L x W)	4000 mm x 1200 mm
Aluminium foil type	Embossed / Embossed, Embossed / Plain
Aluminium foil thickness	15-15 Microns, 80-80 Microns, 80/200-200 Microns
Panel thickness	20 mm (Indoor Application) 30 mm (Outdoor Application)
FIRE PROPERTIES :	
Fire Propagation	Class 0, according to BS 476 Part 6 & Part 7
Surface Spread of Flame	Class 1, according to BS 476 Part 7
Smoke Development Index	Class A, according to ASTM E-84
INSULATION PROPERTIES :	
Material for Insulation	PIR (Polyisocyanurate)
Thermal Conductivity	0.019 W/m.K
Density	48 ± 3 Kg/m³
OTHER PROPERTIES :	
Water Vapour Transmission	0.00 perms
Water Absorption	0.03 %
SPECIFICATION OF USE :	
Air Pressure	Upto 2000 Pa
Air Velocity	Upto 35 m/sec
Friction Coefficient	0.0135

APPLICATIONS :
- ✓ Commercial
- ✓ Residential
- ✓ Hotels
- ✓ Industries
- ✓ Food Processing
- ✓ Hospitals, Pharmaceuticals
- ✓ Shopping Malls
- ✓ Auditorium and Theatres
- ✓ Cold storage
- ✓ Clean Rooms

Technical Data Sheet
8.2 - SMART Panels : Underdeck / Overdeck Insulation

GENERAL CHARACTERSTICS :
SMART Panels are manufactured of CFC & HCFC free closed cell Poly-isocyanurate (PIR) foam "sandwiched" between Aluminium Foil and Aluminium Foil or Paper and Paper or Aluminium Foil and Paper one on each side.

DIMENSIONAL & TECHNICAL CHARACTERSTICS :

Dimensions of Panel (L x W)	4000 mm x 1200 mm
Variants	• Aluminium foil x Aluminium foil x Thickness • Aluminium foil x Paper x Thickness • Paper x Paper x Thickness
Aluminium foil thickness	15 Microns / 80 Microns
Paper	Kraft Paper
Panel thickness	10 to 75 mm
Aluminium foil type	Embossed
FIRE PROPERTIES :	
Fire Propagation	Class 0, according to BS 476 Part 6 & Part 7
Surface Spread of Flame	Class 1, according to BS 476 Part 7
Smoke Development Index	Class A, according to ASTM E-84
INSULATION PROPERTIES :	
Material for Insulation	PIR (Polyisocyanurate) foam which is CFC & HCFC free.
Thermal Conductivity	0.019 W/m.K
Density	45 ± 3 Kg/m³
OTHER PROPERTIES :	
Water Vapour Transmission	0.00 perms
Water Absorption	0.03 %

APPLICATIONS :
- ✓ Residential
- ✓ Commercial
- ✓ Hospital
- ✓ Hotels
- ✓ Cold Storage
- ✓ Clean Rooms

Technical Data Sheet
8.3 - SMART Panels : False Ceiling

GENERAL CHARACTERSTICS :
SMART Panels are manufactured of CFC & HCFC free closed cell Poly-isocyanurate (PIR) foam "sandwiched" between Aluminium Foil and Kraft Paper or Paper and Paper one on each side.

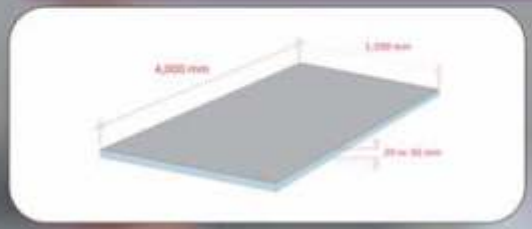
DIMENSIONAL & TECHNICAL CHARACTERSTICS :

Dimensions of Panel (L x W)	600 mm x 600 mm, 600 mm x 1200 mm, 1200 mm x 1200 mm, 1200 mm x 2000 mm
Aluminium foil type	Embossed
Variants	Aluminium foil x Aluminium foil x Thickness
Aluminium foil thickness	80 Microns
Panel thickness	10 to 75 mm
FIRE PROPERTIES :	
Fire Propagation	Class 0, according to BS 476 Part 6 & Part 7
Surface Spread of Flame	Class 1, according to BS 476 Part 7
Smoke Development Index	Class A, according to ASTM E-84
INSULATION PROPERTIES :	
Material for Insulation	PIR (Polyisocyanurate) foam which is CFC & HCFC free.
Thermal Conductivity	0.019 W/m.K
Density	48 ± 3 Kg/m³
OTHER PROPERTIES :	
Water Vapour Transmission	0.00 perms
Water Absorption	0.03 %

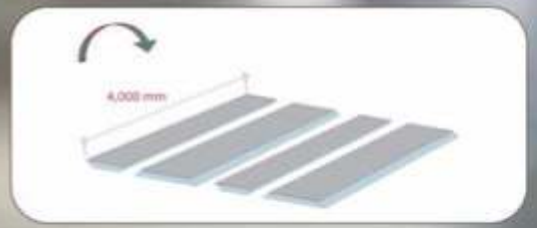
APPLICATIONS :
- ✓ Industrial
- ✓ Residential
- ✓ Commercial
- ✓ Hospitals
- ✓ Hotels
- ✓ Cold Storage
- ✓ Clean Rooms

9 Fabrication (Square Duct)

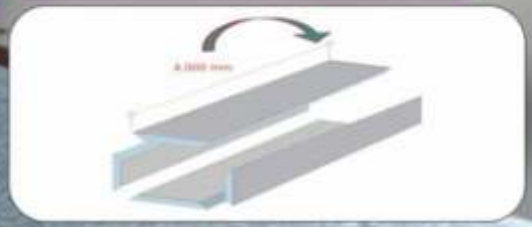
1. Size of the panels: 4,000 x 1,200 x 20mm or 30 mm.



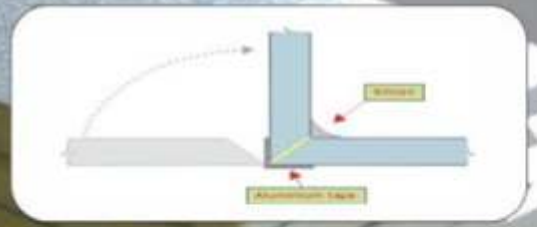
2. Cut the longitudinal strips at 45° and apply glue Length wise.

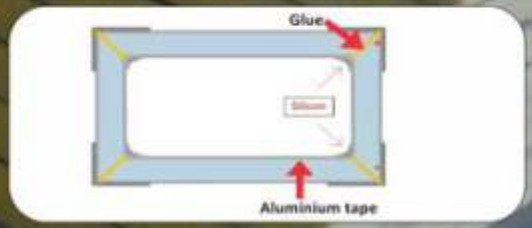


3. Ducts assembled at four separate faces.



- Lengthwise glued.
- Apply Aluminium tape on the external longitudinal angles.
- Apply Silicon Sealant in the internal longitudinal angles.



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