

CHARACTERISTIC & PROPERTIES OF PHENOLIC (PF) PRE INSULATED SYSTEM



PHENOLIC (PF) PRE INSULATED DUCTS is the modern trend in HVAC Ducting. Insulation is one of largest supplier , exporter of Pre insulated duct panels in Dubai, UAE, Middle East and around the world with the brand name of ISO Ducts / PF Ducts. Hapri Ducts are CFC Free and Environment Friendly. ducts System are made of Rigid foam with higher densities, compressive strength and best thermal properties.

PHENOLIC (PF) PRE INSULATED DUCTS are preferred over the traditional ducting and competitors due to the following advantages.

1. Light weighted

PHENOLIC (PF) PRE INSULATED DUCTS System are light weighted yet strong enough to hold the handling in sites and during installation and can keep its dimensional stability for years.

2. Clean Air

PHENOLIC (PF) PRE INSULATED DUCTS System are easy to clean and hygiene.

3. CFC Free

PHENOLIC (PF) PRE INSULATED DUCTS System is CFC & HCFC free.

4. Lesser Manpower

PHENOLIC (PF) PRE INSULATED DUCTS System can be fabricated with less manpower, thus reducing labor cost directly.

5. Environment Advantages

PHENOLIC (PF) PRE INSULATED DUCTS System are perfectly safer for environment. Hapri materials are listed as green building materials by Dubai Central laboratory (DCL).

6. Antifungal and Antibacterial

PHENOLIC (PF) PRE INSULATED DUCTS System are antifungal and antibacterial. It's used in various projects of hospitals, clean rooms, food industries and for pharmaceutical purposes.

7. Thermal Conductivity

PHENOLIC (PF) PRE INSULATED DUCTS System provide the best thermal conductivity among the materials used for ducting.

8. Noise and Vibration

PHENOLIC (PF) PRE INSULATED DUCTS System are provided in higher densities and compressive strength which generates less/no vibration and noise as compare to traditional GI ducts.

9. Quicker Fabrication and Installation

PHENOLIC (PF) PRE INSULATED DUCTS System can be fabricated quickly and most of the time at site and can be installed with minimum efforts and manpower.

10. Fire Properties

PHENOLIC (PF) PRE INSULATED DUCTS System are fire rated / Fire proof provides. It's have tested according to the international standards including ASTM E84, BS 476 Part 6 & Part 7.

11. Low Leakage

The air leakage is minimum/Nil When HAPRI PHENOLIC (PF) PRE INSULATED DUCTS System is combined with the fabrication standards being followed

12. High Compressive strength

PHENOLIC (PF) PRE INSULATED DUCTS System providing highest compressive strength to bear air pressure and load.

TECHNICAL DETAILS OF HAPRI PHENOLIC (PF) PRE INSULATED SYSTEM

The general properties of - PF Pre Insulated Duct panels are given below.

- **Panel Dimensions:**

Length : 4000mm

width : 1200mm

- **Thickness:**

Available in 20mm and 30mm. 25mm can be also produced.

- **Aluminum Facing:**

Both sides Embossed Aluminum, One side Embossed and other side Plain

- **Aluminum Thickness:**

80* Micron Embossed

- **Density:**

Standard Density of Hapri Pre Insulated Duct starts from 55-kg M³ Density range can vary according to the project requirements

- **Compressive Strength:**

Approx 300 Kpa

- **Thermal Conductivity:**

0.030 w/m*k @ 35°C

- **Fire Properties :**

Class 0/Class 1 (According of ASTM E84)

- **Water Absorption**

0.04 %

- **Flexural /Bending Strength :**

Between 1200 - 2000 Kpa

- **Pressure Limit :**

Approx 1000 Pa for 20mm, and for 30mm approx 1750 Pa

- **Air Speed :**

15 m/s for indoor, 35 m/s for outdoor

- **Usage and Applications :**

Indoor and outdoor buildings residential, commercial, Hospitals, Clean Rooms, Pharmaceutical Industries.

- **Sound Attenuation:**

Avg (3150-100 Hz) 14.1

- **Working Temperature :**

-25 till 80 Degree Celsius

Fire Properties :

Class 0 According to ASTM E84 (American Standard)

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PRE INSULATED PHENOLIC DUCTS

INDOOR/INTERNAL APPLICATIONS



- **Product THICKNESS :**

20 mm

- **DENSITY :**

60 ± 5 Kg/m³

- **Panel Dimensions :**

4000 x 1200 mm

- **THERMAL CONDUCTIVITY :**

0.030 w/m*k @ 35°C

- **ALUMINUM FOIL FINISHING :**

Embossed on Both Sides

- **Fire Properties :**

Class 0 According to ASTM E84(Flam spread <25 / Smoke Index < 50)

PRE INSULATED PHENOLIC DUCTS

OUTDOOR/EXTERNAL APPLICATIONS



- **Product THICKNESS :**

30 mm

- **DENSITY :**

$65 \pm 5 \text{ Kg/m}^3$

- **Panel Dimensions :**

4000 x 1200 mm

- **THERMAL CONDUCTIVITY :**

$0.030 \text{ w/m}^{\circ}\text{k @ } 35^{\circ}\text{C}$

- **ALUMINUM FOIL FINISHING :**

Embossed on Both Sides

- **Fire Properties :**

Class 0 According to ASTM E84(Flam spread <25 / Smoke Index < 50)

PHENOLIC PF DUCTS FLANGES AND TOOLS

Aluminum Joint

Flange / Invisible Flange

Thickness : (20mm & 30mm)

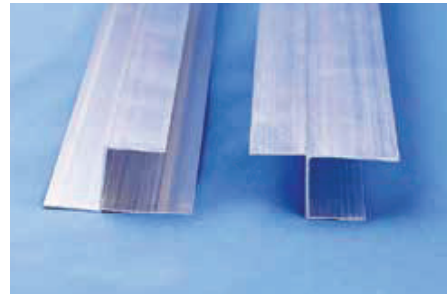
Length : 4mt



Aluminum Chair Flange

Thickness : (20mm & 30mm)

Length : 4mt



Aluminum F-Flange

Thickness : (20mm & 30mm)

Length : 4mt



Aluminum U-Flange

Thickness : (20mm & 30mm)

Length : 4mt



PVC Joint Flange

(Invisible Flange)

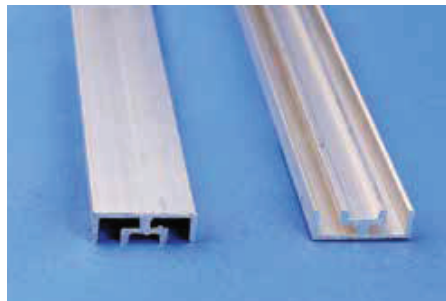
Tickness : (20mm & 30mm)

Length : 4mt

**Aluminum sliding channel**

Tickness : 30mm

Length : 4mt

**H-Insert (H-Bayonet)**

Tickness : 20mm

Length : 4mt

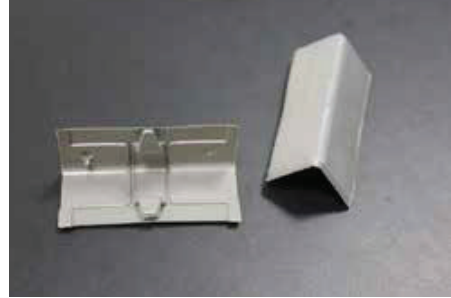
**GI Corner Cover**

Tickness : (20mm & 30mm)



PVC Corner

Thickness : (20mm & 30mm)

**Aluminum Tap**

2 Inch, 3 Inch

**Aluminum Clumping Ruler****Compass**

Glue Spreader Manual



Portable Fabrication Table



Screw for Stiffening Rod

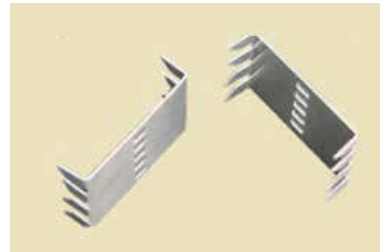


Cross Fixing Device



Reinforcement (Disc & Bar)

Thickness : 14mm & Length : 4mt

**Tiger Joint****Pre insulated Volume Control Damper****Profile Glue****Duct Glue**

Capacity : 15kg



Silicon**Rubber Hammer****Cutting Tools Set**

(Left, Right, Straight and V cutter)

**Manual Bending Machine****Extended Silicon Tool**

(Silicon Gun)



PHENOLIC (PF) PRE INSULATED SYSTEM FABRICATION

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Pre Insulated Duct Panel (HVAC) are alternative to the traditional ducts. Hapri PF Pre Insulated ducts are manufactured keeping in mind all the international standards Like SMACNA, ASHREA etc. Hapri PF Ducts can be fabricated to any design to suit the construction and air conditioning requirement of the building. Hapri have the honor to train the customers for fabricating the Pre Insulated duct within UAE and Overseas as well. The Fabrication process is closely monitor from Cutting till delivery to the site.

PHENOLIC (PF) PRE INSULATED SYSTEM FABRICATION PROCESS INCLUDES THE FOLLOWING.

- **Tracing**

The Cutting marks are drawn by pencil on the sheets according to the sizes.



- **Cutting**

The Duct sheets are cut into the dimensions mentioned in the drawing by different shaped cutters 45 degree left, right, straight and 90 degree angles.



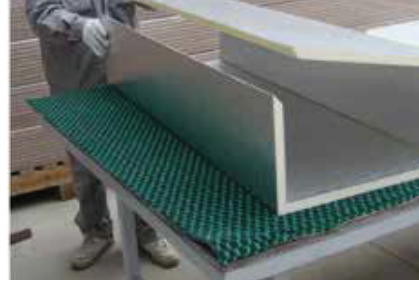
- **Gluing**

Glue is uniformly applied on the edges. The area must be cleaned from dust before applying the glue. It's a specialized Glue used for this specific purpose.



- **Folding/Bonding**

The Ducts are then folded and bonded together properly so that the edges are aligned to each other.



- **Sealing**

The Ducts joints are sealed internally with Sealant so there is no air leakage and the air flow is clean.



- **Taping**

The external joints are closed with Aluminum tap. Also if there is any damage internally or externally, it's covered with the Aluminum Tap.



- **Putting Flanges (Aluminum Profiles/PVC Profiles)**

At the end flanges are put using profile glue. The flanges and profile may be Aluminum or PVC. Reinforcing bar might be used if the duct size is more





TECHNICAL SUPPORT PROGRAM

Technical team comprises of experts from different fields. We provide pre-sales and after sale services to our customers in different areas from suggesting the required thickness of insulation till the required training fixing and supervision for the entire projects at intervals.

The first step is to connect the customer to the department immediately and the experts provide all the technical advice suggesting the required thickness of insulation based on the U Value Calculations and requirements of the Local authorities and consultants.

Mockup samples are made at the site for better understanding of fixing and installation. Free training is provided to the installation people at the construction site. Free supervision for the whole project can be provided whenever needed (at intervals)

The specialized Technical team provides the following assistance to the customers worldwide.

- Suggesting the required product without lamination, with different facing depending upon the usage of materials like wall insulation, roof insulation cavity walls, soffit slab, cold store etc.
- Recommending the required thickness according to the u value calculation
- Calculating U-Values of the Product and the whole system.
- Method of Installation
- Mockup sample at site
- Training for installation at site
- Maintain the quality of application though out the project
- Compliance to the Local authorities regulations like Dubai Municipality, Estidama etc

Duct Fabrication Accessories Calculation (Approx)

	Pre insulated Duct panel 20 mm & 30 mm	QTY/SQM	1000	
S No	Description	Unit	Qty	Box/Tin/pc
1	Aluminium/PVC Joint 4rm/Pcs	Rm	800	200
2	Aluminium Chair 4rm/Pcs	Rm	91	22.72727273
3	Aluminium U Flange 4rm/Pcs	Rm	91	22.72727273
4	Aluminium F Flange 4rm/Pcs	Rm	91	22.72727273
5	H Bayonet 4rm/Pcs	Rm	400	100
6	Duct Glue 15 Kg	Kg	100	6.666666667
7	Duct Silico 24pcs/Box	Roll	110	4.578754579
8	Aluminium Tape 3 inch,16pcs/Box	Roll	164	10.22913257
9	Aluminium tape 2 inch,24pcs/Box	Roll	164	6.819421713
10	PVC Corner	Pcs	909	
11	GI Corner	Pcs	1724	
12	Re-Inforcement Bar Aluminum 4rm/Pcs	Rm	110	27.47252747
13	Aluminum Disc Pcs	Pcs	185	
14	Metal Screw Pcs	Pcs	93	

OUR PROJECTS REFERENCES



Louvre
Abu Dhabi



D3
Dubai



Four Season Beach resort Jumeirah
Dubai



Al Barsha Police Station
Abu Dhabi



Golden Mile Palm Jumeirah
Dubai



Al Ghubaiba Metro Station
Dubai



Al Wahda Mall
Abu Dhabi



Yas Mall
Abu Dhabi



Home Centre
Ajman



Mushrif Park
Abu Dhabi



Mercedese Benz
Sri Lanka



OZO Kandy Sri Lanka
Sri Lanka