

**α**LPHA  
DUCTS

# ALPHA-PIR

## AIR DUCT SYSTEM

Premium quality and performance pre-insulated  
Polyisocyanurate air duct system.

## PRODUCT CATALOGUE

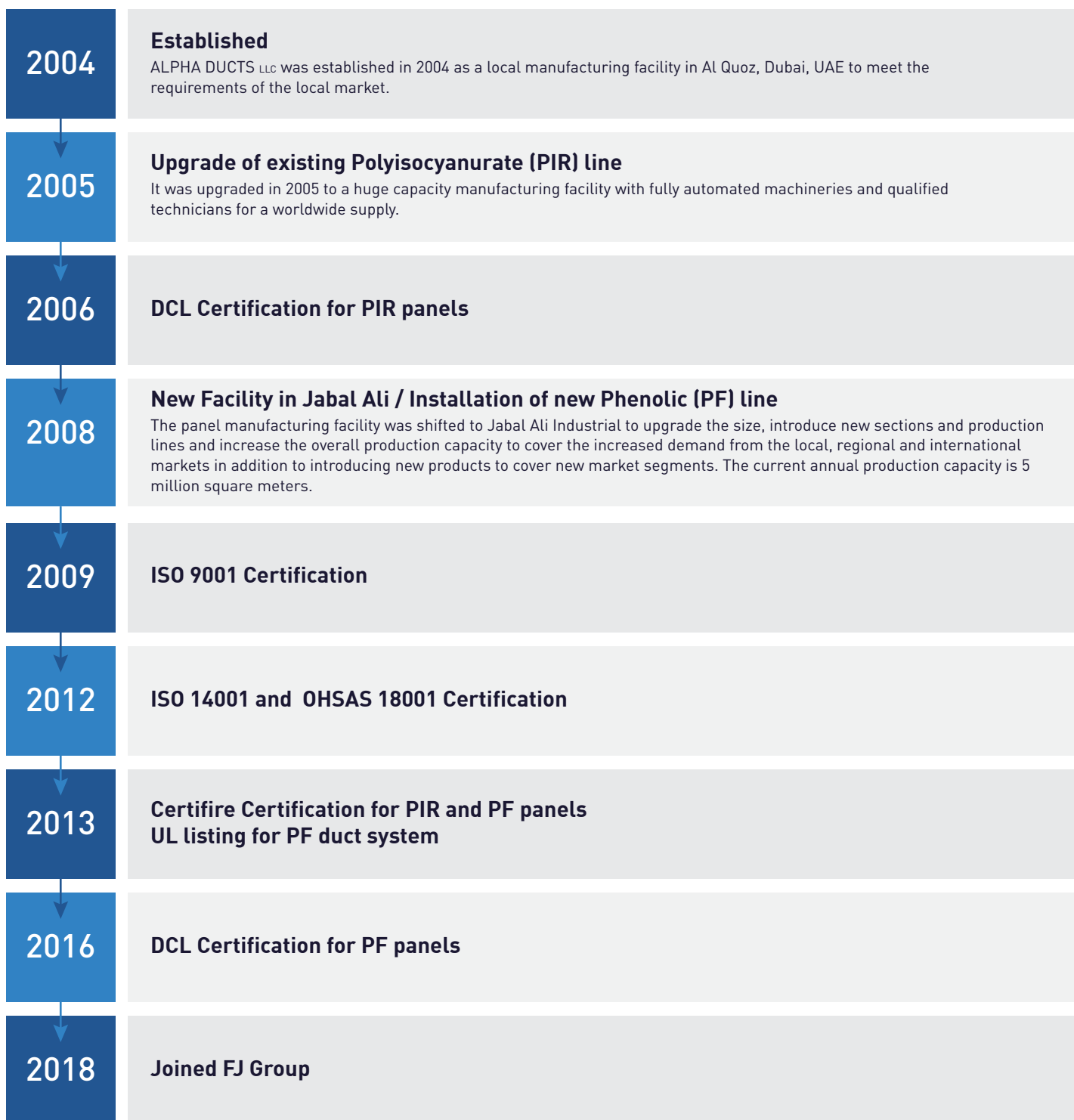
6<sup>th</sup> Issue - October 2023



**FJ Group**  
MEP for a Better Living

# COMPANY PROFILE

ALPHA DUCTS LLC is one of the highly advanced and modernized manufacturers of insulation foam panels, pre-insulated air duct systems and accessories based in Dubai, United Arab Emirates and having an extensive international network to serve customers worldwide.



ALPHA DUCTS LLC is manufacturing insulation panels and pre-insulated air duct systems in the brand name **ALPHA** which are prime quality insulation panels and air ducts meeting the international quality, health, safety, environment and fire standards.

ALPHA DUCTS LLC is certified to the highest international standards of quality, occupational health, safety and environment: ISO 9001, ISO 14001 and ISO 45001.

ALPHA DUCTS LLC products are certified to the highest international air leakage, fire and safety standards: UL listing from Underwriters Laboratories, Certifire certification from Warringtonfire, DCL certification from Dubai Municipality and air leakage certification from BSRIA in addition to complying with BS and EN standards.

# INTRODUCTION

**ALPHA-PIR** air duct system is a lightweight premium quality and performance pre-insulated Polyisocyanurate air duct system for air distribution.

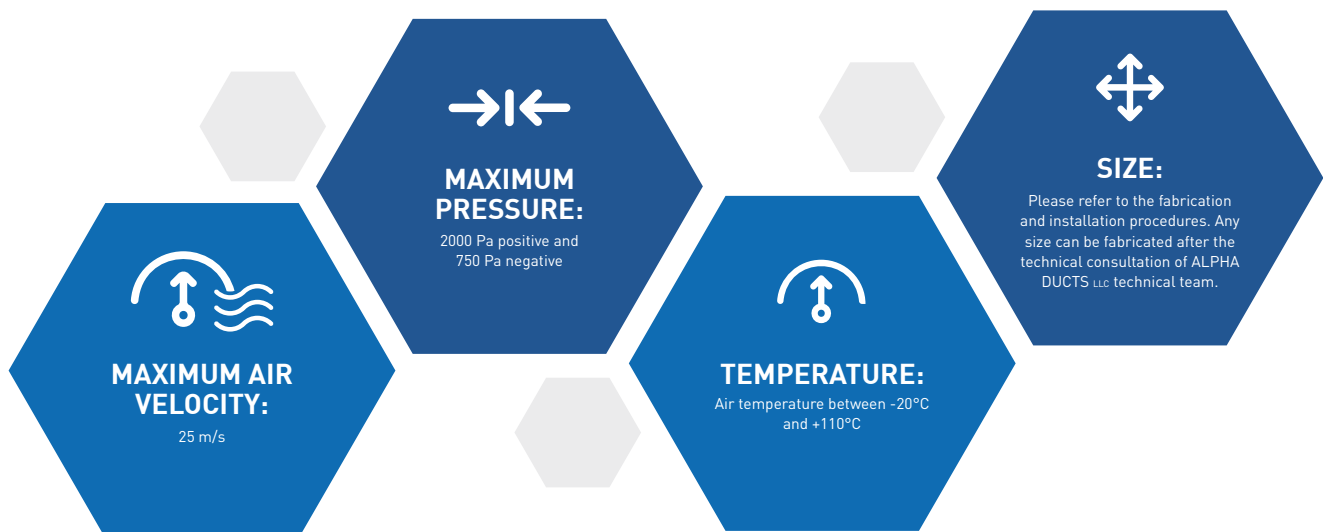
**ALPHA-PIR** air duct system consists of **ALPHA-PIR** Polyisocyanurate panels, specified joining systems and range of accessories in addition to the recommended fabrication and installation procedures.

The ducts are fabricated in sections up to 4 m length and offer multiple advantages in reducing cost and energy usage when compared to the conventional sheet metal duct systems.

**ALPHA-PIR** air duct system is compatible with the standard sheet metal control dampers, fire dampers, access doors and supporting systems used in the conventional sheet metal duct systems.

## RANGE AND LIMITATIONS

**ALPHA-PIR** air duct system is recommended to be used in the systems of supply, return, fresh air and exhaust for air conditioning, heating and ventilation within the below limits:



**ALPHA-PIR** air duct system is recommended to be used in various types of projects: residential, commercial, mixed use, hotels and light industrial.

**ALPHA-PIR** air duct system is highly recommended to be used in high specifications projects like hospitals, food and beverage industry, pharmaceutical industry, air and hygiene controlled environments and many more where the usage of fiber insulation is not allowed.

**ALPHA-PIR** air duct system is recommended to be used for internal and external applications and can be installed in visible open areas, above false ceilings and within confined enclosures.

**ALPHA-PIR** air duct system should not be used in the following applications:

- Chemical, fumes and smoke exhaust systems.
- Kitchen and grease exhaust systems.
- Air systems carrying any type of solid particles.
- Fire resistant duct systems.
- Hot air systems where the air temperature exceeds +110°C.
- Air systems that do not have automatic temperature control as per the indicated range.

## DESIGN AND PRESSURE DROP

**ALPHA-PIR** air duct system follows the same calculation and duct sizing methods used for the rectangular duct designing in the conventional sheet metal duct systems.









The pressure drop in **ALPHA-PIR** air duct system can be compared to the one in the conventional sheet metal duct systems. Therefore the pressure drop data from the sheet metal duct systems can be used for calculating the pressure drop in **ALPHA-PIR** air duct system.

# AIR LEAKAGE







**ALPHA-PIR** air duct system fabricated in line with the recommended fabrication procedure using the specified types of transverse joints and the specified accessories comply with the air leakage requirements as per HVCA DW144 standard.

STANDARD	JOINT		
HVCA DW144	Male / Female	Polymer invisible flange	Aluminium invisible flange
	Class C	Class C	Class C

## ADVANTAGES AND BENEFITS

	<b>Light weight:</b> The ducts fabricated from <b>ALPHA-PIR</b> panels have a considerably lower weight when compared to the conventional sheet metal ducts.
	<b>Installation speed:</b> Because of the light weight, the ducts fabricated from <b>ALPHA-PIR</b> panels can be installed faster than the conventional sheet metal ducts and therefore offer a huge saving in installation time and manpower cost.
	<b>Environment friendly:</b> <b>ALPHA-PIR</b> panels are CFC and HCFC free.
	<b>Moisture resistance:</b> The usage of the aluminium foil facing makes <b>ALPHA-PIR</b> panels highly resistant to moisture and eliminates the need of a vapor barrier used with the traditional fiber insulation.
	<b>Health and safety:</b> <b>ALPHA-PIR</b> panels are resistant to bacteria and microbes, fungal and mould growth, will not sustain vermin, are odorless and have a fiber free foam core.
	<b>Visible application:</b> <b>ALPHA-PIR</b> air duct system is aesthetically pleasing in open to view applications.
	<b>External application:</b> <b>ALPHA-PIR</b> air duct system can be used in external applications.
	<b>Air leakage:</b> The recommended fabrication procedure allowing the combination of the suitable number of pieces in addition to the possibility of fabricating duct pieces in sections up to 4 m length will reduce the total number of joints in <b>ALPHA-PIR</b> air duct system compared to the conventional sheet metal duct systems. This will result in reducing the volume of air leakage in the full system.

## MECHANICAL PROPERTIES

	Thermal conductivity	0.022 W/m.K	ASTM C518 at 10°C
	Water vapor transmission	ZERO g/h.m <sup>2</sup>	ASTM E96
	Temperature range	-20°C and +110°C	As per standard practice
	Minimum compressive strength	200 kPa	ASTM D1621 at 10% deformation
	Minimum flexural strength	1200 kPa	ASTM C203
	Closed cell content	90%	BS EN ISO 4590

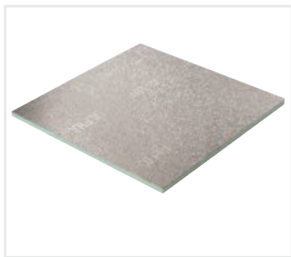
# ALPHA-PIR PANELS

**ALPHA-PIR** panels consist of a formaldehyde free, fiber free, high performance rigid thermoset Polyisocyanurate foam core faced on both sides with an extremely durable, protective, low vapor permeability aluminium foil.

The foam core is produced using a CFC / HCFC free blowing agent having a zero Ozone Depletion Potential (ODP) and a Global Warming Potential (GWP) lower than 5.

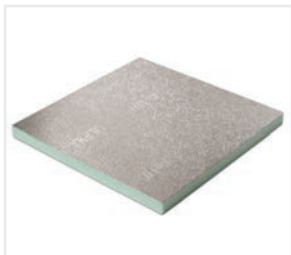
The aluminium foil is bonded to the foam core by heat reaction during the manufacturing process without using additional adhesives. The aluminium foil is lacquered with a factory applied corrosion and UV resistant polymer coating.

## ALPHA-PIR PANEL FOR INTERNAL USE



### AD-PIR-12-10

Thickness	: 12 mm
Minimum density	: 50 kg/m <sup>3</sup>
Dimensions	: 4000 mm x 1200 mm and 3000 mm x 1200 mm
Aluminium foil finish	: embossed / embossed
Aluminium foil thickness	: 80 micron / 80 micron



### AD-PIR-20-10

Thickness	: 20 mm
Minimum density	: 50 kg/m <sup>3</sup>
Dimensions	: 4000 mm x 1200 mm and 3000 mm x 1200 mm
Aluminium foil finish	: embossed / embossed
Aluminium foil thickness	: 80 micron / 80 micron



### AD-PIR-30-10

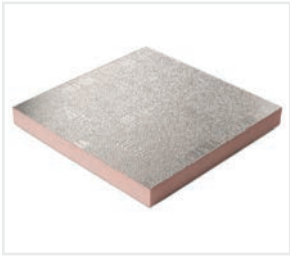
Thickness	: 30 mm
Minimum density	: 50 kg/m <sup>3</sup>
Dimensions	: 4000 mm x 1200 mm and 3000 mm x 1200 mm
Aluminium foil finish	: embossed / embossed
Aluminium foil thickness	: 80 micron / 80 micron

## ALPHA-PIR PANEL FOR EXTERNAL USE



### AD-PIR-20-20

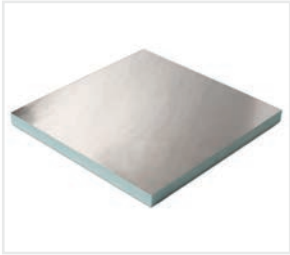
Thickness	: 20 mm
Minimum density	: 60 kg/m <sup>3</sup>
Dimensions	: 4000 mm x 1200 mm and 3000 mm x 1200 mm
Aluminium foil finish	: embossed / embossed
Aluminium foil thickness	: 80 micron / 200 micron



### **AD-PIR-30-20**

Thickness	: 30 mm
Minimum density	: 60 kg/m <sup>3</sup>
Dimensions	: 4000 mm x 1200 mm and 3000 mm x 1200 mm
Aluminium foil finish	: embossed / embossed
Aluminium foil thickness	: 80 micron / 200 micron

## **ALPHA-PIR PANEL WITH SMOOTH FACER**



### **AD-PIR-S-20-10**

Thickness	: 20 mm
Minimum density	: 55 kg/m <sup>3</sup>
Dimensions	: 4000 mm x 1200 mm and 3000 mm x 1200 mm
Aluminium foil finish	: smooth / embossed
Aluminium foil thickness	: 80 micron / 80 micron



### **AD-PIR-S-20-20**

Thickness	: 20 mm
Minimum density	: 60 kg/m <sup>3</sup>
Dimensions	: 4000 mm x 1200 mm and 3000 mm x 1200 mm
Aluminium foil finish	: smooth / embossed
Aluminium foil thickness	: 80 micron / 200 micron



### **AD-PIR-S-30-10**

Thickness	: 30 mm
Minimum density	: 55 kg/m <sup>3</sup>
Dimensions	: 4000 mm x 1200 mm and 3000 mm x 1200 mm
Aluminium foil finish	: smooth / embossed
Aluminium foil thickness	: 80 micron / 80 micron



### **AD-PIR-S-30-20**

Thickness	: 30 mm
Minimum density	: 60 kg/m <sup>3</sup>
Dimensions	: 4000 mm x 1200 mm and 3000 mm x 1200 mm
Aluminium foil finish	: smooth / embossed
Aluminium foil thickness	: 80 micron / 200 micron



# ALPHA-PIR-PLUS PANELS

**ALPHA-PIR-PLUS** panels are developed and used specifically in projects with high end hygiene specifications like hospitals, food and beverage industry and pharmaceutical industry where the surface resistance of the duct system against bacteria and microbes is essential and critical.

**ALPHA-PIR-PLUS** panels consist of a formaldehyde free, fiber free, high performance rigid thermoset Polyisocyanurate foam core faced on both sides with an extremely durable, protective, low vapor permeability aluminium foil.

The foam core is produced using a CFC / HCFC free blowing agent having a zero Ozone Depletion Potential (ODP) and a Global Warming Potential (GWP) lower than 5.

The aluminium foil is bonded to the foam core by heat reaction during the manufacturing process without using additional adhesives.

**ALPHA-PIR-PLUS** panels are manufactured using an aluminium foil facer with a special coating to provide the necessary resistance against bacteria and microbes.

**ALPHA-PIR-PLUS** panels are tested and verified for resistance against bacteria and microbes growth as per the following codes and standards:

- Bacteriological Analytical Manual USFDA January 2001.
- Compendium of Methods for the Microbiological Examination of Foods, APHA, 5<sup>th</sup> Edition.
- ISO 11731:2017, Second edition 05-2017, Water Quality.
- Manual of Microbiological Methods for the Food and Drink Industry, Campden and Chorleywood Food Research Association.



## AD-PIR-PLUS-20-10

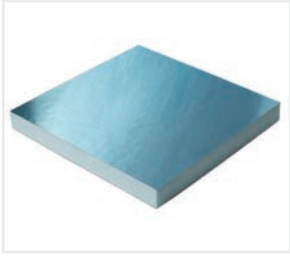
Thickness	: 20mm
Minimum density	: 55 kg/m <sup>3</sup>
Dimensions	: 4000 mm x 1200 mm and 3000 mm x 1200 mm
Aluminium foil finish	: smooth / embossed
Aluminium foil thickness	: 80 micron / 80 micron



## AD-PIR-PLUS-20-20

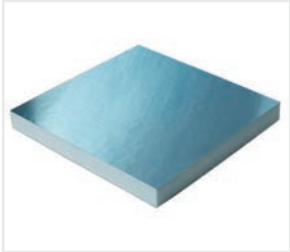
Thickness	: 20mm
Minimum density	: 60 kg/m <sup>3</sup>
Dimensions	: 4000 mm x 1200 mm and 3000 mm x 1200 mm
Aluminium foil finish	: smooth / embossed
Aluminium foil thickness	: 80 micron / 200 micron





### **AD-PIR-PLUS-30-10**

Thickness	: 30mm
Minimum density	: 55 kg/m <sup>3</sup>
Dimensions	: 4000 mm x 1200 mm and 3000 mm x 1200 mm
Aluminium foil finish	: smooth / embossed
Aluminium foil thickness	: 80 micron / 80 micron



### **AD-PIR-PLUS-30-20**

Thickness	: 30mm
Minimum density	: 60 kg/m <sup>3</sup>
Dimensions	: 4000 mm x 1200 mm and 3000 mm x 1200 mm
Aluminium foil finish	: smooth / embossed
Aluminium foil thickness	: 80 micron / 200 micron

# ACCESSORIES

## ALUMINIUM INVISIBLE FLANGE



### AD-F-AIF-20

Size : 20 mm  
Length : 4 m

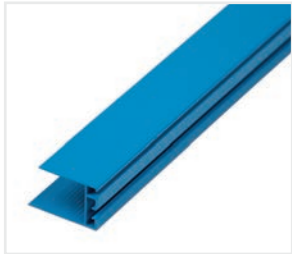


### AD-F-AIF-30

Size : 30 mm  
Length : 4 m

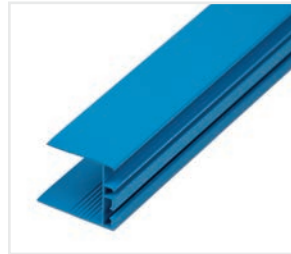
## ALUMINIUM INVISIBLE FLANGE-BLUE

For usage with ALPHA-PIR-PLUS duct system



### AD-F-AIFB-20

Size : 20 mm  
Length : 4 m



### AD-F-AIFB-30

Size : 30 mm  
Length : 4 m

## POLYMER INVISIBLE FLANGE



### AD-F-PIF-20

Size : 20 mm  
Length : 4 m



### AD-F-PHB-20/30

Length : 4 m

## POLYMER INVISIBLE FLANGE-BLUE

For usage with ALPHA-PIR-PLUS duct system



### AD-F-PIFB-20

Size : 20 mm  
Length : 4 m

## ALUMINIUM CHAIR FLANGE



### AD-F-ACF-20

Size : 20 mm  
Length : 4 m



### AD-F-ACF-30

Size : 30 mm  
Length : 4 m

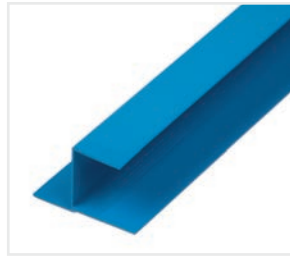
## ALUMINIUM CHAIR FLANGE-BLUE

For usage with ALPHA-PIR-PLUS duct system



### AD-F-ACFB-20

Size : 20 mm  
Length : 4 m



### AD-F-ACFB-30

Size : 30 mm  
Length : 4 m

## ALUMINIUM U FLANGE



### AD-F-AUF-20

Size : 20 mm  
Length : 4 m

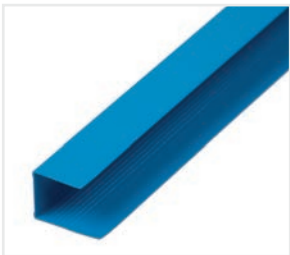


### AD-F-AUF-30

Size : 30 mm  
Length : 4 m

## ALUMINIUM U FLANGE-BLUE

For usage with ALPHA-PIR-PLUS duct system



### AD-F-AUFB-20

Size : 20 mm  
Length : 4 m



### AD-F-AUFB-30

Size : 30 mm  
Length : 4 m

## ALUMINIUM F FLANGE



### AD-F-AFF-20

Size : 20 mm  
Length : 4 m

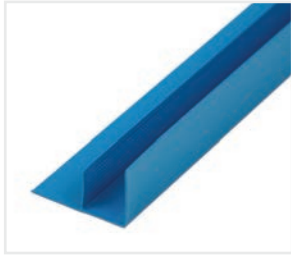


### AD-F-AFF-30

Size : 30 mm  
Length : 4 m

## ALUMINIUM F FLANGE-BLUE

For usage with ALPHA-PIR-PLUS duct system



### AD-F-AFFB-20

Size : 20 mm  
Length : 4 m



### AD-F-AFFB-30

Size : 30 mm  
Length : 4 m

## POLYMER COVERING ANGLE



### AD-F-PCA-20

Width / Height: 30 mm  
Length : 78 mm



### AD-F-PCA-30

Width / Height: 40 mm  
Length : 78 mm

## POLYMER COVERING ANGLE-BLUE

For usage with ALPHA-PIR-PLUS duct system



### AD-F-PCAB-20

Width / Height: 30 mm  
Length : 78 mm



### AD-F-PCAB-30

Width / Height: 40 mm  
Length : 78 mm

## GALVANIZED CORNER



### AD-F-GIC-20

Size : 20 mm  
Length : 80 mm



### AD-F-GIC-30

Size : 30 mm  
Length : 100 mm

## ALUMINIUM REINFORCEMENT BAR



### AD-F-ARB

Diameter : 14 mm  
Length : 4 m

## POLYMER CROSS FIXING CONNECTOR



### AD-F-PCFC

Length : 118 mm  
Width : 118 mm

## ALUMINIUM DISC



### AD-F-AD

Diameter : 96 mm

## SELF TAPPING SCREW



### AD-F-STS

Diameter : 5.5 mm  
Length : 75 mm

## ALPHA DUCTS SPECIAL FOAM GLUE



### AD-F-AG-14

Weight : 14 kg

### AD-F-AG-12

Weight : 12 kg

### AD-F-AG-10

Weight : 10 kg

## ALPHA DUCTS ACRYLIC SEALANT



### AD-F-ASL-W

Weight : 400 g  
Color : White

### AD-F-ASL-G

Weight : 400 g  
Color : Grey

## ALUMINIUM TAPE



### AD-F-AT-50-25

Width : 50 mm  
Length : 22.86 m



### AD-F-AT-75-25

Width : 75 mm  
Length : 22.86 m

## ALUMINIUM REINFORCED TAPE



### AD-F-ART-75

Width : 75 mm  
Length : 45.72 m

## ALUMINIUM TIGER CONNECTOR



### AD-F-ATC

Length : 50 mm  
Width : 40 mm

# MANUAL FABRICATION TOOLS

ALPHA DUCTS LLC have specifically developed a complete range of high quality hand tools for manual fabrication of ALPHA pre-insulated air duct systems enabling fast, efficient and economical fabrication operations.

These tools are portable and easy to handle thus removing any restraints related to location and allowing fabrication on site.

## MANUAL FABRICATION TOOL KIT



### AD-F-TB-10

Single blade : Left / 45°  
cutter  
Single blade : Right / 45°  
cutter  
Single blade : Straight / 90°  
cutter  
Double blade : 45°  
cutter

Manual silicon gun  
Stiff spatula  
Tape marker  
Rubber hammer  
Compass  
Knife  
Measuring tape



### AD-F-TB-5

Single blade : Left / 45°  
cutter  
Single blade : Right / 45°  
cutter  
Single blade : Straight / 90°  
cutter  
Double blade : 45°  
cutter

## SINGLE BLADE CUTTER



### AD-F-SBC-L

Orientation : Left / 45°  
Panel : 20 mm and  
thickness 30 mm



### AD-F-SBC-R

Orientation : Right / 45°  
Panel : 20 mm and  
thickness 30 mm



### AD-F-SBC-S

Orientation : Straight / 90°  
Panel : 20 mm and  
thickness 30 mm

## DOUBLE BLADE CUTTER



### AD-F-DBC-125

Angle : 12.5°  
Panel : 20 mm and  
thickness 30 mm



### AD-F- DBC-225

Angle : 22.5°  
Panel : 20 mm and  
thickness 30 mm



### AD-F-DBC-450

Angle : 45°  
Panel : 20 mm and  
thickness 30 mm



### AD-F- DBC-600

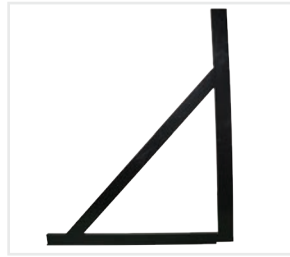
Angle : Adjustable  
Panel : 20 mm and  
thickness 30 mm

## SQUARE IN ALUMINIUM



### AD-F-SQR-10

Size : 1200 mm



### AD-F-SQR-20

Size : 700 mm

## MANUAL BENDING MACHINE



### AD-F-MBMC

## PNEUMATIC GLUE SPREADER



### AD-F-PGS

## TAPE MARKER



### AD-F-TPMK

## STIFF SPATULA



### AD-F-SPTL



## RUBBER HAMMER



**AD-F-RBHM**

## COMPASS



**AD-F-CPS**

## ALUMINIUM CLAMPING RULER



**AD-F-CLR-40**

Length : 4 m



**AD-F-CLR-12**

Length : 1.2 m

## PORTABLE FABRICATION TABLE



**AD-F-PTL-40**

Length : 4 m x 1.2 m

# ICONIC PROJECTS

**ALPHA** pre-insulated air duct systems were used in a variety of prestigious projects covering many building categories like shopping malls, mixed use high rise towers, hotels, community villas and buildings, airport terminals in addition to many more.



**CLIENT** : EMAAR  
**CONSULTANT** : HYDER CONSULTING / ARIF AND BINTOAK  
**PRODUCT** : ALPHA-PIR

## THE RESIDENCES DOWNTOWN DUBAI



## IBN BATTUTA MALL

**CLIENT** : NAKHEEL  
**CONSULTANT** : DEWAN AL EMARA  
**PRODUCT** : ALPHA-PIR



**CLIENT** : EMAAR  
**CONSULTANT** : HYDER CONSULTING  
**PRODUCT** : ALPHA-PIR

## MARINA PROMENADE



## DAMAC TOWERS

BY PARAMOUNT

**CLIENT** : DAMAC PROPERTIES  
**CONSULTANT** : KEO / KHATIB AND ALAMI  
**PRODUCT** : ALPHA-PIR





**CLIENT** : UNION PROPERTIES  
**CONSULTANT** : HYDER CONSULTING  
**PRODUCT** : ALPHA-PIR

## THE RITZ-CARLTON,

Dubai International Financial Centre



## THE LANDMARK TOWER ABU DHABI

**CLIENT** : DEPARTMENT OF  
PRESIDENTIAL AFFAIRS  
**CONSULTANT** : BURO HAPPOLD  
**PRODUCT** : ALPHA-PIR

ALPHA DUCTS LLC reserves the right to amend the product specifications without prior notice. Product thickness mentioned should not be considered as available in ex-stock. Final approval must always be obtained from the local Engineer / Authorities prior to the commencement of fabrication and installation.

ALPHA DUCTS LLC believes that the information and recommendations in this catalogue are accurate and reliable. However, since the installation and the usage conditions are not under the control of ALPHA DUCTS LLC, the final performance of the system is the responsibility of the customer.

# ALPHA

D U C T S

---

## ALPHA DUCTS LLC

P.O. Box 336769 Dubai, United Arab Emirates

Phone : +971 4 2724715  
Fax : +971 4 2724904  
Mail : [info@alphaducts.com](mailto:info@alphaducts.com)  
Website : [www.alphaducts.com](http://www.alphaducts.com)