



αLPHA
D U C T S

ALPHA-PIR

AIR DUCT SYSTEM

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

PRODUCT CATALOGUE

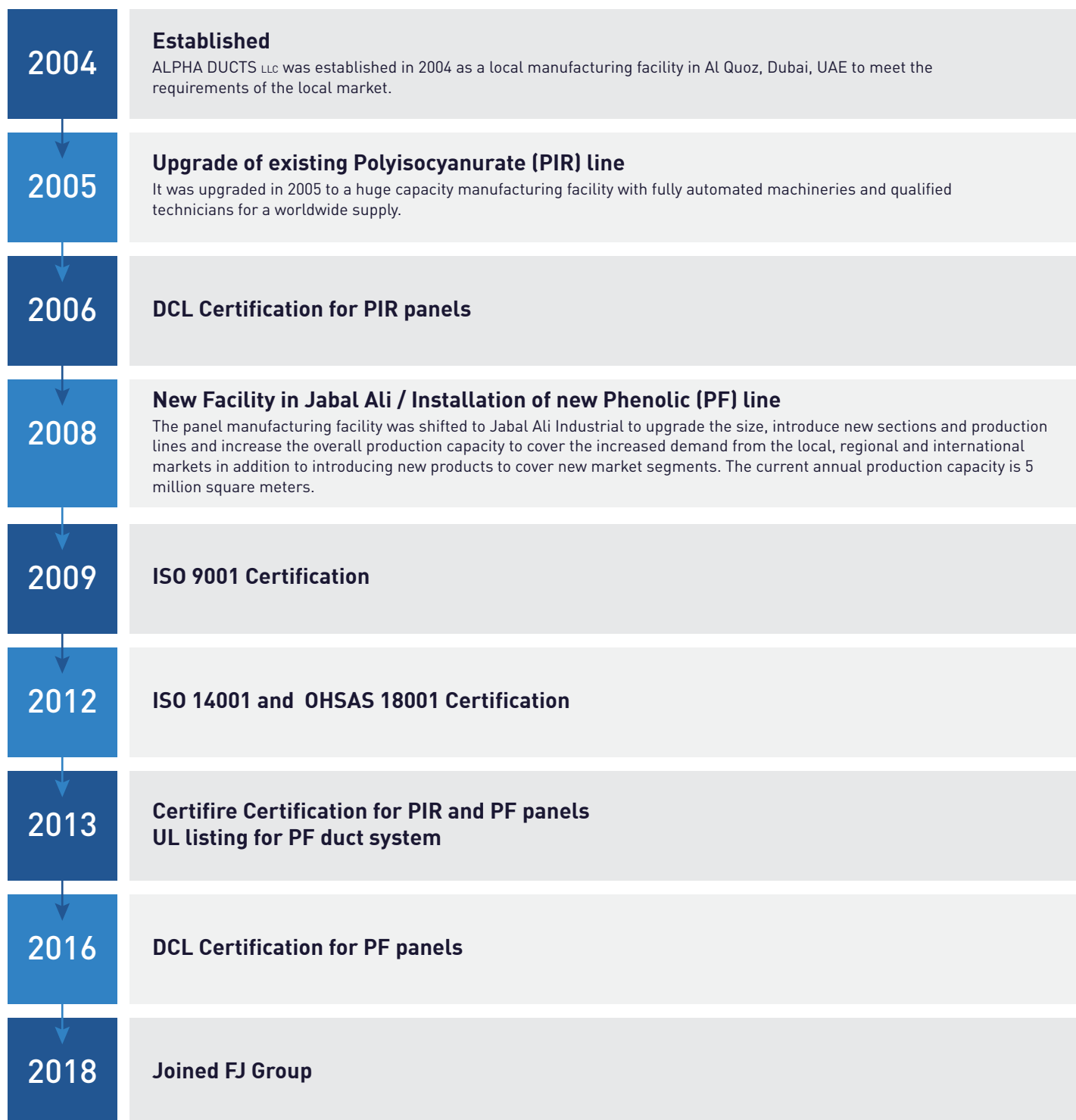
6th Issue - October 2023



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.

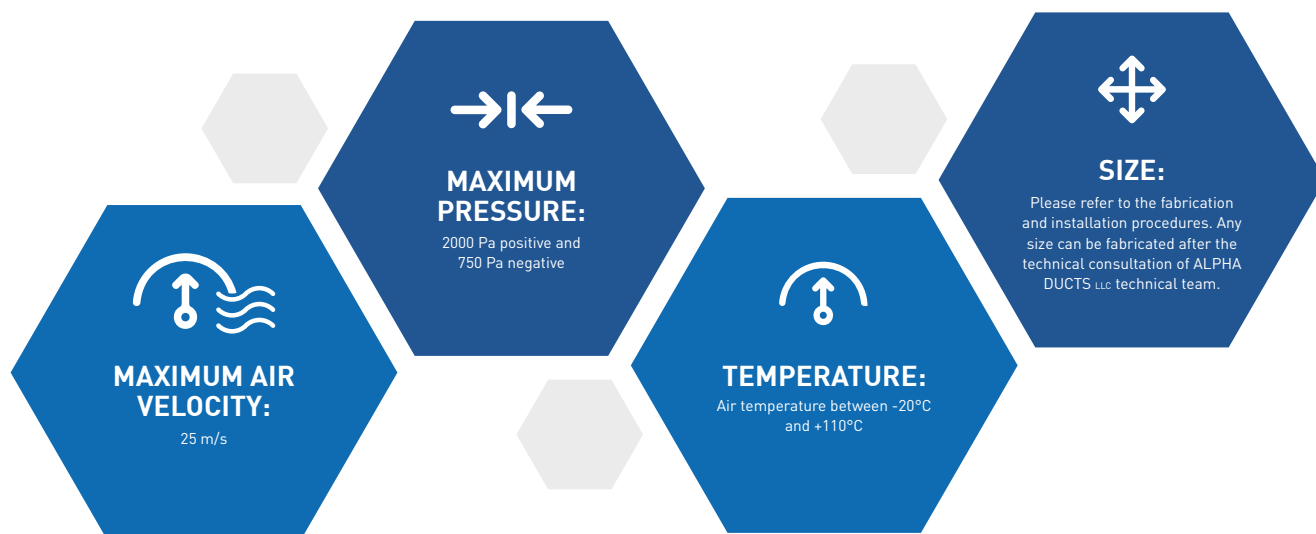
ALPHA-PIR air duct system consists of **ALPHA-PIR** Polyisocyanurate panels, specified joining systems and range of accessories in addition to the recommended fabrication and installation procedures.

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

	Light weight: The ducts fabricated from ALPHA-PIR panels have a considerably lower weight when compared to the conventional sheet metal ducts.
	Installation speed: Because of the light weight, the ducts fabricated from ALPHA-PIR panels can be installed faster than the conventional sheet metal ducts and therefore offer a huge saving in installation time and manpower cost.
	Environment friendly: ALPHA-PIR panels are CFC and HCFC free.
	Moisture resistance: The usage of the aluminium foil facing makes ALPHA-PIR panels highly resistant to moisture and eliminates the need of a vapor barrier used with the traditional fiber insulation.
	Health and safety: ALPHA-PIR panels are resistant to bacteria and microbes, fungal and mould growth, will not sustain vermin, are odorless and have a fiber free foam core.
	Visible application: ALPHA-PIR air duct system is aesthetically pleasing in open to view applications.
	External application: ALPHA-PIR air duct system can be used in external applications.
	Air leakage: 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 ALPHA-PIR 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 ²	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

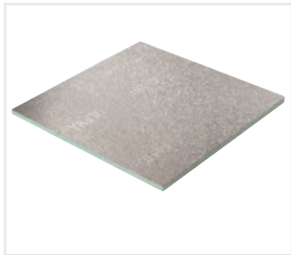
ALPHA-PIR PANELS

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.

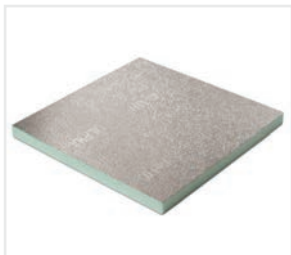
The aluminium foil is bonded to the foam core by heat reaction during the manufacturing process without using additional adhesives. The aluminium foil is lacquered with a factory applied corrosion and UV resistant polymer coating.

ALPHA-PIR PANEL FOR INTERNAL USE



AD-PIR-12-10

Thickness	: 12 mm
Minimum density	: 50 kg/m ³
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 ³
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

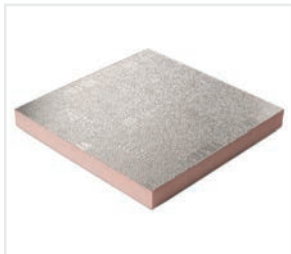
Thickness	: 30 mm
Minimum density	: 50 kg/m ³
Dimensions	: 4000 mm x 1200 mm and 3000 mm x 1200 mm
Aluminium foil finish	: embossed / embossed
Aluminium foil thickness	: 80 micron / 80 micron

ALPHA-PIR PANEL FOR EXTERNAL USE



AD-PIR-20-20

Thickness	: 20 mm
Minimum density	: 60 kg/m ³
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 ³
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 ³
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 ³
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 ³
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 ³
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.

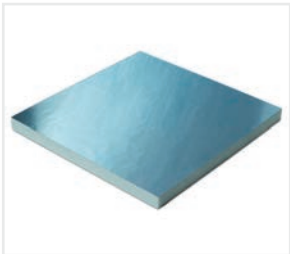
The foam core is produced using a CFC / HCFC free blowing agent having a zero Ozone Depletion Potential (ODP) and a Global Warming Potential (GWP) lower than 5.

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, 5th 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.



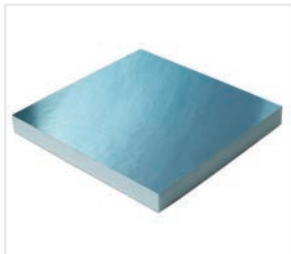
AD-PIR-PLUS-20-10

Thickness	: 20mm
Minimum density	: 55 kg/m ³
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 ³
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 ³
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 ³
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

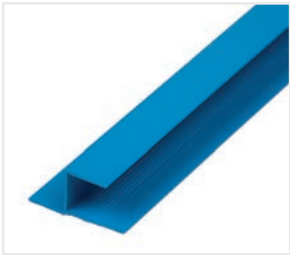


AD-F-ACF-30

Size : 30 mm
Length : 4 m

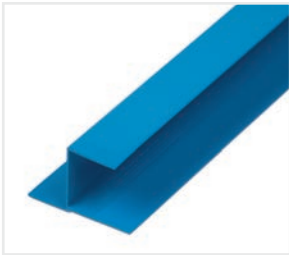
ALUMINIUM CHAIR FLANGE-BLUE

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

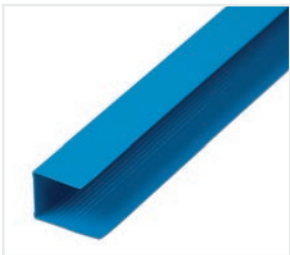


AD-F-AUF-30

Size : 30 mm
Length : 4 m

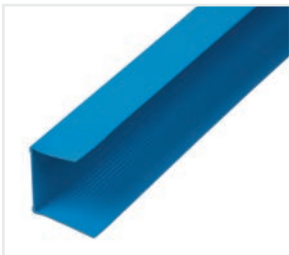
ALUMINIUM U FLANGE-BLUE

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

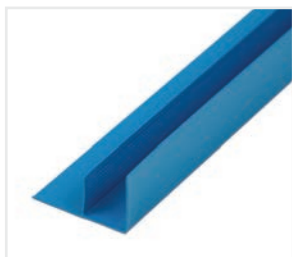


AD-F-AFF-30

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



AD-F-PCFC

Length : 118 mm
Width : 118 mm

POLYMER CROSS FIXING CONNECTOR

ALUMINIUM DISC



AD-F-AD

Diameter : 96 mm

SELF TAPPING SCREW



AD-F-ST5

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

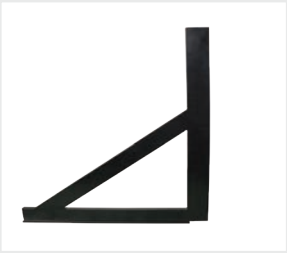
Angle : 45°
Panel : 20 mm and
thickness 30 mm



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

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MEP for a Better Living