

ALPHA-PIR AIR DUCT SYSTEM

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

α ALPHA

CATALOGUE

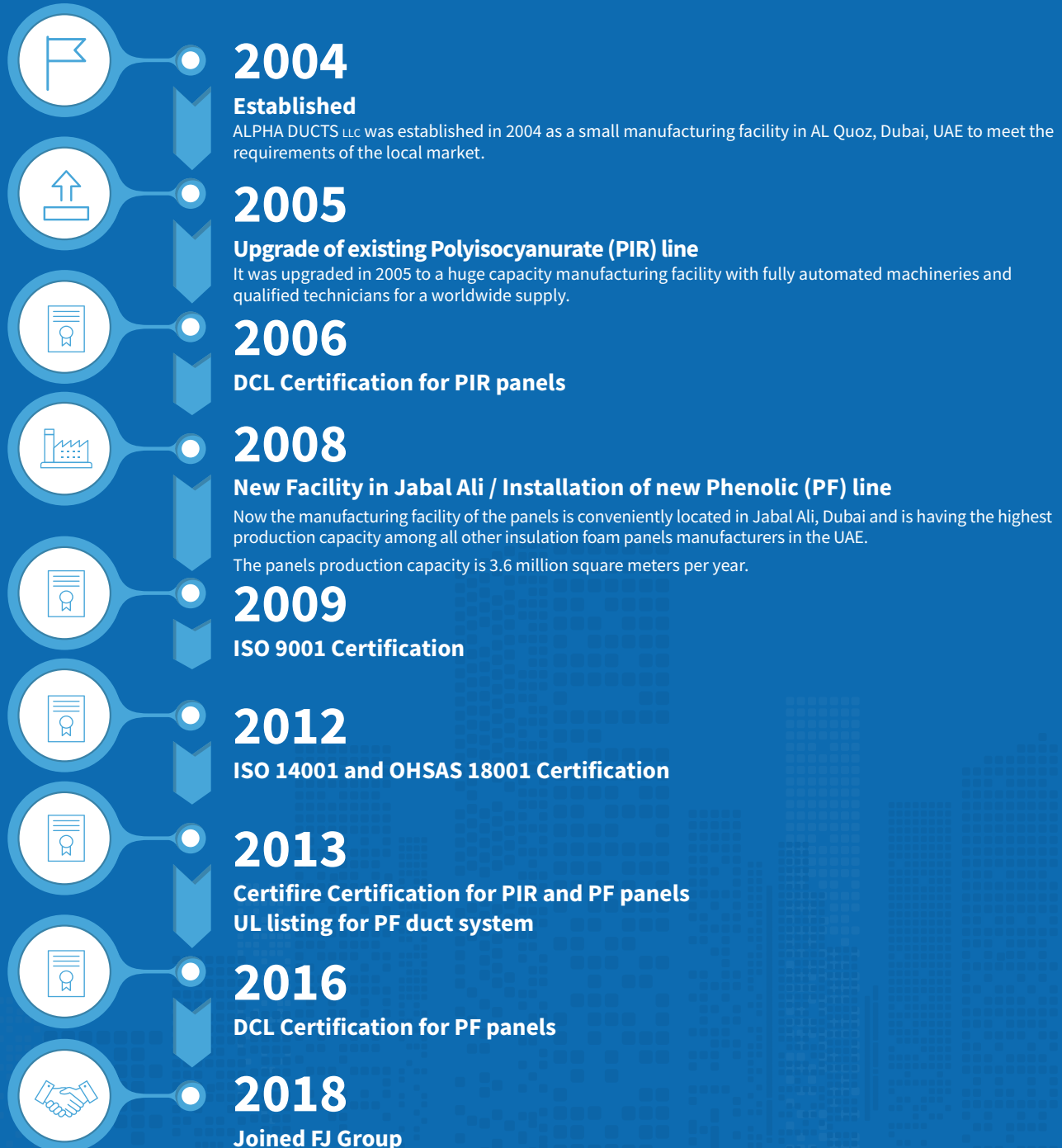
4th Issue - September 2022



A member of FJ GROUP

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 in the Middle East and GCC regions.



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.

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:

Maximum air velocity:
20 m/s

Maximum pressure:
2000 Pa positive and
750 Pa negative

Temperature:
Air temperature between -20°C
and +80°C

Size:
Please refer to the fabrication and
installation procedures. Any size can be
fabricated after the technical consultation
of ALPHA DUCTS LLC technical team.

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 +80°C.
- Air systems that do not have automatic temperature control as per the indicated range.
- In mechanical or electrical rooms, in underground and outdoor applications without additional mechanical or weather protection.

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		
	Male / Female	Polymer invisible flange	Aluminum invisible flange
HVCA DW144	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 provided that it is protected from adverse weather conditions and sunlight.
	Air leakage: The recommended fabrication procedure allowing the combination of the suitable number of pieces in addition the possibility of fabricating duct pieces in sections up to 4m 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	0.023 W/m.K	ASTM C518 at 10°C
	Water vapor transmission	ZERO g/h.m2	ASTM E96
	Temperature range	-20°C and +80°C	As per standard practice
	Minimum compressive strength	130 kPa	BS EN 826 at 10% deformation
	Minimum flexural strength	800 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.

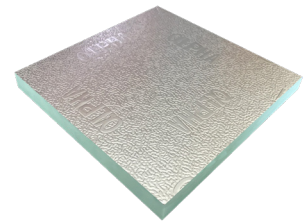
The foam core is produced using a CFC / HCFC free blowing agent having a zero Ozone Depletion Potential (ODP) and a Global Warming Potential (GWP) lower than 5.

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 resistant polymer coating.

ALPHA-PIR Panel for internal use

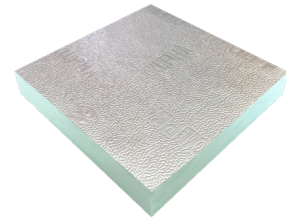
AD-PIR-20-10

Thickness : 20 mm
Minimum density : 50 kg/m³
Dimensions : 4000 mm x 1200 mm
Aluminum foil finish : embossed / embossed



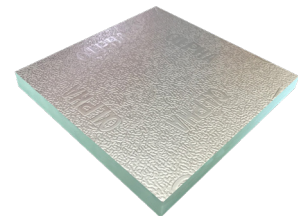
AD-PIR-30-10

Thickness : 30 mm
Minimum density : 50 kg/m³
Dimensions : 4000 mm x 1200 mm
Aluminum foil finish : embossed / embossed



AD-PIR-20-105

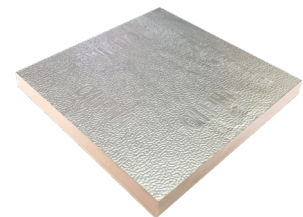
Thickness : 20 mm
Minimum density : 55 kg/m³
Dimensions : 4000 mm x 1200 mm
Aluminum foil finish : embossed / embossed



ALPHA-PIR Panel for external use

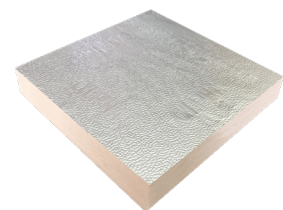
AD-PIR-20-20

Thickness : 20 mm
Minimum density : 60 kg/m³
Dimensions : 4000 mm x 1200 mm
Aluminum foil finish : embossed / embossed



AD-PIR-30-20

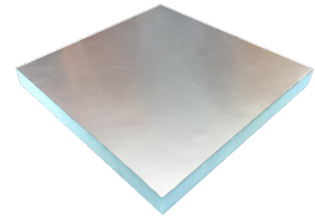
Thickness : 30 mm
Minimum density : 60 kg/m³
Dimensions : 4000 mm x 1200 mm
Aluminum foil finish : embossed / embossed



ALPHA-PIR Panel with smooth facer

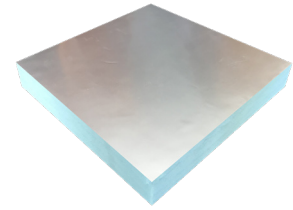
AD-PIR-S-20

Thickness : 20 mm
Minimum density : 55 kg/m³
Dimensions : 4000 mm x 1200 mm
Aluminum foil finish : smooth / embossed



AD-PIR-S-30

Thickness : 30 mm
Minimum density : 55 kg/m³
Dimensions : 4000 mm x 1200 mm
Aluminum foil finish : smooth / embossed



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.

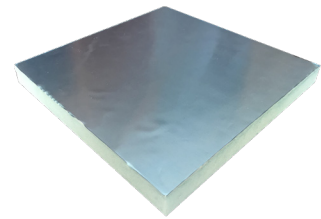
ALPHA-PIR-PLUS panels are manufactured using an aluminum foil facer with a special coating to provide the necessary resistance against bacteria and microbes.

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.

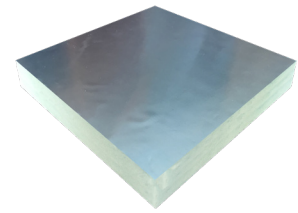
AD-PIR-PLUS-20

Thickness : 20mm
Minimum density : 55 kg/m³
Dimensions : 4000 mm x 1200 mm
Aluminum foil finish : smooth / embossed



AD-PIR-PLUS-30

Thickness : 30mm
Minimum density : 55 kg/m³
Dimensions : 4000 mm x 1200 mm
Aluminum foil finish : smooth / embossed



ACCESSORIES

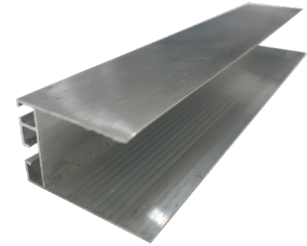
Aluminium Invisible Flange

AD-F-AIF-20

Size : 20 mm
Length : 4 m

AD-F-AIF-30

Size : 30 mm
Length : 4 m



Aluminium Invisible Flange-Blue

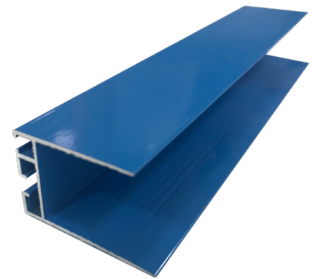
For usage with ALPHA-PIR-PLUS duct system

AD-F-AIFB-20

Size : 20 mm
Length : 4 m

AD-F-AIFB-30

Size : 30 mm
Length : 4 m



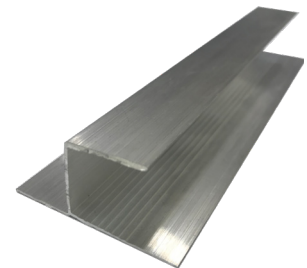
Aluminium Chair Flange

AD-F-ACF-20

Size : 20 mm
Length : 4 m

AD-F-ACF-30

Size : 30 mm
Length : 4 m



Aluminium Chair Flange-Blue

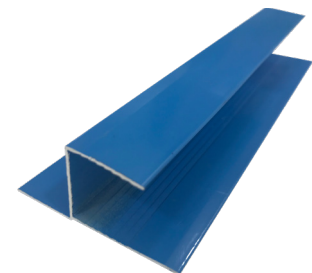
For usage with ALPHA-PIR-PLUS duct system

AD-F-ACFB-20

Size : 20 mm
Length : 4 m

AD-F-ACFB-30

Size : 30 mm
Length : 4 m



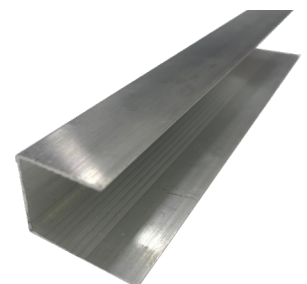
Aluminium U Flange

AD-F-AUF-20

Size : 20 mm
Length : 4 m

AD-F-AUF-30

Size : 30 mm
Length : 4 m



Aluminium U Flange-Blue

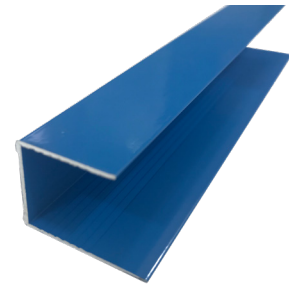
For usage with ALPHA-PIR-PLUS duct system

AD-F-AUFB-20

Size : 20 mm
Length : 4 m

AD-F-AUFB-30

Size : 30 mm
Length : 4 m



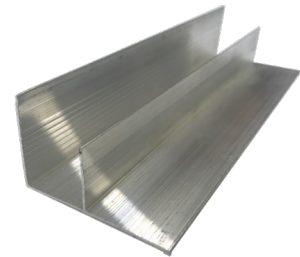
Aluminium F Flange

AD-F-AFF-20

Size : 20 mm
Length : 4 m

AD-F-AFF-30

Size : 30 mm
Length : 4 m



Aluminium F Flange-Blue

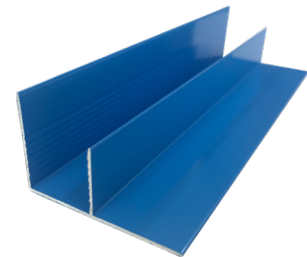
For usage with ALPHA-PIR-PLUS duct system

AD-F-AFFB-20

Size : 20 mm
Length : 4 m

AD-F-AFFB-30

Size : 30 mm
Length : 4 m



Polymer Invisible Flange

AD-F-PIF-20

Size : 20 mm
Length : 4 m

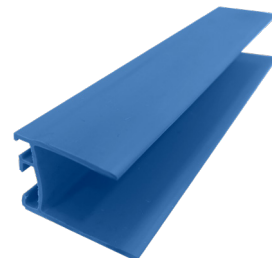


Polymer Invisible Flange-Blue

For usage with ALPHA-PIR-PLUS duct system

AD-F-PIFB-20

Size : 20 mm
Length : 4 m



Polymer H Bayonet

AD-F-PHB-20/30

Length : 4 m



Polymer Covering Angle

AD-F-PCA-20

Width / Height : 25 mm
Length : 80 mm

AD-F-PCA-30

Width / Height : 40 mm
Length : 80 mm



Polymer Covering Angle-Blue

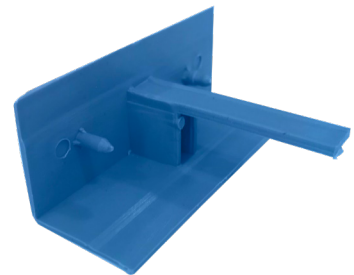
For usage with ALPHA-PIR-PLUS duct system

AD-F-PCAB-20

Width / Height : 30 mm
Length : 80 mm

AD-F-PCAB-30

Width / Height : 40 mm
Length : 80 mm



Galvanized Corner

AD-F-GIC-20

Size : 20 mm
Height : 80 mm

AD-F-GIC-30

Size : 30 mm
Height : 100 mm



Aluminium Reinforcement Bar

AD-F-ARB

Diameter : 14 mm
Length : 4 m



Aluminium Reinforcement Bar-Blue

For usage with ALPHA-PIR-PLUS duct system

AD-F-ARFB

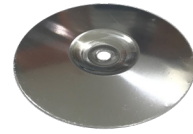
Diameter : 14 mm
Length : 4 m



Aluminium Disc

AD-F-ADB

Diameter : 98 mm

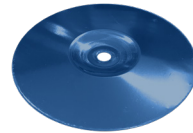


Aluminium Disc-Blue

For usage with ALPHA-PIR-PLUS duct system

AD-F-AD

Diameter : 98 mm



Self Tapping Screw

AD-F-ADB

Diameter : 6.35 mm
Length : 50.8 mm



ALPHA DUCTS Special Foam Glue

AD-F-AG-15

Width : 250 mm
Height : 350 mm
Weight : 15 kg



ALPHA DUCTS Acrylic Sealant

AD-F-ASL

Length : 215 mm
Weight : 400 g



Aluminum Tiger Connector

AD-F-ATC

Length : 50 mm
Weight : 40 mm



Polymer Cross Fixing Connector

AD-F-PCFC

Length : 118 mm
Width : 118 mm



Polymer Cross Fixing Connector-Blue

For usage with ALPHA-PIR-PLUS duct system

AD-F-PCFCB

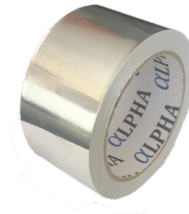
Length : 118 mm
Width : 118 mm



Aluminium Tape

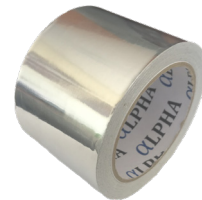
AD-F-AT-50-25

Width : 50 mm
Length : 22.86 m



AD-F-AT-75-25

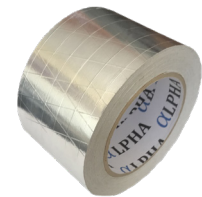
Width : 75 mm
Length : 45.72 m



Aluminium Reinforced Tape

AD-F-ART-75

Width : 75 mm
Length : 45.72 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.



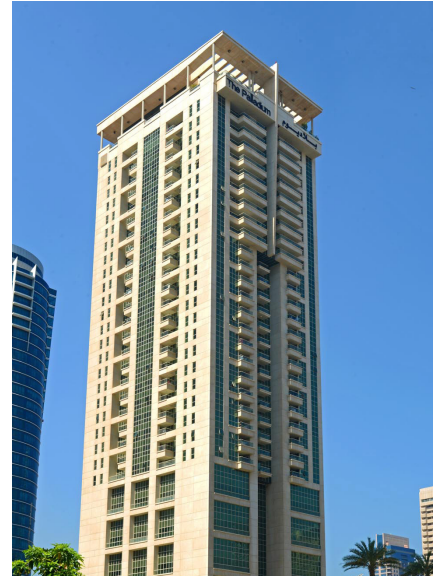
PROJECT : THE RESIDENCES DOWNTOWN DUBAI
CLIENT : EMAAR
CONSULTANT : HYDER CONSULTING / ARIF AND BINTOAK
PRODUCT : ALPHA-PIR



PROJECT : IBN BATTUTA MALL
CLIENT : NAKHEEL
CONSULTANT : DEWAN AL EMARA
PRODUCT : ALPHA-PIR



PROJECT : DAMAC TOWERS BY PARAMOUNT
CLIENT : DAMAC PROPERTIES
CONSULTANT : KEO / KHATIB AND ALAMI
PRODUCT : ALPHA-PIR



PROJECT : PALLADIUM TOWER
CLIENT : ETA STAR PROPERTIES
CONSULTANT : IAN BANHAM
PRODUCT : ALPHA-PIR



PROJECT : NAD AL SHEBA VILLAS
CLIENT : NAKHEEL
CONSULTANT : ARIF AND BINTOAK
PRODUCT : ALPHA-PIR



PROJECT : MARINA PROMENADE
CLIENT : EMAAR
CONSULTANT : HYDER CONSULTING
PRODUCT : ALPHA-PIR



PROJECT : AL REEFVILLAS
CLIENT : MANAZEL REAL ESTATE
CONSULTANT : CRANG AND BOAKE
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 brochure 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

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**MECHANICAL & ELECTRICAL
CONTRACTORS**

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