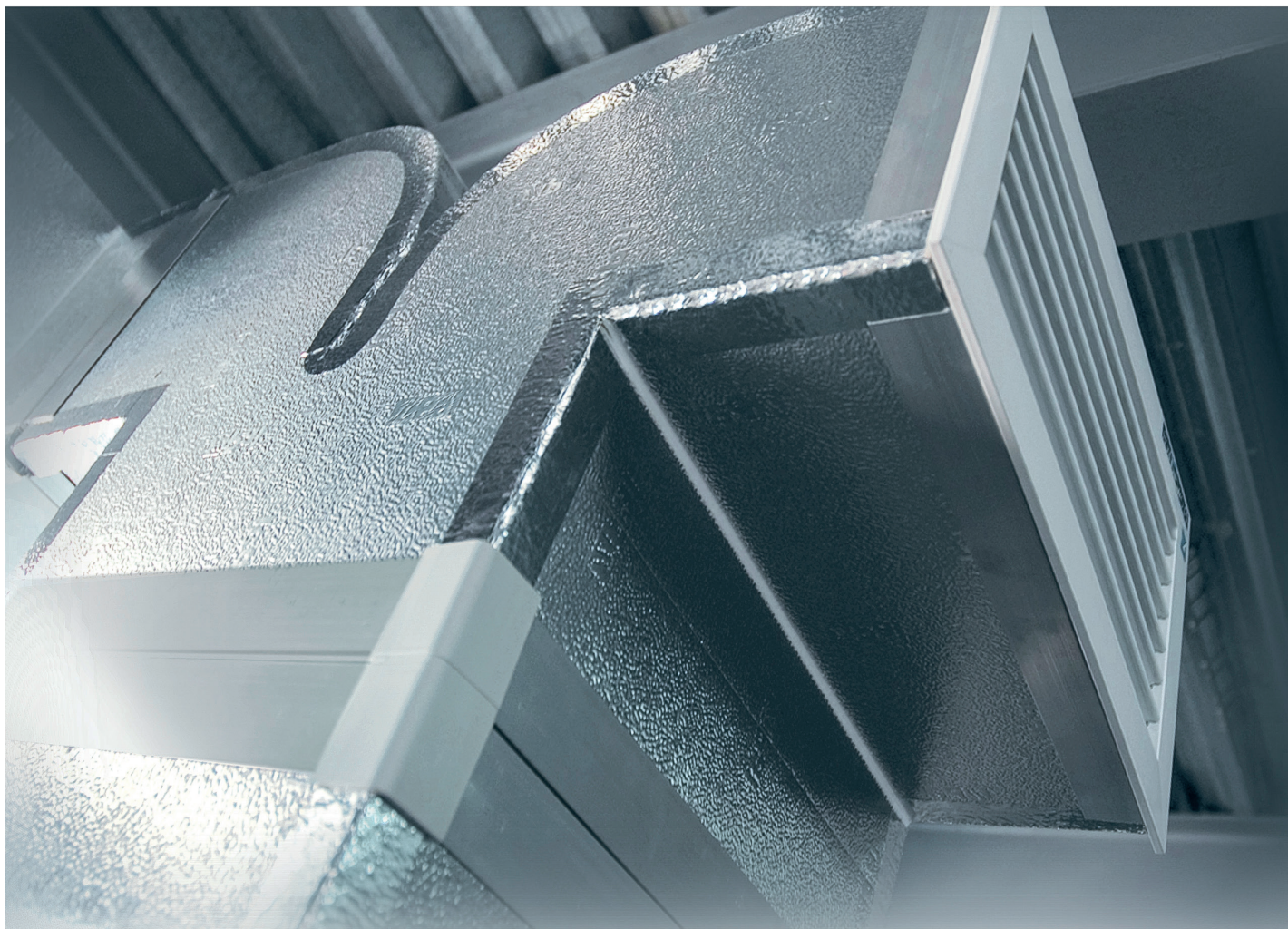Insulation

Pal Duct™ PIR System
Product Catalogue

Fibre-free Core

Kingspan®
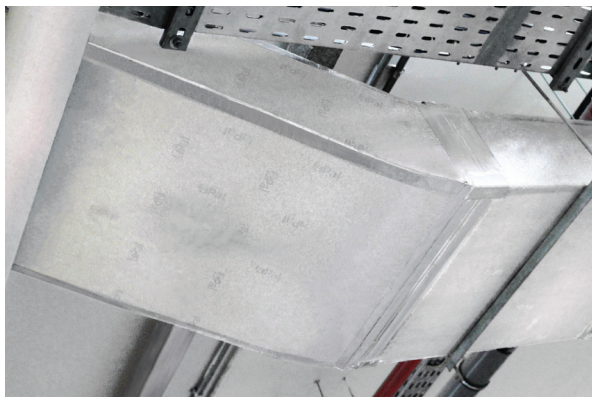
Introduction

Overview

The heating, ventilation and air–conditioning (HVAC) industry is in the midst of a dynamic era. However, air–distribution ductwork, a critical component of HVAC systems, has remained virtually unchanged since the early 1900s.

Several factors have introduced the need to revolutionise HVAC ductwork. Energy use has continued to escalate, and thus the demand for energy reducing solutions has intensified. Requirements for clean air are becoming increasingly prevalent. Speed of construction has become a valuable asset. Floor space and headroom are under constant pressure.

Kingspan PalDuct systems have been the pioneer in pre–insulated ducting. Pal was the first company in the world to introduce the innovative and revolutionary rigid pre–insulated ductwork as an alternative to sheet metal ductwork. It was invented by Claudio Ferraro of Bologna, Italy in 1965.

Kingspan Insulation has proven the value of its products and Kingspan PalDuct has been used in some of the most prestigious projects around the world, due to its known advantages over the traditional galvanised sheet metal ductwork.

Kingspan Insulation has commissioned state of the art manufacturing plants, established workshops in different regions worldwide and also provided specialised and comprehensive training courses conducted by service oriented and experienced trainers well–equipped with the latest technologies, all to ensure quality HVAC ductwork fabrications and installations. This is closely supervised by the representatives from subsidiary companies and sales offices worldwide.

In 2014 Kingspan Group acquired Pal International and assimilated it into its Insulation Division, which subsequently became responsible for the sales and marketing of Kingspan PalDuct products across the globe.

Introduction

What is Kingspan PalDuct Technology?

- Complete line of components and accessories.
- Professional hand tools and automated machinery.
- Specialised training courses for ductwork fabricators.
- "Duct Design Software" to size the ductwork and estimate the material needed.
- Technical Support.

Advantages of Kingspan PalDuct Technology

- Easy to clean and hygienic.
- CFC/HCFC-free: helping to minimise the effects of Ozone Depletion and Global Warming
- Clean air: fibre-free insulation core.
- Lightweight: only 15% of the weight of sheet metal ductwork.
- Resistance to fungus growth.
- Space saving: flush-fitting installation possible.
- Low leakage: fully sealed systems conform to the air-leakage limit of DW 144 Class C-high pressure.
- Low λ value.
- Energy-saving: up to 20% annually.
- Fast-track installation: rapid erection combined with single-x installation.
- On-site fabrication capability.
- No limits to duct sizes.
- High-compressive strength.
- High rigidity/integrity.
- Base material is impermeable to moisture.

Specialised Training & Technical Support

Kingspan Insulation provides specialised and comprehensive training courses to appointed distributors and clients in order to ensure that fabricators carry out the fabrication of Kingspan PalDuct Systems for any project directly on-site, assuring fast and more accurate execution of duct installation requirements.

Kingspan Insulation also provides technical support to appointed distributors and clients in order to ensure the consistent quality of HVAC ductwork fabrication and installations.

Certifications & Compliance

Kingspan Insulation is ISO certified and complies with Management System standards: ISO 9001: 2015 (Quality management systems. Requirements), ISO 14001: 2015 (Environmental Management Systems. Requirements) and BS / I.S OHSAS 18001: 2007 (Health and Safety Management Systems. Requirements). Kingspan PalDuct PIR products have Factory Control, Product Level certification and Product Approval issued by Warrington Certifire. Kingspan PalDuct PIR has been tested in accordance with the requirements of EN 13403:2013 (Ventilation for buildings non-metallic ducts. Ductwork made from insulation duct boards.)

Kingspan PalDuct PIR Panels

Polyisocyanurate Insulation Panel

Kingspan PalDuct PIR Panels comprise a fibre–free high performance rigid thermoset polyisocyanurate (PIR) insulation core, faced on both sides with an embossed aluminium foil. The aluminium foil is lacquered with corrosion-resistant polymer varnish.

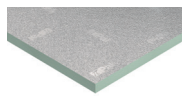### Kingspan PalDuct PIR Panel (Internal Use)
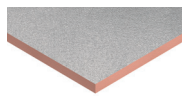
1010

1100

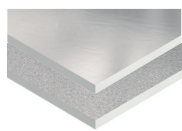| Thickness (mm)	20/30
Density (kg/m³)	42 ± 3
Panel Dimensions (mm)	4000 x 1200
Thermal Conductivity (W/m.K)	0.020
Aluminium Foil Finish	Embossed / Embossed
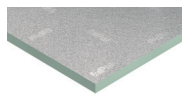
Kingspan PalDuct PIR Panel (External Use)

1075

1150

Thickness (mm)	20/30
Density (kg/m³)	48 ± 3
Panel Dimensions (mm)	4000 x 1200
Thermal Conductivity (W/m.K)	0.020
Aluminium Foil Finish	Embossed / Embossed
Aluminium Foil Thickness (External Side)	200 microns
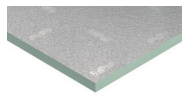
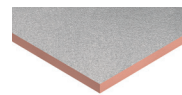### Kingspan PalDuct PIR Panel(Smooth Facing)

1075

Thickness (mm)	20
Density (kg/m³)	42 ± 3
Panel Dimensions (mm)	4000 x 1200
Thermal Conductivity (W/m.K)	0.020
Aluminium Foil Finish	Smooth / Embossed
Aluminium Foil Thickness (External Side)	200 microns

CFC/HCFC-free Insulation Panel

People, nowadays, are becoming even more conscious of their impact on the environment. Kingspan PalDuct PIR Panel complies to the concern for the increasing Ozone Depletion and Global Warming.

The system uses panels which comprise a polyisocyanurate (PIR) insulation core, that is manufactured with a CFC/HCFC–free blowing agent. The blowing agent used has zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP).
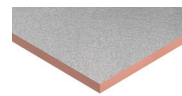
Kingspan PalDuct PIR Panel (Internal Use)

1009

Thickness (mm)	20
Density (kg/m³)	50 ± 3
Panel Dimensions (mm)	4000 x 1200
Thermal Conductivity (W/m.K)	0.020
Facer Finish	Embossed / Embossed

Kingspan PalDuct PIR Panel (Internal Use)

1000

Thickness (mm)	10
Density (kg/m³)	50 ± 3
Panel Dimensions (mm)	4000 x 1200
Thermal Conductivity (W/m.K)	0.0272
Facer Finish	Embossed / Embossed

Kingspan PalDuct Eco Panels

Antimicrobial Coated Panel

Micro-organisms are unavoidably present in the air we breathe. Bacteria can be harmful and can be the cause of unwanted odours, stains and infectious diseases.

The HVAC industry has become to be increasingly concerned with the quality of air that is distributed through the ductwork in a building. Hygienic coatings for HVAC ductwork have been designed for use in locations such as food preparation areas, clinics, schools and hospitals, where it is important to limit the growth of bacteria. Moreover, this may be especially important in high humidity areas where bacteria can multiply rapidly.

Description

The Kingspan PalDuct Eco System uses Panels and components, which are coated in an innovative antimicrobial technology that inhibits the growth of bacteria.

Kingspan PalDuct Eco Panel comprises a fibre-free rigid thermoset polyisocyanurate (PIR) or polyurethane (PUR) insulation core, faced on one side with an embossed aluminium foil and the other with a smooth aluminium foil. Both facings are protected with Biomaster antimicrobial technology. The panels can be joined together with antimicrobial coated, green coloured aluminium and polymer profiles and adhesive materials to create a pre–insulated HVAC ductwork system that can resist the spread of surface bacteria.

Kingspan PalDuct Eco Panel
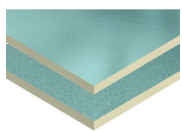
1201

Thickness (mm)	21 – 30
Density (kg/m³)	48 – 50
Panel Dimensions (mm)	4000 x 1200
Thermal Conductivity (W/m.K)	0.020
Aluminium Foil Finish	Smooth / Embossed Antimicrobial Coating
Antimicrobial Efficiency	ISO 22196

Features

The Kingspan PalDuct Eco System has been developed to fight harmful airborne micro-organisms more effectively. Kingspan PalDuct Eco Panels are protected with Biomaster Antibacterial Technology, which has been shown to inhibit the growth of bacteria on the surface of the ductwork system.

The Kingspan PalDuct Eco System has been tested by an independent laboratory and found to have bacterial growth resistance on the following organisms:

- Pseudomonas aeruginosa;
- Staphylococcus aureus; and
- Escherichia coli.

How does Biomaster protection work?

Biomaster is based on silver ion technology. When bacteria come into contact with a Biomaster protected surface, the silver ions prevent them from growing, producing energy or replicating; therefore, they die.

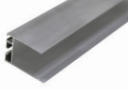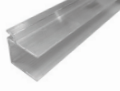The controlled release of the active ingredient provides maximum antibacterial protection for the lifetime of the product. The active antimicrobial agent in Biomaster complies with the required legislation including:

- Biocidal Products Regulation (BPR);
- Food and Drug Administration (FDA); and
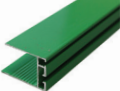- Environmental Protection Agency (EPA).

Kingspan PalDuct Panel Accessories

Polymer/Aluminium Invisible Profile/ Aluminium Joint Profile

Thickness	20 mm
Code	4010 (Aluminium Invisible Profile) 4100 (Polymer)
Nominal Length	4 m
Thickness	30 mm
Code	4040 (Aluminium Joint Profile) 4041 (Aluminium Invisible Profile)
Nominal Length	4 m

Kingspan PalDuct Eco System Green Colour Polymer Invisible Profile

Thickness	20 mm
Code	4063
Nominal Length	4 m

H Bayonet in Polymer

Thickness	20 mm
Code	4105
Nominal Length	4 m

Aluminium Channel

Thickness	30 mm
Code	4080
Nominal Length	4 m

Corner Cover in Polymer

Thickness	20 mm
Code	4350

Thickness	30 mm
Code	4390

Corner Plate for Invisible Profile

Thickness	20 mm
Code	4360

Thickness	30 mm
Code	4400

Steel Corner

Code	4380

Aluminium U Profile
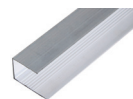
Thickness	20 mm
Code	4013
Nominal Length	4 m
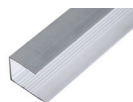
Thickness	30 mm
Code	4042
Nominal Length	4 m

Kingspan PalDuct Eco System Green Aluminium U Profile
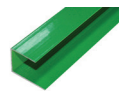
Thickness	20 mm
Code	4065
Nominal Length	4 m
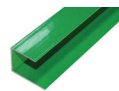
Thickness	30 mm
Code	4082
Nominal Length	4 m

Aluminium Chair Profile
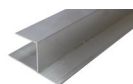
Thickness	20 mm
Code	4015
Nominal Length	4 m
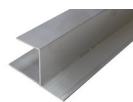
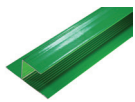| Thickness	30 mm
Code	4043
Nominal Length	4 m

Kingspan PalDuct Panel Accessories

Kingspan PalDuct Eco System Green Colour Cover in Polymer

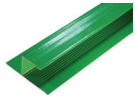| Code	4355

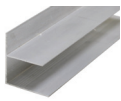## Kingspan PalDuct Eco System Green Aluminium Chair Profile

Thickness	20 mm
Code	4067
Nominal Length	4 m

Thickness	30 mm
Code	4083
Nominal Length	4 m

Aluminium F Profile

Thickness	20 mm
Code	4017
Nominal Length	4 m
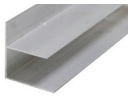
Thickness	30 mm
Code	4044
Nominal Length	4 m

Kingspan PalDuct Eco System Green Aluminium F Profile
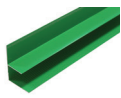
Thickness	20 mm
Code	4069
Nominal Length	4 m
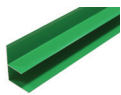
Thickness	30 mm
Code	4084
Nominal Length	4 m

Reinforcement Bar in Aluminium

Thickness	14 mm
Code	4450
Nominal Length	4 m

Reinforcement Disc in Aluminium

Code	4454

Reinforcement Disc in Polymer

Code	4452

Duct Support

Code	4455

Tiger Clip
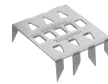
Code	3034

Tiger Connector

Code	4465

Tiger Closure
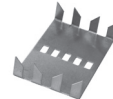
Code	4456

Cross Fixing Device

Code	4453

Kingspan PalDuct Panel Accessories

Kingspan PalDuct Sealant

Code	4250

Kingspan PalDuct Adhesive

Capacity	15 kg/tin
Code	4200

Gasket Self Adhesive

Code	4461

Aluminium Tape

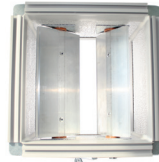| Width	50 mm
Code	4300
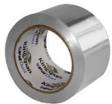
Width	75 mm
Code	4310

Screw for Stiffening Rod

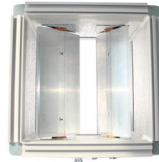| Code	4458

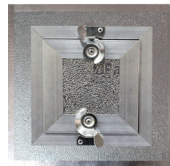### PIR Pre-insulated Volume Control Damper

Thickness	20/30 mm

Phenolic Pre-insulated Volume Control Damper
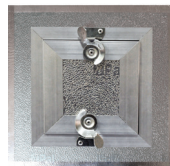
Thickness	20/30 mm

PIR Pre-insulated Access Door

Thickness	20/30 mm

Phenolic Pre-insulated Access Door

Thickness	20/30 mm

Automated and Manual Fabrication Equipment

Automated
Kingspan Ducting Supercut CNC Machine

Code	5004

Kingspan Ducting CNC Machine

Code	5000

Manual

A complete set of professional hand tools and manual fabrication equipment has been specifically developed to enable the efficient and economical fabrication of ductwork. Ease of portability provides the option for on–site fabrication.

A full line of automated machinery is also available for high volume ductwork requirements.

Portable Fabrication Table
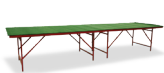
Length (m)	4 x 1.2
Code	5054

Compass

Code	8008

Aluminium Clamping Ruler

Length (m)	4
Code	5055

Length (m)	1.2
Code	5056

Automated and Manual Fabrication Equipment

Kingspan PalDuct Manual Fabrication Tool Kit

Left Cutter	45°
Right Cutter	45°
Double Blade Cutter	90°
Double Blade Cutter – 20 mm	45°
Compass	
Glue Spreading	Manual
Stiff Spatula	Aluminium
Manual Silicone Gun	
Measuring Tape	
Rivet Machine	
Rubber Hammer	
Knife	
Tape Maker	
Code	5053

Square in Aluminium

Size (mm)	1200
Code	5057

Size (mm)	700
Code	5058

Cutter Box

Left Cutter	45°
Right Cutter	45°
Double Blade Cutter 20 mm	45°
Straight Cutter	90°
Code	5082

Manual Bending Machine

Code	5059

Pneumatic Glue Spreader

Code	5060

Manual Extended Silicon Tool

Code	5063

Double Blade Cutter

Size (mm)	20/30 45° Double Blade
Code	5069 (20 mm) 5070 (30 mm)

Single Blade Cutter

Size (mm)	20/30 90° Straight 45° Left 45° Right
Code	(20/30 mm) 5072 (90° Straight) 5068 (45° Left) 5071 (45° Right)

Stiff Spatula

Code	5075

Glue Spreader Manual

Code	5081

Tape Marker

Code	5077

Rubber Hammer

Code	8040

Kingspan PalDuct Systems Order Guide

20 mm Panel (Internal Use)

To produce 1,000 m² of The Kingspan PalDuct PIR System, the following is a list of material and accessories for a standard construction requirement:

Code	Description	UOM	Approx. Qty.
1010	Panel 4000 x 1200 mm	m²	1,000
4010	Aluminium Invisible Profile	m	760
4105	H Bayonet in Polymer	m	400
4350	Corner Cover in Polymer	pc	900
4360	Corner Plate for Invisible Profile	pc	1,200
4013	Aluminium U Profile	m	80
4015	Aluminium Chair Profile	m	80
4017	Aluminium F Profile	m	80
4200	Kingspan PalDuct Adhesive	kg	91
4300	Aluminium Tape	roll	150
4250	Kingspan PalDuct Sealant	tube	90

30 mm Panel (External Use)

To produce 1,000 m² of The Kingspan PalDuct PIR System, the following is a list of material and accessories for a standard construction requirement:

Code	Description	UOM	Approx. Qty.
1150	Panel 4000 x 1200 mm	m²	1,000
4040	Aluminium Invisible Profile	m	760
4080	Aluminium Channel	m	400
4380	Steel Corner	pc	1,500
4400	Corner Plate for Invisible Profile	pc	1,500
4461	Gasket	pc	400
4042	Aluminium U Profile	m	80
4043	Aluminium Chair Profile	m	80
4044	Aluminium F Profile	m	80
4200	Kingspan PalDuct Adhesive	kg	90
4310	Aluminium Tape	roll	150
4250	Kingspan PalDuct Sealant	tube	90
4450	Reinforcement Bar in Aluminium	m	120
4454	Reinforcement Disc	pc	200

Prestige Projects

Project Name: The Dubai Mall
Location: Dubai, United Arab Emirates
Building Use: Retail
Product: Kingspan PalDuct PIR System

Project Name: Aldar Headquarters
Location: Abu Dhabi, U.A.E.
Building Use: Offices
Product: Kingspan PalDuct PIR System

Project Name: Khalifa University
Location: Abu Dhabi, U.A.E.
Building Use: Education
Product: Kingspan PalDuct PIR System

Project Name: Arabian Ranches Golf Club
Location: Dubai, United Arab Emirates
Building Use: Leisure
Product: Kingspan PalDuct PIR System

Project Name: Dubai Sustainable City
Location: Dubai, United Arab Emirates
Building Use: Residential
Product: Kingspan PalDuct PIR System

Project Name: World Trade Center Doha
Location: Doha, Qatar
Building Use: Offices
Product: Kingspan PalDuct PIR System

Project Name: Intercontinental Dubai Marina
Location: Dubai, United Arab Emirates
Building Use: Hotel
Product: Kingspan PalDuct PIR System

Project Name: Nation Towers
Location: Abu Dhabi, U.A.E.
Building Use: Mixed Use
Product: Kingspan PalDuct PIR System

Contact Details

Kingspan Insulation LLC

P.O. Box 113826, Dubai Investment Park 2,
Dubai, U.A.E.
T: +971 (0) 4 889 1000
F: +971 (0) 4 883 8515
E: info@kingspaninsulation.ae
www.kingspaninsulation.com

Technical Service

Kingspan Insulation has one of the most technically advanced support services in the industry offering a full spectrum of advice, free of charge for all types of design projects.

The Kingspan Insulation technical team are continually updating their knowledge on building regulations, best practise, construction methods and the development of building materials to ensure the advice and services provided are always one step ahead.

Services available:

- U-value calculations;

- condensation/dew point risk calculations;

- advice on product selection and product data for the full range of Kingspan Insulation products;

- installation and fixing advice on all applications and products;

- specification and construction advice; and

- Tapered Roofing Design service.

Email: technical@kingspaninsulation.ae

Kingspan®