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Kingspan Insulation Panels for Pre-insulated Ductwork

A COMPONENT OF THE KINGSPAN KOOLDUCT™ & KINGSPAN PALDUCT™ PRE-INSULATED DUCTWORK SYSTEMS

Kingspan® Ducting Solutions

Technical Data

Kingspan **Kool**Duct™
Rigid Phenolic Insulation Panels

Description

Kingspan **Kool**Duct™ rigid phenolic insulation panels have a CFC/HCFC–free rigid phenolic insulation core with a density of 55–60 kg/m³. Manufactured by a continuous process, the quality of the insulation is constantly monitored and controlled. The closed cell structure of the insulation gives the product excellent thermal properties, making it non–wicking and highly resistant to moisture penetration. *Kingspan* **Kool**Duct™ rigid phenolic insulation panels are faced on both sides with an extremely durable and protective low vapour permeability, 25 micron aluminium foil reinforced with a 5 mm glass fibre scrim.

Kingspan **Kool**Duct™ rigid phenolic insulation panels are manufactured under a quality control system approved to BS EN ISO 9001: 2000 (Quality management systems. Requirements).

Application

Kingspan **Kool**Duct™ rigid phenolic insulation panels are a core component of the *Kingspan* **Kool**Duct™ System of pre–insulated air distribution ductwork, which is an alternative to traditional sheet metal ductwork in Building Services / HVAC applications.

The *Kingspan* **Kool**Duct™ System can easily meet the air leakage requirements of HVCA DW 144 – Class C / SMACNA Class CL 6 (for low and medium pressure applications – max. 1000 Pa).

Availability

- Insulation panel dimensions: 3930 mm x 1200 mm.
- Insulation panel thickness: 22 mm & 28 mm.

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General Physical Properties

Property	Test Method	Typical Value
Nominal Density	(BS 4370–1: 1988 (1996))	55–60 kg/m³
Thermal Conductivity at 23°C Mean Temp	(BS 4370–2: 1993)	0.021 W/m·K
Colour		Pink
Minimum Closed Cell Content	(BS EN ISO 4590: 2003)	> 90%
Compressive Strength at 10% Compression	(BS 4370–1: 1988 (1996))	200 kPa
Operating Temperature Limits of Panels	Upper Limit Lower Limit	+80°C –20°C
Thermal Resistance of ductwork including the effect of low emissivity facings (R–Total)*: 22 mm *Kingspan* **Kool**Duct™ rigid phenolic insulation panel** Cooling Application[1]: Ambient Air Flowing at 0.5 m/s : Still Ambient Air Heating Application[2]: Ambient Air Flowing at 0.5 m/s : Still Ambient Air 28 mm *Kingspan* **Kool**Duct™ rigid phenolic insulation panel** Cooling Application[1]: Ambient Air Flowing at 0.5 m/s : Still Ambient Air Heating Application[2]: Ambient Air Flowing at 0.5 m/s : Still Ambient Air	(Calculation)	 1.18 m²·K/W 1.52 m²·K/W 1.15 m²·K/W 1.47 m²·K/W 1.48 m²·K/W 1.81 m²·K/W 1.43 m²·K/W 1.75 m²·K/W
Water Vapour Resistance, Z (Method A)	(BS EN 12086: 1997)	617 MN·s/g

[1] *Calculated using 13ºC supply air and 26ºC ambient environment.*
[2] *Calculated using 30ºC supply air and 18ºC ambient environment.*
* *For assistance on the Building Code for Australia (BCA) compliance for installed ductwork, please contact Kingspan Insulation's Australian Distributor (see rear cover).*
** *For cooling applications, the risk of condensation should be assessed and calculated as appropriate.*

Fire Test Classifications

Fire Test	Test Method	Result
Early Fire Hazard (Australia)	(AS 1530–3: 1989)	Ignitability Index = 0 Spread of Flame = 0 Heat Evolved Index = 0 Smoke Developed Index = 0–1
Standard for Safety (Canada / US)	(CAN/ULC–S110) / (UL 181)	**Kool**Duct™ Air Duct is UL Listed (Class 1)
Fire Performance (UK)	(BS 476–6: 1989) (BS 476–7: 1997)	I ≤ 12 i ≤ 6 (These test results combined, enable Class 1 the panels to be classified as Class 0)
Specific Optical Density of Smoke (UK)	(BS 6401: 1983)	Avg. Ds = 15 (without pilot flame) Avg. Ds = 22.7 (with pilot flame)

Technical Data

Kingspan **Pal**Duct™ Rigid Polyisocyanurate (PIR) Insulation Panels 80/80

Description

Kingspan **Pal**Duct™ rigid polyisocyanurate insulation panels have a CFC/HCFC–free rigid polyisocyanurate insulation core with a density of 45 kg/m^3. Manufactured by a continuous process, the quality of the insulation is constantly monitored and controlled. The closed cell structure of the insulation gives the product excellent thermal properties, making it non–wicking and highly resistant to moisture penetration. *Kingspan* **Pal**Duct™ rigid polyisocyanurate insulation panels are available with the following facings:

- 20 mm *Kingspan* **Pal**Duct™ 80/80 E/E: 80 micron aluminium facing embossed on both sides;
- 20 mm *Kingspan* **Pal**Duct™ 80/80 S/E: 80 micron smooth aluminium inner facing with 80 micron embossed aluminium outer facing; and
- 30 mm *Kingspan* **Pal**Duct™ 80/80 E/E: 80 micron aluminium facing embossed on both sides.

Kingspan **Pal**Duct™ rigid polyisocyanurate insulation panels are manufactured under a quality control system approved to UNI EN ISO 9001: 2000 (Quality management systems. Requirements).

Application

Kingspan **Pal**Duct™ rigid polyisocyanurate insulation panels are a core component of the *Kingspan* **Pal**Duct™ System of pre–insulated air distribution ductwork, which is an alternative to traditional sheet metal ductwork in Building Services / HVAC applications.

The *Kingspan* **Pal**Duct™ System is suitable for low and medium pressure applications (max. 1000 Pa).

Availability

- Insulation panel dimensions: 4000 mm x 1200 mm.
- Insulation panel thickness: 20 mm & 30 mm.

General Physical Properties

Property	Test Method	Typical Value
Nominal Density	(ASTM D 1622–2003 / UNI EN ISO 845: 1997)	45 kg/m^3
Thermal Conductivity at 23°C Mean Temp	(UNI EN 13165: 2006)	0.024 W/m·K
Colour		Pale Yellow
Minimum Closed Cell Content	(ASTM D 2856–1994)	> 90%
Compressive Strength at 10% Compression	(UNI EN 826: 1996)	200 kPa
Operating Temperature Limits of Panels	(UNI EN 1604: 1996) Upper Limit Lower Limit	 +70°C –20°C
Thermal Resistance of ductwork including the effect of low emissivity facings (R–Total)*: 20 mm *Kingspan* **Pal**Duct™ rigid polyisocyanurate insulation panel** Cooling Application[1]: Ambient Air Flowing at 0.5 m/s : Still Ambient Air Heating Application[2]: Ambient Air Flowing at 0.5 m/s : Still Ambient Air 30 mm *Kingspan* **Pal**Duct™ rigid polyisocyanurate insulation panel** Cooling Application[1]: Ambient Air Flowing at 0.5 m/s : Still Ambient Air Heating Application[2]: Ambient Air Flowing at 0.5 m/s : Still Ambient Air	(Calculation)	 0.96 m^2·K/W 1.30 m^2·K/W 0.94 m^2·K/W 1.26 m^2·K/W 1.39 m^2·K/W 1.73 m^2·K/W 1.34 m^2·K/W 1.67 m^2·K/W

[1] *Calculated using 13ºC supply air and 26ºC ambient environment.*
[2] *Calculated using 30ºC supply air and 18ºC ambient environment.*
* *For assistance on the Building Code for Australia (BCA) compliance for installed ductwork, please contact Kingspan Insulation's Australian Distributor (see rear cover).*
** *For cooling applications, the risk of condensation should be assessed and calculated as appropriate.*

Fire Test Classifications

Fire Test	Test Method	Result
Early Fire Hazard (Australia)	(AS 1530–3: 1989)	Ignitability Index = 0 Spread of Flame = 0 Heat Evolved Index = 0 Smoke Developed Index = 0–1
Standard for Safety (US)	(UL 181 Burning)	Pass (AWTA test report)

Contact Details

Customer Service

Please contact Kingspan Insulation on the numbers below:

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Technical Advice / Design

Kingspan Insulation supports all of its products with a comprehensive Technical Advisory Service for specifiers and contractors.

Calculations can be carried out to provide heat losses / gains, condensation / dew point risk, required insulation thicknesses etc... Thereafter any number of permutations can be provided to help you achieve your desired targets.

Kingspan Insulation can also give general application advice and advice on design detailing and fixing etc... Site surveys are also undertaken as appropriate.

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Literature & Samples

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