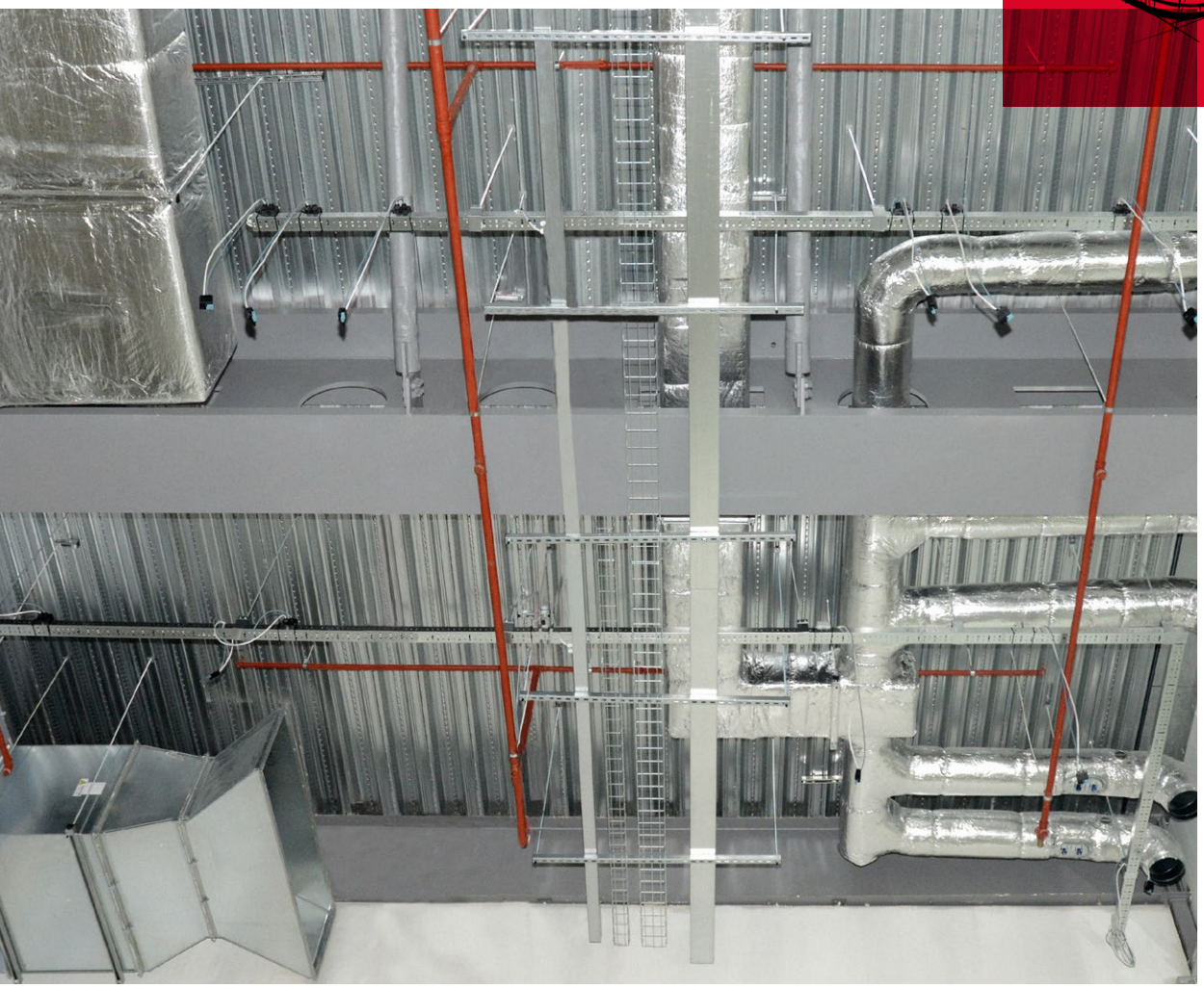
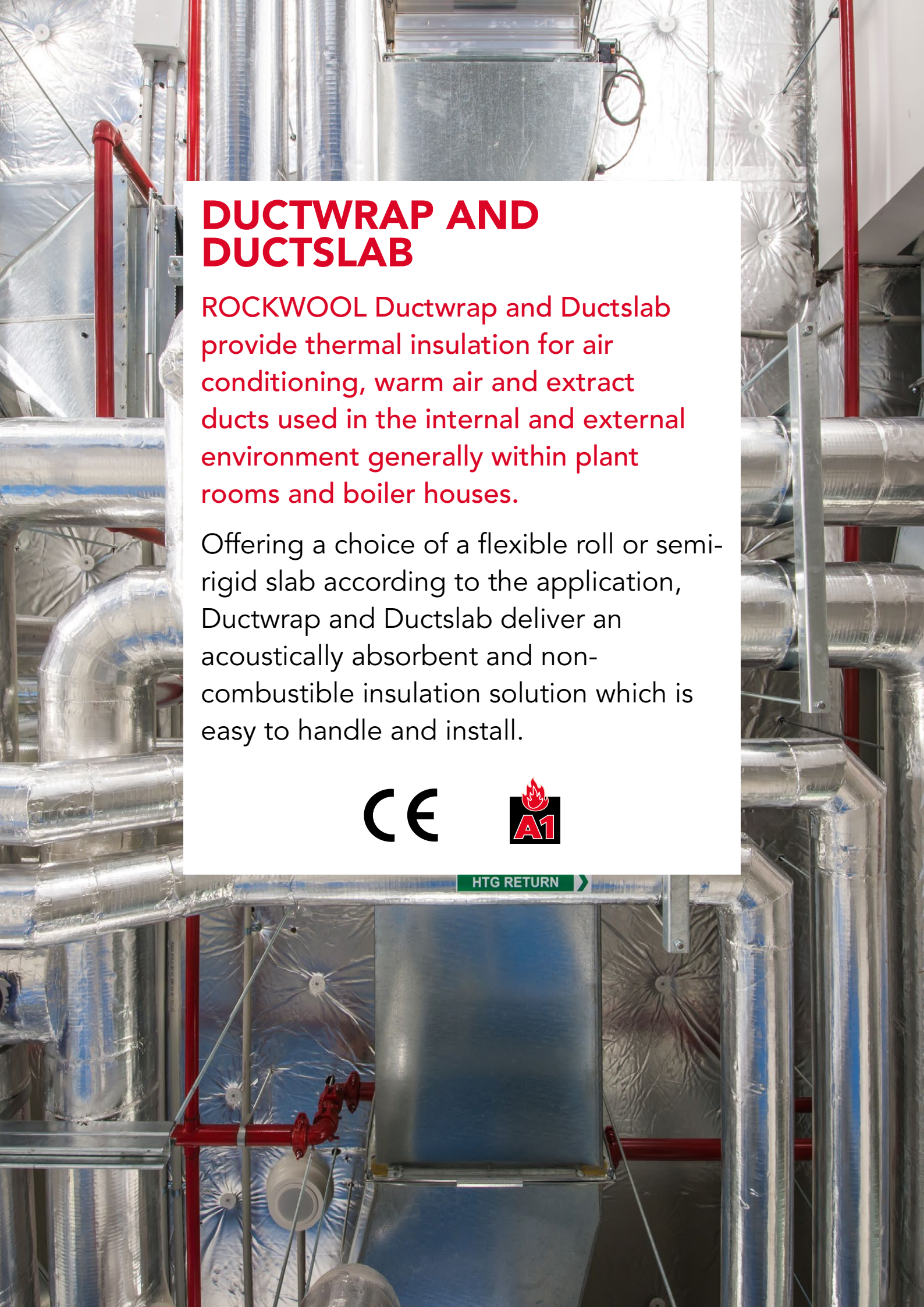
# DUCTWRAP AND DUCTSLAB

For the thermal insulation of ductwork and water storage tanks.



ROCKWOOL®




# DUCTWRAP AND DUCTSLAB

ROCKWOOL Ductwrap and Ductslab provide thermal insulation for air conditioning, warm air and extract ducts used in the internal and external environment generally within plant rooms and boiler houses.

Offering a choice of a flexible roll or semi-rigid slab according to the application, Ductwrap and Ductslab deliver an acoustically absorbent and non-combustible insulation solution which is easy to handle and install.

CE A1

## Advantages

- Acoustically absorbent
- Non-combustible
- Water repellent
- Chemically inert
- Easy to handle and install

## Description

ROCKWOOL Ductwrap and Ductslab are used for the thermal insulation of cold water storage, feed and expansion tanks. The products are recommended for ductwork for service temperatures of up to 230°C.

Ductwrap is a lightweight, flexible insulation roll, faced with reinforced aluminium foil.

Ductslab is a semi-rigid insulation slab, faced with reinforced aluminium foil.

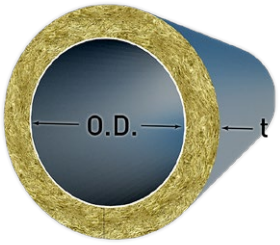
# Applications

## Calculation of length

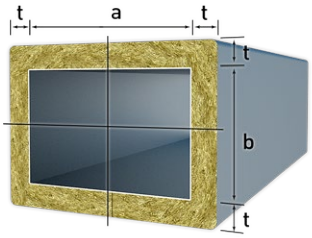
The calculation to determine the length of Ductwrap required to insulate the pipe or duct is made using the formula shown opposite.

The required thickness of Ductwrap and Ductslab insulation will depend on such factors as duct air temperatures, ambient air temperatures and the designed heat losses.

The tables below are for general guidance only.




Circular Ducts: L = 3.14 x (O.D. +2t)




Regular Ducts: L = 2a + 2b + 8t

## Thickness of ROCKWOOL insulation for warm air ducts

(taken from BS 5422:2009 Table 12)

Table 12 - Ductwrap

| Minimum temperature inside duct (°C) | External surface emissivity Minimum thickness of ROCKWOOL Ductwrap (mm) | | | | | |
|---|---|---|---|---|---|---|
| | 0.05 (eg. Bright aluminimum foil) | | 0.44 (eg. Dusty galvanised steel) | | 0.90 (eg. Blackpaint) | |
| | Calculated thickness (mm) | Advised thickness (mm) | Calculated thickness (mm) | Advised thickness (mm) | Calculated thickness (mm) | Advised thickness (mm) |
| 15 | 26 | 30 | 13 | 25 | 9 | 25 |
| 10 | 45 | 50 | 23 | 25 | 15 | 25 |
| 5 | 64 | 70 | 33 | 40 | 21 | 25 |
| 0 | 83 | 90 | 42 | 50 | 27 | 30 |

Table 12 - Ductslab

| Minimum temperature inside duct (°C) | External surface emissivity Minimum thickness of ROCKWOOL Ductslab (mm) | | | | | |
|---|---|---|---|---|---|---|
| | 0.05 (eg. Bright aluminimum foil) | | 0.44 (eg. Dusty galvanised steel) | | 0.90 (eg. Blackpaint) | |
| | Calculated thickness (mm) | Advised thickness (mm) | Calculated thickness (mm) | Advised thickness (mm) | Calculated thickness (mm) | Advised thickness (mm) |
| 15 | 26 | 30 | 14 | 25 | 9 | 25 |
| 10 | 47 | 50 | 24 | 25 | 15 | 25 |
| 5 | 67 | 70 | 34 | 40 | 22 | 25 |
| 0 | 86 | 90 | 44 | 50 | 28 | 30 |

## Indicative thickness of insulation for ductwork carrying warm air to control heat loss (taken from BS5422:2009 Table 13)

Table 13 - Ductwrap

| | External surface emissivity Minimum thickness of ROCKWOOL Ductwrap (mm) | | | | | |
|---|---|---|---|---|---|---|
| | 0.05 (eg. Bright aluminimum foil) | | 0.44 (eg. Dusty galvanised steel) | | 0.90 (eg. Blackpaint) | |
| Maximum heat loss ($W/m^2$) | Calculated thickness (mm) | Advised thickness (mm) | Calculated thickness (mm) | Advised thickness (mm) | Calculated thickness (mm) | Advised thickness (mm) |
| 16.34 | 31 | 40 | 37 | 40 | 39 | 40 |

Table 13 - Ductslab

| | External surface emissivity Minimum thickness of ROCKWOOL Ductslab (mm) | | | | | |
|---|---|---|---|---|---|---|
| | 0.05 (eg. Bright aluminimum foil) | | 0.44 (eg. Dusty galvanised steel) | | 0.90 (eg. Blackpaint) | |
| Maximum heat loss ($W/m^2$) | Calculated thickness (mm) | Advised thickness (mm) | Calculated thickness (mm) | Advised thickness (mm) | Calculated thickness (mm) | Advised thickness (mm) |
| 16.34 | 32 | 40 | 38 | 40 | 41 | 50 |

## Indicative thickness of insulation for chilled and dual-purpose ducting to control heat transfer (taken from BS5422:2009 Table 14)

Table 14 - Ductwrap

| | External surface emissivity Minimum thickness of ROCKWOOL Ductwrap (mm) | | | | | |
|---|---|---|---|---|---|---|
| | 0.05 (eg. Bright aluminimum foil) | | 0.44 (eg. Dusty galvanised steel) | | 0.90 (eg. Blackpaint) | |
| Maximum heat loss ($W/m^2$) | Calculated thickness (mm) | Advised thickness (mm) | Calculated thickness (mm) | Advised thickness (mm) | Calculated thickness (mm) | Advised thickness (mm) |
| 6.45 | 50 | 50 | 58 | 60 | 61 | 70 |

Table 14 - Ductslab

| | External surface emissivity Minimum thickness of ROCKWOOL Ductslab (mm) | | | | | |
|---|---|---|---|---|---|---|
| | 0.05 (eg. Bright aluminimum foil) | | 0.44 (eg. Dusty galvanised steel) | | 0.90 (eg. Blackpaint) | |
| Maximum heat loss ($W/m^2$) | Calculated thickness (mm) | Advised thickness (mm) | Calculated thickness (mm) | Advised thickness (mm) | Calculated thickness (mm) | Advised thickness (mm) |
| 6.45 | 52 | 60 | 59 | 60 | 63 | 70 |

# Performance

## Standards and approvals

Ductwrap and Ductslab products are CE marked in accordance with BS EN 14303. For more information please visit www.rockwool.co.uk/DOP

Ductslab satisfies the requirements of BS 3958–5, 'Specification for bonded man-made mineral fibre slabs'.

Ductwrap and Ductslab can be used to satisfy the requirements of BS 5422 'Method for specifying thermal insulating materials'.

The product has been authorised for use in LUL surface and sub-surface premises when installed in accordance with this data sheet – please refer to the LUL Approved Product Register website www.LU-apr.co.uk for specific details.

## Fire

The products are classified A1 in accordance with BS EN 13501-1 and fully comply with the definitions of non-combustible in all UK and Ireland Building Regulations.

## Thermal

| | Temperature (°C) | 10 | 50 | 100 | 150 | 200 |
|---|---|---|---|---|---|---|
| Ductslab | λ (W/mK) | 0.034 | 0.042 | 0.054 | 0.060 | 0.086 |
| Ductwrap | λ (W/mK) | 0.034 | 0.040 | 0.050 | 0.063 | 0.079 |

Consider a horizontal duct at 35°C in still air at 15°C insulated with 50mm Ductslab or Ductwrap:

| Cladding type | Emissivity (ε) | Other surface temp (°C) | Heat loss (W/m) |
|---|---|---|---|
| Aluminium | 0.05 | 19.0 | 13 |
| Cloth | 0.90 | 16.9 | 14 |

## Service temperature and limiting surface temperature

ROCKWOOL Ductwrap and Ductslab can be used for service temperatures of up to 230°C. The limiting outer foil face temperature is 80°C to maintain facing bond strength.

## Acoustics

It is sometimes desirable to improve the acoustic insulation on ducts, especially those in which gases, fluids or particle solids are transported at high velocities. The use of Ductwrap and Ductslab can considerably improve the level of environmental sound. For higher standards of acoustic attenuation, ROCKWOOL Techwrap can be used to provide both thermal and acoustic insulation.

# Product information

## Dimensions

Ductwrap rolls - 1000mm wide

| Thickness of roll (mm) | Length of roll (mm) | Rolls per pack | Area per pack ($m^2$) |
|---|---|---|---|
| 25 | 5000 | 2 | 10 |
| 40 | 4000 | 2 | 8 |
| 50 | 6000 | 1 | 6 |

Ductslab - length 1000mm width 600mm thickness 40, 50 and 60mm*

*Other thicknesses may be available upon request

## Density

The nominal density of Ductwrap and Ductslab is 45 kg/$m^3$.

## Other product properties

### pH neutrality

ROCKWOOL insulation is chemically compatible with all types of pipes, ducts, equipment and fittings. (Guidance is given in BS5970 regarding the treatment of austenitic stainless steel pipework and fittings). Stonewool insulation is chemically inert. A typical aqueous extract of ROCKWOOL insulation is neutral or slightly alkaline (pH 7 to 9.5).

### Durability

ROCKWOOL stone wool insulation products have been proven in service for over 60 years, in a wide range of climates and degrees of exposure. ROCKWOOL insulation will generally perform effectively for the lifetime of the building, plant or structure.

### Biological

ROCKWOOL stone wool is a naturally inert and rot- proof material that does not encourage or support the growth of fungi, moulds or bacteria, or offer sustenance to insects or vermin.

### Water vapour resistance

When suitably taped, the aluminium foil gives Ductwrap and Ductslab a water vapour resistance of approx 1000MNs/g.

## Specification clauses

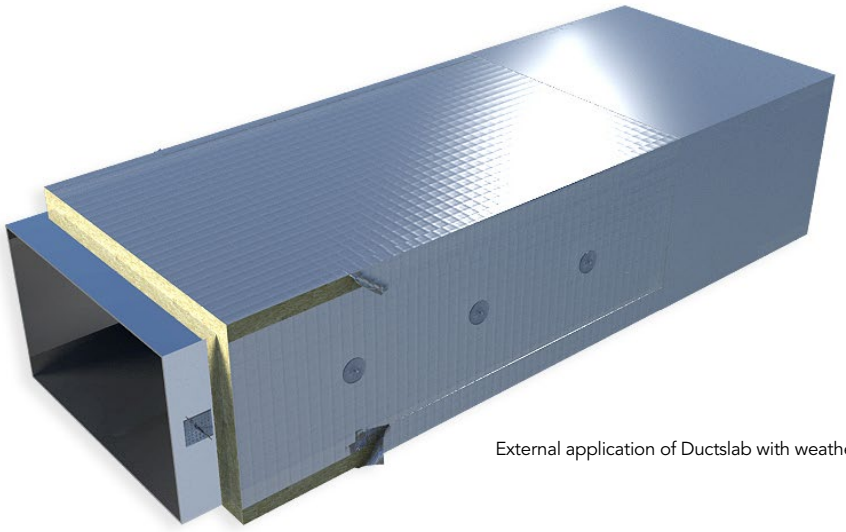
### Typical specification clauses for ductwork

The following specifications are for guidance purposes only and should be read in conjunction with recommendations given in BS 5970.

### 1. External applications (weather protected)

The duct insulation is to be Ductslab manufactured by ROCKWOOL Limited, Pencoed, Bridgend, CF35 6NY, secured to the ducting by means of a suitable adhesive and/or self-adhesive stick pins*, applied in accordance with the manufacturer's recommendations.

All joints are to be securely taped with 75mm wide plain soft aluminium foil self-adhesive tape (Idenden type T303, or similar and approved) to maintain a continuous vapour barrier. The final surface treatment is to be:



External application of Ductslab with weather protection

### *Note

The pins and washers are necessary to avoid sagging of the insulation, particularly on larger size ducts and on the undersides of ducts. Fixing centres will depend on the size of the duct and the weight of the insulating material. The excess projection of the pins above the washers should be cut off and the washer sealed using the soft aluminium self-adhesive tape to maintain the integrity of the vapour barrier. The maximum surface temperature of the ductwork should not exceed the recommended maximum service temperature of the self-adhesive stick pins.

(Guidance should be sought from the manufacturer of the stick pins).

| | |
|---|---|
| a) Flat aluminium zinc coated steel protection | Mild steel sheet continuously hot dipped with 185g/m$^2$ aluminium-zinc coating to BS EN 10326 and BS EN 10327, applied directly to insulating material.<br><br>0.4mm thick flat sheet<br>Fixed and installed in accordance with BS5970. |
| b) Ribbed aluminium-zinc coated steel protection | Mild steel sheet continuously hot dipped with 185g/m$^2$ aluminium-zinc coating to BS EN 10326 and BS EN 10327, applied directly to insulating material.<br><br>0.4mm thick ribbed sheet<br>Fixed and installed in accordance with BS5970. |
| c) Aluminium sheeting protection | Apply flat (embossed) or profiled aluminium cladding directly to insulating material.<br><br>0.56mm thick on pipework<br>0.71mm thick on ductwork<br>Fixed and installed in accordance with BS5970. |
| d) Mild steel sheet | Mild steel sheet continuously hot dipped with aluminium-zinc coating to BS EN 10326 and BS EN 10327, applied directly to insulating material.<br><br>Fixed and installed in accordance with BS5970. |
| e) Self adhesive weather resistant zero perm multi-layer laminate | Apply multi-layer laminate directly over ducts and pipework, ensuring 75mm overlap for a complete vapour barrier.<br><br>Fixed and installed in accordance with BS5970. |
| f) Polyisobutylene | Polyisobutylene, minimum thickness 0.8mm. Fixed and installed in accordance with BS5970. |
| g) Roofing felt protection | Secure in position with galvanized wire netting, of 1mm x 25mm mesh. Finish with two coats of black bituminous paint.<br><br>Fixed and installed in accordance with BS5970. |

## NBS clauses'

ROCKWOOL Ductslab and Ductwrap are associated with the following NBS Clauses:

T90 Heating systems - domestic

- 390 Feed and expansion cisterns

U90 General ventilation - domestic

- 490 Site applied insulation to ductwork

Y30 Mechanical Thermal Insulation

- 340 Mineral fibre insulation slabs

## 2. Horizontal ducts concealed from view

To be insulated with ROCKWOOL Ductwrap/ Ductslab, nominal density 45 kg/m$^3$, having a factory applied reinforced aluminium foil facing. Joints to be securely taped with 75mm minimum wide soft aluminium self adhesive tape. The insulation on the underside of the ducting to be additionally secured by suitable insulation hangers at 300mm centres.

The whole to be further supported by means of:-

- 19 - 22 SWG x 50mm mesh galvanised wire netting. Where a vapour barrier is required, care to be taken when applying wire mesh support to avoid damaging the aluminium foil.

  or

- Aluminium Bands, circumferential at nominal 300mm centres. Bands located over the outer surface typically 50mm from the circumferential joint of the Ductwrap and Ductslab. Do not over tighten the aluminium bands, as this will locally reduce the thickness of the insulation and reduce the thermal efficiency.

N.B. Additional measures may be necessary to prevent sagging.

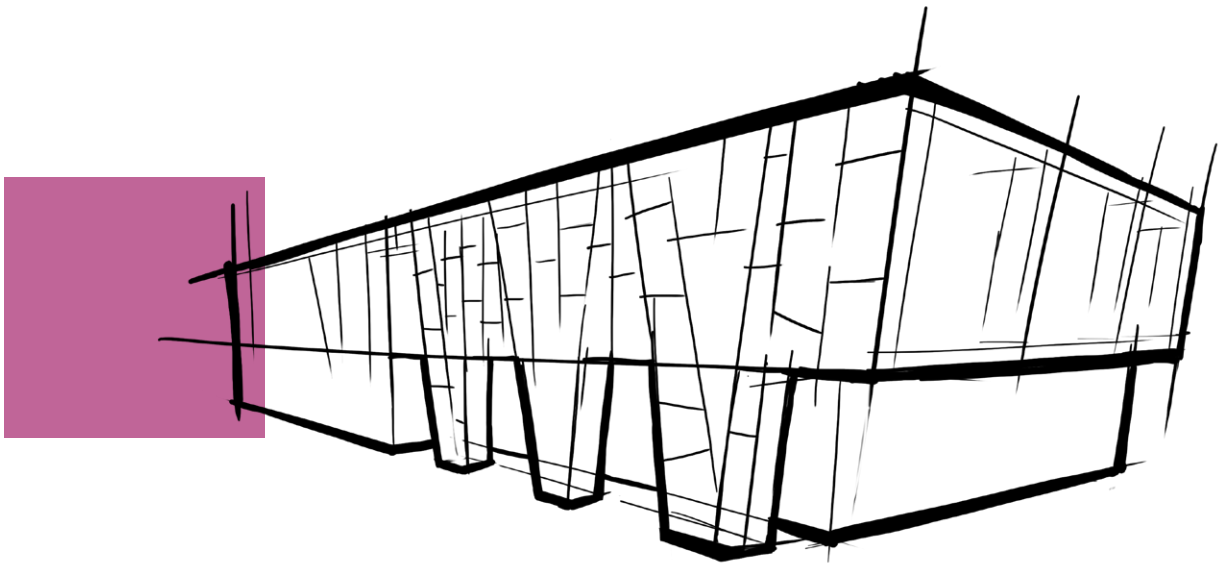
  or

- Subject to the client's approval, alternative fixings can be used in place, or alongside the above.

For operating temperatures below ambient a vapour barrier is required.

Provision should be made at all exposed edges to ensure continuation of the aluminium foil to the duct surface. Aluminium foil to be secured with 75mm wide aluminium self-adhesive tape (i.e. Idenden T303 or similar and approved).

Where support pins/hangers puncture the foil, they should be sealed using aluminium foil tape to maintain the vapour barrier.



## Sustainability

As an environmentally conscious company, ROCKWOOL promotes the sustainable production and use of insulation and is committed to a continuous process of environmental improvement.

All ROCKWOOL products provide outstanding thermal protection as well as four added benefits:

- **Fire resistance**
- **Acoustic comfort**
- **Sustainable materials**
- **Durability**

## Health & Safety

The safety of ROCKWOOL stone wool is confirmed by current UK and Republic of Ireland health & safety regulations and EU directive 97/69/EC:ROCKWOOL fibres are not classified as a possible human carcinogen.

A Material Safety Data Sheet is available and can be downloaded from www.rockwool.co.uk to assist in the preparation of risk assessments, as required by the Control of Substances Hazardous to Health Regulations (COSHH).

## Environment

Made from a renewable and plentiful naturally occurring resource, ROCKWOOL insulation saves fuel costs and energy in use and relies on trapped air for its thermal properties.

ROCKWOOL insulation does not contain (and has never contained) gases that have ozone depletion potential (ODP) or global warming potential (GWP).

ROCKWOOL is approximately 97% recyclable. For waste ROCKWOOL material that may be generated during installation or at end of life, we are happy to discuss the individual requirements of contractors and users considering returning these materials to our factory for recycling.

## Interested?

For further information, contact the Technical Solutions Team on 01656 868490 or email technical.solutions@rockwool.co.uk

Visit www.rockwool.co.uk to view our complete range of products and services.

## The ROCKWOOL Trademark

ROCKWOOL® - our trademark

The ROCKWOOL trademark was initially registered in Denmark as a logo mark back in 1936. In 1937, it was accompanied with a word mark registration; a registration which is now extended to more than 60 countries around the word.

The ROCKWOOL trademark is one of the largest assets in the ROCKWOOL Group, and thus well protected and defended by us throughout the world.

If you require permission to use the ROCKWOOL logo for your business, advertising or promotion. You must apply for a Trade Mark Usage Agreement. To apply, write to: marketcom@rockwool.com.

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ROCKCLOSE®

RAINSCREEN DUO SLAB®

HARDROCK®

ROCKFLOOR®

FLEXI®

BEAMCLAD®

FIREPRO®

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## Notes

## Notes

## Notes

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