

The Isover Yellow Guide to Technical Insulation For HVAC, Marine and OEM Applications



Your environment. It's the nature of our business.

Isover Technical Insulation **Providing innovative solutions to all your needs.**

For HVAC, Marine and OEM

Isover Technical insulation. Providing innovative solutions. Our focus on the HVAC, Marine and OEM markets, world leading technology and innovative approach to product development has enabled us to provide a comprehensive range of product solutions and systems.

Our products and systems combine imagination with in-depth knowledge to provide solutions that address the three key performance requirements of these demanding markets; thermal insulation for effective energy saving; acoustic insulation for protection from equipment noise and fire insulation for the protection of property and lives.



Effective thermal insulation is becoming increasingly important for economic and environmental reasons, as well as personnel protection, in HVAC, Marine and OEM Sectors.

Thermal performance of Isover Technical Insulation solutions will greatly affect the amount of energy saved. Providing substantial measurable cost savings. Whist helping to prevent injuries, such as burns, where operators may come into contact with surfaces exceeding 50°C



Acoustic performance

Noise levels emanating from HVAC services (pipework, ductwork and air handling equipment) and other services can be significantly reduced with the use of Isover insulation solutions which help to achieve reduced environmental noise levels.

The degree of acoustic performance will depend upon the application, the thickness of insulation used, and the nature of the finish used to over-clad the installation.



Fire performance

How materials behave in a fire, from ignition to flashover (the spontaneous ignition of hot smoke and gasses) needs to be assessed at design stage for all technical constructions, from buildings to ships.

Euroclasses, a harmonised classification system for materials' reaction to fires, in now in place and is intended to replace the British Standards. Building regulations in England, Wales and Scotland now incorporate Euroclass classifications. The classification levels are A1/A2, B, C, D, E and F. A1/A2 corresponds to the safest situation. E would be the most dangerous situation and F is unclassified.

The majority of our Technical range of insulation achieves an A1 Euroclass rating when classified in accordance with BS EN 13501.



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→ → HVAC

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Your environment. It's the nature of our business. We develop sustainable insulation solutions to protect both your built environment and the natural environment. To maintain our focus we have placed environmental responsibility at the heart of our business strategy.

Our vision to lead the UK mineral wool market in energy efficiency and acoustic insulation solutions will be achieved with products that meet the highest thermal, acoustic and fire safety performance levels. We will meet changing regulations first and surpass current regulations for those that wish to excel. Our products will provide best value solutions for the residential, commercial, RMI and technical building environments, be safe to use and help to protect the environment.

Also at the heart of our strategy is our 3 Point Plan for environmental sustainability. This dynamic plan adopts the life cycle concept, guides our efforts to continuously improve the way in which our products and processes impact your environment, and seeks to ensure that Isover and our products use...



Less Materials

Less Energy

Less Emissions

www.3pointplan.co.uk







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Insulation of pipework Insulation of metal ductwork Fire protection of metal ductwork Pre-insulated ductwork systems

HVAC Solutions

LILTIMAT

ULTIMATE[™] Protect fire protection of metal ductwork



HVAC Solutions

The safe option for saving energy and providing comfort

At Isover, we focus on the unique thermal, acoustic and fire protection demands of the HVAC market. Whether it's a school, hospital, factory, office or home, our range of HVAC products will provide the most efficient insulation solutions for pipe and ductwork, ensuring the building environment is thermally protected, has minimal noise disruption and is fire safe.

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Service selector

Recommended locations for Isover materials and additional cladding options for weatherproofing and insulation protection.

How to use this table: **1**. Select your service requirement. **2**. Select the location for where the insulation is required. **3**. Move across the table to discover the best Isover solution for your needs.

SERVICE	LOCATION	Insulation Material 1 Isover Foil Pipe Section (page 7) 2 Isover High Performance Duct Wrap or Slab (pages 10 - 11) 3 Isover ULTIMATE [®] Protect (page 13) 4 Isover CLIMANE [®] Surfam (pages 15)				Additiona A Steel SI B Fibaroll C Venture	al Covering heet I RFP eClad 1579	cw
		1	2	3	4	A	В	С
Low temperature hot	Plant Rooms	~				~		
water	Occupied Areas	V				V		
Direct heating /	Concealed Areas	V						
not water systems	External	V					~	V
Steam and high	Plant Rooms	V	~			~		
temperature hot	Occupied Areas	V	~			~		
water	Concealed Areas	~	~					
	External	V	V				V	V
Chilled / cold water	Plant Rooms	V				~		
systems	Occupied Areas	V				~		
	Concealed Areas	V						
	External	V					~	V
Fresh air ductwork	Plant Rooms		~	V	V	~		
Supply air ductwork	Occupied Areas		~	V	V	~		
(Rectangular and	Concealed Areas		V	V	V			
circular)	External		~	V	V		~	V
Flue gas ducting	Plant Rooms	V	~			~		
(for temperatures	Occupied Areas	V	V			~		
up to 230°C)	Concealed Areas	V	~			~		
	External	V	~			~		
Oil	External or Unheated Spaces	V					~	V

✓ - indicates product suitability

NOTE: All Isover products have a factory applied foil finish.



Isover Foil Pipe Section





Isover CLIMAVER®

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Isover Foil Pipe Sections

Designed to provide thermal and acoustic insulation of pipework. Isover Foil Pipe Sections are strong, lightweight pre-formed 'snap on' sections with a reinforced aluminium foil covering.





Isover Foil Pipe Section

Features	Benefits
High levels of thermal and acoustic performance	 Meets all UK thermal building regulations and offers energy savings
• Euroclass A2 fire rating; class 'O' compliance	• Fire safe
• Pipe section length of 1.2m	 Longer than traditional stonewool solutions allowing quicker installation time
 Incorporates a self-adhesive overlap 	• Providing a quick and effective vapour control finish
• High quality mineral wool	Chemically neutral - no need to bore-coat
	Contains special water repellent additives - will not absorb water, therefore will not accelerate corrosion
	 Performance will not deteriorate over time - long product life, no ageing of product
• Durable with consistent density and thickness around the bore	 No soft edges and excellent compression resistance. Will not easily damage in storage, during transportation or installation
Generic BRE Green Guide A Summary Rating	Excellent envionmental credentials
• Up to 80% recycled post – consumer glass	

• Fire classification - Euroclass A2 fire rating

- The factory applied aluminium foil facing meets the highest standards required by BS476: Part 6 'Fire Propagation' and BS476: Part 7 'Surface spread of Flame'. The foil facing is therefore rated 'Class O' to the Building Regulations.

- Service temperature Maximum continuous service temperatures up to 230°C. For service temperatures in the range of 230°C to 500°C please contact our Technical department for advice on 01928 796 180 or email: techinsulation@saint-gobain.com. The temperature on the aluminium facing should not exceed 80°C.
- Acoustic performance Noise levels from pipework services can be greatly reduced with Isover glass woool pipe sections. Please contact our Technical department for further information on 01928 796 180 or email: techinsulation@saint-gobain.com.

Thermal Conductivity (lambda λ)

Mean Temperature	(°C)	10	50	100	200
Thermal Conductivity	(W/mK)	0.032	0.035	0.043	0.062

Isover Foil Pipe Section Range

The table below shows the Isover Foil Pipe Section sizes available

How to use this table:

- 1. Select the pipe diameter from the column on the left
- 2. Choose thickness required from across the top of the table

Pipe insulation 1200mm length foil-faced pipe sections						
Inner diameter	Nominal insulation thickness (mm)					
(mm)	20	25	30	40	50	60
15	~	~	V	V	~	-
22	~	~	~	V	~	-
28	~	~	V	V	V	-
35	~	~	V	V	~	-
42	~	~	V	V	~	-
48	~	~	V	V	V	-
54	~	~	V	V	V	-
60	~	~	V	V	~	~
70	-	~	V	V	-	-
76	-	V	V	V	V	V
83	-	~	-	-	-	-
89	-	~	V	V	V	V
108	-	V	V	V	-	-
114	-	~	~	V	V	V
140	-	~	V	~	~	-
168	-	V	V	V	V	-
219	-	V	V	V	V	-
273	-	-	-	~	~	-

NOTE: Other sizes available upon request

For further guidance on selecting the right thickness for insulation of the job please refer to our helpful **thickness tables** (page 16) or contact our dedicated Technical help line



on: **01928 796 180**

or email: techinsulation@saint-gobain.com





Number of Pipe Sections per box

Sections per box/bag (Linear metres per box/bag)							
	20 25 30 40 50 60						
15	30 (36)	30 (36)	30 (36)	20 (24)	14 (16.8)	-	
22	24 (28.8)	30 (36)	25 (30)	16 (19.2)	12 (14.4)	-	
28	30 (36)	25 (30)	20 (24)	16 (19.2)	12 (14.4)	-	
35	30 (36)	20 (24)	20 (24)	14 (16.8)	9 (10.8)	-	
42	25 (30)	20 (24)	16 (19.2)	12 (14.4)	9 (10.8)	-	
48	20 (24)	16 (19.2)	12 (14.4)	12 (14.4)	8 (9.6)	-	
54	20 (24)	16 (19.2)	14 (16.8)	12 (14.4)	8 (9.6)	-	
60	16 (19.2)	14 (16.8)	12 (14.4)	9 (10.8)	8 (9.6)	5 (6)	
70	-	12 (14.4)	12 (14.4)	8 (9.6)	6 (7.2)	-	
76	-	12 (14.4)	9 (10.8)	8 (9.6)	5 (6)	5 (6)	
83	-	9 (10.8)	-	-	-	-	
89	-	9 (10.8)	8 (9.6)	6 (7.2)	5 (6)	5 (6)	
108	-	8 (9.6)	6 (7.2)	6 (7.2)	5 (6)	-	
114	-	9 (10.8)	5 (6)	6 (7.2)	4 (4.8)	4 (4.8)	
140	-	6 (7.2)	5 (6)	4 (4.8)	4 (4.8)	-	
168	-	4 (4.8)	4 (4.8)	4 (4.8)	2 (2.4)	-	
219	-	2 (2.4)	2 (2.4)	2 (2.4)	1 (1.2)	-	
273	-	-	-	1 (1.2)	1 (1.2)	-	

Carton size



L3 Carton: 300mm x 300mm x 1205mm

L4 Carton: 410mm x 410mm x 1205mm

L45 Carton: 400mm x 500mm x 1205mm

L5 Carton: 500mm x 500mm x 1205mm

NOTE 1: The bracketed number is the linear metres per box/bag.

Number of Pipe Sections per pallet

	Packs per pallet							
	(Linear metre ner nallet)							
	20	25	30	40	50	60		
15	24 (864.0)	15 (540.0)	15 (540.0)	15 (360.0)	12 (201.6)			
22	24 (691.2)	15 (540.0)	15 (450.0)	15 (288.0)	12 (172.8)			
28	15 (540.0)	15 (450.0)	15 (360.0)	15 (288.0)	12 (172.8)			
35	15 (540.0)	15 (360.0)	15 (360.0)	12 (201.6)	12 (129.6)			
42	15 (450.0)	15 (360.0)	15 (288.0)	12 (172.8)	12 (129.6)			
48	15 (360.0)	15 (288.0)	15 (216.0)	12 (172.8)	12 (115.2)			
54	15 (360.0)	15 (288.0)	12 (201.6)	12 (172.8)	12 (115.2)			
60	15 (288.0)	12 (201.6)	12 (172.8)	12 (129.6)	12 (115.2)	12 (72.0)		
70		12 (172.8)	12 (172.8)	12 (115.2)	12 (86.4)	-		
76		12 (172.8)	12 (129.6)	12 (115.2)	12 (72.0)	12 (72.0)		
83		12 (129.6)	-	-	-	-		
89		12 (129.6)	12 (115.2)	12 (86.4)	12 (72.0)	12 (72.0)		
108		12 (115.2)	12 (86.4)	12 (86.4)	12 (72.0)	-		
114		12 (129.6)	12 (72.0)	12 (86.4)	12 (57.6)	12 (57.6)		
140		12 (86.4)	12 (72.0)	12 (57.6)	12 (57.6)	-		
168		12 (57.6)	12 (57.6)	12 (57.6)	1 (2.4)	-		
219		1 (2.4)	1 (2.4)	1 (2.4)	1 (1.2)	-		
273		-	-	1 (1.2)	1 (1.2)	-		

NOTE 1: The bracketed number is the linear metres per pallet.

Insulation of metal ductwork



All products within this range ductwork offer the below properties:

Features	Benefits
 High levels of thermal and acoustic performance 	 Meets all UK thermal building regulations and offers energy savings
 Euroclass A1 fire rating; class 'O' compliance 	 Completely fire safe - totally non-combustible
• Durable with consistent density and thickness	 No soft edges and excellent compression resistance, will not easily damage in storage, during transportation or installation
 Easy to cut and flexible to bend 	• Fast installation
• Outstanding weight savings of up to 40% compared to typical competitor roll products	Lightweight and easy to install
Factory applied aluminium foil facing	 Inherent vapour barrier protecting against moisture reaching the duct
Up to 75% more product from every roll	 Long roll length and compression resulting in space savings in storage and transportation
• High quality mineral wool	 Will not absorb moisture from the surrounding air and is chemically inert - will not accelerate corrosion of steel, copper or aluminium
	Performance will not deteriorate over time - long product life, no ageing of product
	Compression resistance - product will not sag or consolidate over time in normal applications
 Generic BRE Green Guide A+ Summary Rating 	 Excellent environmental credentials
 Up to 86% recycled post - consumer glass 	

• Fire classification - Euroclass A1 fire rating

- The factory applied aluminium foil facing meets the highest standards required by BS476: Part 6 'fire propagation' and BS476:Part 7 'Surface spread of flame'. The foil facing is therefore rated 'Class O' to the building Regulations.

 Service temperature - Maximum continuous service temperature of 230°C. The products can also be used in below ambient conditions, provided that a 100% vapour barrier is maintained. The temperature of the foil facing should not exceed 80°C

Insulation of circular metal ductwork Isover High Performance Duct Wrap

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Strong and easy to handle for use with all shapes of ductwork. Ideal for thermal and acoustic insulation of circular ducts, installed at ceiling level inside a building.



Thermal Conductivity (lambda λ)

Mean Temperature	(°C)	10
Thermal Conductivity	(W/mK)	0.033

Product	Order code	Thickness (mm)	Width (mm)	Length (mm)	m² per pack	Packs per pallet	m² per pallet
Isover High Performance Duct Wrap	5200013813	25	1200	18000	21.60	18	388.80
	5200013814	40	1200	12000	14.40	18	259.20
	5200013815	50	1200	9000	10.80	18	194.40

Insulation of rectangular metal ductwork Isover High Performance Duct Slab

Ideal for thermal and acoustic insulation of metal ducts at all levels inside a building. Offering greater compressive strength, allowing subsequent covering and suitable for low level installation and outside applications.

For external conditions an exterior waterproofing system is required (See Service selector page 6). For further information or for design advice please contact our technical department on 01928 796180 or email: techinsulation@saint-gobain.com. For product features and benefits please see page 10 opposite.

Thermal Conductivity (lambda λ)

Mean Temperature	(°C)	10
Thermal Conductivity	(W/mK)	0.031

Product Range

Product	Order code	Thickness (mm)	Width (mm)	Length (mm)	Slabs per pack	m² per pack	Packs per pallet	m² per pallet
Isover High Performance Duct Slab (foil-faced slabs)	5200013691	25	600	1200	16	11.52	16	184.32
	5200013692	40	600	1200	10	7.20	16	115.20
	5200013849	50	600	1200	9	6.48	16	103.68

Isover Multi-Purpose Duct Slab

Ideal for thermal insulation of rectangular metal ducts, installed at a high / ceiling level inside a building. For features and benefits, please see page 10 opposite.

Thermal Conductivity (lambda λ)

Mean Temperature		10
Thermal Conductivity	(W/mK)	0.032

Product	Order code	Thickness (mm)	Width (mm)	Length (mm)	Slabs per pack	m² per pack	Packs per pallet	m² per pallet
Isover Multi-Purpose Duct Slab	5200013851	25	600	1200	16	11.52	16	184.32
(foil-faced slabs)	5200013695	40	600	1200	12	8.64	16	138.24
	5200013696	50	600	1200	10	7.20	16	115.20







Isover Crimp Wrap

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A flexible glass mineral wool roll, designed to provide thermal and acoustic insulation for ductwork, tanks and large diameter pipes. The increased compression resistance of this product makes it ideal for use at all levels, inside or outside a building with subsequent covering (see Service selector page 6).

Added Features	Benefits
• High levels of thermal and acoustic performance	 Meets all UK thermal building regulations and offers energy savings
Superior acoustic performance	Can be used for noise control of ductwork
• Base material Euroclass A2 fire rating; class 'O' compliance	• Fire safe
Unique variably orientated fibres	Provides superior compression resistance - perfect for use at low levels and/or with external coverings
• Flexible with a natural curve, easy to cut and bend	 Easy to handle, lends itself to being wrapped around curved surfaces allowing faster installation
Factory applied aluminium foil facings	 Inherent vapour barrier protecting from moisture reaching the duct
• High quality mineral wool	 Will not absorb moisture from the surrounding air and is chemically inert - will not accelerate corrosion of steel, copper or aluminium Performance will not deteriorate over time - long product life, no ageing of product Compression resistance - product will not sag or consolidate over time in normal applications
Generic BRE Green Guide A+ Summary Rating	Excellent environmental credentials
• Up to 80% recycled post - consumer glass	

Service temperature - Suitable for continuous service temperatures up to 200°C. The temperature on the aluminium facing should not exceed 80°C

Thermal Conductivity (lambda λ)

Mean Temperature	(°C)	50	75	100	125	150	200
Thermal Conductivity	(W/mK)	0.039	0.044	0.049	0.055	0.061	0.077

Product	Order code	Thickness (mm)	Width (mm)	Length (mm)	m² per pack	Packs per pallet	m² per pallet
	5200013621	30	1200	8150	9.78	18	176.04
	5200403264	40	1200	6000	7.20	18	129.60
Isover Crimp Wrap	5200403265	50	1200	4800	5.76	18	103.68
	5200403266	60	1200	4000	4.80	18	86.40
	5200403267	80	1200	3000	3.60	18	64.80
	5200013587	100	1200	3750	4.50	12	54.00

Fire protection range Isover ULTIMATE[™] Protect

ULTIMATE[™] Protect is a new generation mineral wool that combines all the advantages of conventional thermal and acoustic insulation with increased fire protection.

The ULTIMATE[™] Protect product range, also known as U Protect, consists of Slabs and Wired Mats which offer up to two hours fire protection for both rectangular and circular ductwork systems. See thickness tables page 26.

Effective Fire Protection

A top performer when it comes to material stability and thermal resistance at high temperatures. ULTIMATE[™] Protect offers a Euroclass A1 fire rating and has been certified to comply with EN1366-1.

Ease of Installation

Excellent handling characteristics ensures that cutting, bending and fitting is faster and more efficient. The ULTIMATE™ Protect Wired Mat range is specifically designed for easy installation on circular ductwork.

Lightweight

65% lighter than conventional stone mineral wool products, ULTIMATE™ Protect makes light work of installation and its low pack weight meets the most stringent of workplace Health and Safety manual handling recommendations.

UPTO 65% **LIGHTER THAN TRADITIONAL STONE MINERAL** WOOL





ULTIMATE













Fire protection range Isover ULTIMATE[™] Protect



ULTIMATE™ Protect comes with a unique high-performance profile. It combines increased fire resistance; easy handling and low pack weight.

Features	Benefits
Meets BS 476: Part and EN1366-1 for ventilation ductwork	 Increased fire protection performance
• Euroclass A1 fire rating; class 'O' compliance	Totally non-combustible, top level reaction to fire performance
High levels of thermal performance	Meets all UK thermal building regulations and offering energy savings
Superior acoustic performance	 50% better sound absorption than typical competitor products
 Up to 65% lighter than traditional stone wool systems 	• Easier to handle
• Easy to cut and bend	 50% faster installation Standard laggers knife can be used
Off cuts can be used	Minimises waste on site
Only need glue at wall penetrations	Less glue required, faster installation
No need for pre-fabrication	• Cost savings
• High quality mineral wool	 Will not absorb moisture from the surrounding air and is chemically inert - will not accelerate corrosion of steel, copper or aluminium
	Performance will not deteriorate over time - long product life, no ageing of product
	Compression resistance - product will not sag or consolidate over time in normal applications

• Fire classification - Euroclass A1 fire rating.

- The factory applied aluminium foil facing meets the highest standards required by BS476: Part 6 'fire propagation' and BS476:Part 7 'Surface spread of flame'. The foil facing is therefore rated 'Class O' to the building Regulations.

• Service temperature - Faced side maximum 80°C.

Thermal Conductivity (lambda λ)

Mean Temperature	(°C)	10	50	100	200	300	400	500	600
Thermal Conductivity	(W/mK)	0.030	0.034	0.039	0.053	0.072	0.098	0.130	0.170

Product Range

Product	Order code	Thickness (mm)	Width (mm)	Length (mm)	Slabs per pack	m² per pack	Packs per pallet	m² per pallet
ULTIMATE™ Protect Slab 4.0 Alu 1	5200432634	50	600	1200	8	5.76	12	69.12
	5200414575	60	600	1200	6	4.32	12	51.84
	5200414576	70	600	1200	5	3.60	12	43.20
	5200414577	80	600	1200	5	3.60	12	43.20
	5200431810	90	600	1200	4	2.88	12	34.56
	5200414578	100	600	1200	4	2.88	12	34.56
ULTIMATE™ Protect Wired Mat 4.0 Alu 1	5200432184	75	600	4000	2	4.80	18	86.40
	5200432186	120	600	2500	2	3.00	18	54.00

Please refer to page 26 - 28 for further information of thickness required and U Protect accessories

Pre-insulated ductwork system Isover *CLIMAVER*®

CLIMAVER[®] is a high density glass mineral wool board, faced on both sides. This system offers excellent thermal and acoustic performance in a fire safe system and is a more economical and efficient all in one alternative to conventional 'sheet metal and insulation' ductwork.

Suitable for use in commercial projects i.e. schools, hospitals, office blocks etc.

Features	Benefits
Pre-insulated ductwork system	 Insulation and 'ductwork' combined, no need for secondary lagging
Conforms to DW144	 Same engineering methodology as pre-insulated and metal
	ductwork
 Excellent levels of thermal performance 	 Meets UK thermal building regulations and offers significant energy
	savings
 Euroclass B; Class 'O'fire rating 	 Meets and exceeds European and British Standards
• CLIMAVER® offers inherent acoustic performance	 Reduce noise transmission and possibly negate need for attenuators
unlike foam plastic ducts, CLIMAVER® Neto offers	 Suitable for all acoustic applications and plenum boxes
a superior attentuation than that of sheet metal	
 Can be fabricated on site or off site 	 Adaptable to onsite changes saving costs
 Light weight - 6.7 kg/m² per sheet 	 Up to 4¹/₂ times lighter than sheet metal solutions
 Precision-cut perfect joints 	• Fast assembly and installation, less wastage in the installation process
• Durable	 Not easily damaged in storage, during transportation or installation
 Tolerates mechanical cleaning 	• Easy to clean
 Factory applied aluminium foil facing 	 Inherent vapour barrier and air tightness, offering very low leakage
	rates and pressure drops
Generic BRE Green Guide A Summary Rating	Excellent environmental credentials
• Up to 80% recycled post – consumer glass	

• Fire classification - Euroclass B fire rating.

Service temperature - Maximum continuous service temperature of 230°C. The products can also be used in below ambient
conditions, provided that a 100% vapour barrier is maintained. The temperature of the foil facing should not exceed 80°C

Isover CLIMAVER® Plus R and Isover CLIMAVER® Neto

Thermal Conductivity (lambda λ)

CLIMAVER [®] Plus R			CLIMAVER® Neto		
Mean Temperature	(°C)	10	Mean Temperature	(°C)	10
Thermal Conductivity	(W/mK)	0.032	Thermal Conductivity	(W/mK)	0.033

Product	Order code	Thickness (mm)	Width (mm)	Length (mm)	Slabs per pack	m² per pack	Packs per pallet	m² per pallet
CLIMAVER [®] Plus R	5200013847	25	1190	3000	7	24.99	12	299.98
CLIMAVER® Neto	5200414556	25	1190	3000	7	24.99	12	299.98





Thickness tables to aid product selection

The following tables are used to detail the Isover Product thickness in relation to British Standards BS5422. The tables have been calculated using the formulae given in BS EN ISO 12241. The thicknesses shown in this section are commercially available thicknesses that will meet or exceed the thermal performance required.

England and Wales

BS5422: 2009 or TIMSA Guidance for Achieving Compliance with Part L of the Building Regulations.

Scotland

BS5422:2001. Method for specifying thermal insulating materials on pipes, ductwork and equipment (in the temperature range -40°C to +700°C). Also for Scotland, refer to Technical Handbooks by the SBSA. Domestic Handbook 2009 and Non-Domestic Handbook 2009 Sections 6 – Energy.

What thickness of Isover insulation do I need?

- Table 1: Domestic central heating installations & hot water systems
- Table 2: Non-domestic central heating installations to control heat loss for direct water & heating pipes
- Table 3: Chilled water supplies to control heat gain
- Table 4: Chilled and cold water supplies to prevent condensation
- Table 5: Ducts used to carry heated and cooled air
- Table 6: Protection against freezing in buildings other than dwellings
- Table 7: Fire protection of ductwork
- Table 8: ULTIMATE™ Protect accessories

Insulation Thicknesses

The thicknesses shown in the following tables are calculated at the maximum thermal conductivities of the material as required in the above British Standards. These thermal conductivity figures must not be exceeded by unapproved substitute materials. In such a case the following thicknesses could be invalid and the installation may not comply with the legal requirements of the building regulations.

For further guidance on meeting Building Standards with our glass mineral wool HVAC systems please contact our dedicated helpline



on: 01928 796 180

or email us at: techinsulation@saint-gobain.com



Table 1 - Environmental insulation thicknesses for domesticcentral heating installations and hot water systems

England & Wales - Refer to TIMSA Guide Table 6, page 14 and BS 5422: 2009 Table 19.

Domestic heating compliance guide with Approved documents L1a: New dwellings and L1b: Existing dwelling

Pipe diameter (OD)	Maximum permissible heat loss* (W/m)	
mm	(Thickness of Isover Foil Pipe Section)	
10 mm	7.23 (n/a)	
12 mm	7.35 (n/a)	
15 mm	7.89 (20mm)	
22 mm	9.12 (20mm)	
28 mm	10.07 (20mm)	
35 mm	11.08 (20mm)	
42 mm	12.19 (20mm)	
54 mm	14.12 (20mm)	

When assessing the thickness of insulation needed, standardised conditions should be used in all compliance calculations based in this instance on a horizontal pipe at 60°C in still air at 15°C. For further assistance in converting these heat loss limits to levels (thickness) of insulation, refer to the TIMSA HVAC Guidance for achieving compliance with Part L of the Building Regulations.

The thicknesses shown in this section are commercially available thicknesses that will meet or exceed thermal performance required.

Outside diameter of steel pipe on	Water temperatures of 75°C for central heating and 60°C for hot water with ambient still air temperatures of -1°C					
which insulation	At 60°C		At 75°C			
(mm)	Thickness of Isover Isover Foil Pipe Sections (mm)	Heat Loss (W/m)	Thickness of Isover Isover Foil Pipe Sections (mm)	Heat Loss (W/m)		
10.0	(n/a)	6.8	(n/a)	8.6		
12.0	(n/a)	7.3	(n/a)	9.2		
15.0	30	7.8	30	9.7		
22.0	40	8.2	40	10.2		
28.0	40	9.0	40	11.3		
35.0	40	10.0	50	12.6		
42.0	40	11.0	50	13.8		
54.0	40	12.8	50	16.0		
Cylinders	50	38.2 W/m ²	60	47.9 W/m ²		

Scotland - Refer to Table 14, BS5422:2001

NOTE: The requirements for domestic heating and hot water are combined into one table for ease of material handling on site. In the absence of specific instructions from the specifiers, the insulation thickness shall be not less than that specified in Table 14 (Refer to Table 14, BS5422:2001).

NOTE: Thicknesses given are calculated specifically against the criteria noted in the table. Adopting these thicknesses may not necessarily satisfy other design requirements, such as condensation control.

Table 2 - Environmental insulation thickness for non-domesticheating installations to control heat loss for directhot water and heating pipes

England & Wales

Refer to TIMSA Guide Section 5.2, page 16 & BS5422:2009 Tables 15 & 17 Refer to TIMSA Guide Section 5.2 & 6.1, pages 16-18 & BS5422:2009 Tables 15 & 17. Maximum permissible heat loss (W/m) for direct hot water and heating pipes

Maximum Permissible Heat Loss (W/m) (Thickness of Isover Pipe Section)						
Pipe outside diameter	Hot water	Hot water Low temp. Medium temp High temp				
	Heating 1	Heating 2	Heating 3	Heating 4		
		≤ 95°C	96°C-120°C	121°C-150°C		
17.2	6.60 (25mm)	8.90 (25mm)	13.34 (20mm)	17.92 (25mm)		
21.3	7.13 (25mm)	9.28 (30mm)	13.56 (30mm)	18.32 (30mm)		
26.9	7.83 (30mm)	10.06 (30mm)	13.83 (40mm)	18.70 (40mm)		
33.7	8.62 (30mm)	11.07 (40mm)	14.39 (50mm)	19.02 (50mm)		
42.4	9.72 (30mm)	12.30 (40mm)	15.66 (50mm)	19.25 (60mm)		
48.3	10.21 (40mm)	12.94 (40mm)	16.67 (50mm)	20.17 (60mm)		
60.3	11.57 (40mm)	14.45 (40mm)	18.25 (60mm)	21.96 (80mm)		
76.1	13.09 (40mm)	16.35 (40mm)	20.42 (60mm)	24.21 (80mm)		
88.9	14.58 (40mm)	17.91 (50mm)	22.09 (60mm)	25.99 (80mm)		
114.3	17.20 (40mm)	20.77 (50mm)	25.31 (60mm)	29.32 (80mm)		
139.7	19.65 (40mm)	23.71 (50mm)	28.23 (80mm)	32.47 (100mm)		
168.3	22.31 (40mm)	26.89 (50mm)	31.61 (80mm)	36.04 (100mm)		
219.1	27.52 (40mm)	32.54 (50mm)	37.66 (80mm)	42.16 (100mm)		
273.0 & above	32.40 (40mm)	38.83 (50mm)	43.72 (80mm)	48.48 (100mm)		

NOTES 1, 2, 3, 4 To ensure compliance with maximum permissible heat loss criteria, proposed insulation thicknesses should be calculated according to BS EN ISO 12241 using standardized assumptions:

1 Horizontal pipe at 60°C in still air at 15°C.

- 2 Horizontal pipe at 75°C in still air at 15°C
- 3 Horizontal pipe at 100°C in still air at 15°C
- 4 Horizontal pipe at 125°C in still air at 15°C



Scotland

The insulation thickness shall be not less than that specified in Tables 12 & 13 below (Refer to Tables 12 & 13, BS5422:2001).

Environmental insulation thickness for non-domestic hot water service areas to control heat loss

Outside diameter	Hot face temperature (°C)					
of steel pipe on	75°C		100°C		150°C	
thickness has been based (mm)	Thickness of Isover Isover Foil Pipe Sections (mm)	Heat loss (W/m)	Thickness of Isover Isover Foil Pipe Sections (mm)	Heat loss (W/m)	Thickness of Isover Isover Foil Pipe Sections (mm)	Heat loss (W/m)
17.2	30	7.7	40	10.8	60	16.4
21.3	30	8.4	40	11.7	60	17.6
26.9	40	9.2	40	12.9	60	19.2
33.7	40	10.1	50	14.0	60	20.9
42.4	40	11.4	50	15.5	70	23.2
48.3	40	12.1	50	16.4	70	24.5
60.3	40	13.5	50	18.3	70	27.2
76.1	40	15.5	50	20.7	80	30.2
88.9	40	17.0	50	22.6	80	32.7
114.3	50	19.7	60	26.2	80	37.5
139.7	50	22.5	60	29.6	80	42.2
168.3	50	25.5	60	33.5	80	46.8
219.1	50	30.9	60	40.0	100	55.4
273.0	50	36.3	60	46.6	100	64.2
Above 323.9 and including flat surfaces	50	39.6	80	50.9	100	71.5

Isover glass mineral wool has better thermal properties than typical stone mineral wool, is much lighter than typical stone mineral wool, and therefore tends to be easier to handle and install.

For further guidance on meeting Building Standards with our glass mineral wool HVAC systems please contact our dedicated helpline



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UPTO **33%** LIGHTER THAN TRADITIONAL STONE MINERAL WOOL PIPE INSULATION

Table 2 - Environmental insulation thickness for non-domestic heating installations to control heat loss for direct hot water and heating pipes

Environmental insulation thickness for non-domestic hot water service areas to control heat loss



Outside diameter	Water temperatures of 60°C			
of steel pipe on which insulation thickness has been based (mm)	Thickness of Isover Isover Foil Pipe Section (mm)	Heat loss (W/m)		
17.2	30	5.6		
21.3	30	6.1		
26.9	30	6.7		
33.7	30	7.4		
42.4	40	8.2		
48.3	40	8.7		
60.3	40	9.7		
76.1	40	11.0		
88.9	40	12.1		
114.3	50	14.0		
139.7	50	16.0		
168.3	50	18.1		
219.1	50	21.6		
273.0	50	25.1		
Above 323.9 and including flat surfaces	50	28.5		

NOTE 1: Thicknesses given are calculated specifically against the criteria noted in the table. Adopting these thicknesses may not necessarily satisfy other design requirements such as condensation control.



Table 3 - Environmental insulation thicknesses for chilled water supplies to control heat gain

England & Wales

Refer to TIMSA Guide Section 5.2, page 17 & BS5422: 2009 Table 10.

Pipe outside	Maximum permissible heat gain (W/m) (Thickness of Isover Pipe Section)				
diameter (mm)	Temperature of contents (°C)				
	>10 ⁵	4.9 > 10.0 ⁶	0 > 4.9 ⁷		
17.2	2.48 (20mm)	2.97 (20mm)	3.47 (20mm)		
21.3	2.72 (20mm)	3.27 (20mm)	3.81 (25mm)		
26.9	3.05 (20mm)	3.58 (20mm)	4.18 (25mm)		
33,7	3.41 (20mm)	4.01 (25mm)	4.60 (25mm)		
42.4	3.86 (20mm)	4.53 (25mm)	5.11 (30mm)		
48.3	4.11 (20mm)	4.82 (25mm)	5.45 (30mm)		
60.3	4.78 (20mm)	5.48 (25mm)	6.17 (30mm)		
76.1	5.51 (20mm)	6.30 (25mm)	6.70 (40mm)		
88.9	6.17 (20mm)	6.90 (30mm)	7.77 (40mm)		
114.3	7.28 (20mm)	8.31 (30mm)	9.15 (40mm)		
139.7	8.52 (20mm)	9.49 (30mm)	10.45 (40mm)		
168.3	9.89 (25mm)	10.97 (30mm)	11.86 (40mm)		
219.1	12.27 (25mm)	13.57 (30mm)	14.61 (40mm)		
273.0 & above	14.74 (25mm)	16.28 (30mm)	17.48 (40mm)		

NOTE 1: The insulation thicknesses shown are calculated specifically against the criteria noted in this table.

The insulation thicknesses shown may not be sufficient to prevent condensation on low emissivity surfaces applied to insulated pipes located in 25°C, 80% relative humidity ambient air as described in BS5422. Additional guidance on the control of condensation is provided in Table 4 (page 22) of this Isover Guide.

To ensure compliance with maximum permissible heat gain criteria, proposed insulation thicknesses should be calculated according to B5 EN ISO 12241 using standardized assumptions:

5 Horizontal pipe at 10°C in still air at 25°C 6 Horizontal pipe at 5°C in still air at 25°C

7 Horizontal pipe at 0°C in still air at 25°C

Scotland

The insulation thicknesses shall not be less than that specified in Table 9 (Refer to Table 9, BS5422:2001).

Outside diameter	Temperature of contents (°C)				
of steel pipe on which	teel pipe on which + 5		+ 0		
insulation has been based (mm)	Thickness of Isover Isover Foil Pipe Section (mm)	Heat Gain (W/m)	Thickness of Isover Isover Foil Pipe Section (mm)	Heat Gain (W/m)	
21.3	25	2.9	30	3.4	
33.7	30	3.5	40	4.0	
60.3	40	4.5	50	5.0	
114.3	50	6.1	60	6.5	
168.3	60	7.2	70	7.9	
273	60	9.9	80	10.6	
508	80 Crimp Wrap	15.8	100 Crimp Wrap	16.5	
610.0 and above, including flat surfaces	80 Crimp Wrap	16.2	100 Crimp Wrap	17.2	

Table 4 - Minimum insulation thickness for chilled and cold water supplies to prevent condensation.

England & Wales:

Refer to TIMSA guide section 7.2 7 & BS5422:2009 Table 8.

Scotland:

The table below is an extraction of BS5422:2001.

Reference Table 8 (BS5422:2001)

 Minimum insulation thicknesses for chilled and cold water supplies to prevent condensation on a low emissivity outer surface (0.05) with an ambient temperature of +25°C and a relative humidity of 80%

Outside diameter of steel	Temperature of contents (°C)			
pipe on which insulation has been based.		+ 5		
(mm)	Thickr	ness of Isover Foil Pipe Section	(mm)	
17.2		20	25	
21.3	20	25	30	
26.9	20	25	30	
33.7		25	40	
42.4		30		
48.3	25	30	40	
60.3		30	50	
76.1	25			
88.9	25			
101.6	25	40	50	
114.3	30	40		
139.7	30		50	
168.3	30		60	
219.1	30		60	
244.5		50	60	
273.0			60	
323.9		50	60	
355.6		50	60	
406.4	40	60		
457.0		60		
508.0		60	80	
610.0		60		
Flat	50			
NOTE 1 Thicknes	sses given are calculated spec	ifically against the criteria no	ted in the table.	



Table 5 - Insulation thicknesses for ducts used to carry heated and cooled air

England & Wales

Refer to TIMSA Guide Section 6.2.5, page 26 & BS 5422: 2009 Tables 13&14.

Maximum Permissible Heat Gain/Loss For Insulated Ducts Used To Carry Air (Including those heated ducts used periodically for cooled air)

Maximum Permissible Heat Gain/Loss (W/m2) (Thickness of Isover High Performance Duct Wrap)					
Heated duct ⁸ Dual purpose ⁹ Cooled duct ¹⁰					
16.34 (40mm)	-6.45 (50mm)	-6.45 (50mm)			
NOTES					
may not necessarily satisfy other design requirements such as control of condensation.					

^{8,9,10} To ensure compliance with maximum permissible heat transfer criteria, proposed insulation thicknesses should be calculated according to BS EN ISO 12241 using standardized assumptions:

 $^{\rm 8}$ Horizontal duct at 35°C, with 600mm vertical sidewall in still air at 15°C

 $^{\rm 9}$ Horizontal duct at 13°C, with 600mm vertical sidewall in still air at 25°C

 $^{\rm 10}$ Horizontal duct at 13°C, with 600mm vertical sidewall in still air at 25°C

The insulation thickness shall be not less than that specified Table 12 BS5422:2009

The table below shows the minimum insulation thickness for condensation control on ductwork carrying chilled air in ambient conditions: indoor still air temperature +25°C, relative humidity 80%, dew point temperature 21.3°C.

Minimum	External surface emissivity			
temperature inside duct (°C)	0.05 (e.g. bright aluminium foil)	0.44 (e.g. dusty galvanised steel)	0.90 (e.g. black paint)	
	Minim	num thickness of Isover Duct Wrap	(mm)	
15	25	13 (25)	8 (25)	
10	40	23 (25)	15 (25)	
5	50	32 (40)	20 (25)	
0	50	41 (50)	26 (40)	

Table 5 - Insulation thickness for ducts used to carry heatedand cooled air - continued

Scotland

The insulation thicknesses shall not be less than that specified in Tables 10 & 11 of BS5422:2001.

Minimum insulation thickness for condensation control on ductwork carrying chilled air in ambient conditions: indoor still air temperature +25°C, relative humidity 80%, dew point temperature 21.3°C.

The table below shows the minimum insulation thickness for condensation control on ductwork carrying chilled air in ambient conditions: indoor still air temperature +25°C, relative humidity 80%, dew point temperature 21.3°C

A 41-11-1-1-1	External surface emissivity			
Minimum temperature inside duct (°C)	0.05 (e.g. bright aluminimum foil)	0.44 (e.g. dusty galvanised steel)	0.90 (e.g. black paint)	
	Minimum	thickness of Isover Duct Wrap) (mm)	
15	25	13 (25)	8 (25)	
10	40	23 (25)	15 (25)	
5	50	32 (40)	20 (25)	
0	50	41 (50)	26 (40)	

The table below shows the environmental insulation thickness for ductwork carrying warm air

Temperature difference between air inside ductwork and ambient air			
10°C	25°C	50°C	
Environmental thickness of Isover Duct Wrap and corresponding heat loss			
40mm	50mm	60mm	
7.2W/m ²	15.3W/m ²	26.0W/m ²	

Ambient Temperature is taken at 20°C.

NOTE 1: Thicknesses given are calculated specifically against the criteria noted in the table. Adopting these thicknesses may not necessarily satisfy other design requirements such as condensation control.



England & Wales:

Refer to TIMSA Guide Section 7.^{1.2,} page 29 and BS 5422: 2009 Table 29

Scotland:

BS 5422: 2001Table 23

			Thickness of Isover	Pipe Section (mm)
	Outside diameter	Inside diameter (bore) (mm)	Specified conditions ¹	Specified conditions ²
	()		Indoor	Outdoor
	15	13.6	80	420
	22	20.2	25	60
	28	26.2	20	30
∙ pipe	35	32.6	20	20
pper	42	39.6	20	20
3	54	51.6	20	20
	76.1	73.1	20	20
	108	105	20	20
	21.3	16	50	175
	26.9	21.6	25	40
	33.7	27.2	20	20
pipe	42.4	35.9	20	20
iteel	48.3	41.8	20	20
	60.3	53	20	20
	76.1	68.8	20	20
	88.9	80.8	20	20

Key: 'to table 3 of BS EN 1057:1996

² to table 4 of BS 1387:1985

Specified conditions ¹: water temperature 2 °C; ambient temperature -6 °C; evaluation period 12 h; permitted ice formation 50 %; indoor.

Specified conditions²: water temperature 2 °C; ambient temperature -10 °C; evaluation period 12 h; permitted ice formation 50 %; outdoor.

Thermal conductivity (λ Lambda) [W/mK)]

NOTE 1 Thicknesses given are calculated specifically against the criteria noted in the table. Adopting these thicknesses may not satisfy other design requirements.

NOTE 2 Some of the insulation thicknesses given are too large to be applied in practice but are included to highlight the difficulty in protecting small diameter pipes against freezing. To provide the appropriate degree of frost protection to certain sizes of pipes, it may be necessary to provide additional heat to the system, for example by circulating the water or trace heating. Where electric trace heating is fitted to pipework oversized pre-formed sections of glass mineral wool insulation shall be provided to accommodate the thickness of the trace heating cable.

- NOTE 3 Assumed densities (λ) and heat capacities (cp); λ steel = 7 840 kg/m³, cp steel = 455 J/kg λ K
- λ water = 1 000 kg/m³, cp water = 4 200 J/kgλK λ copper = 8 900 kg/m³, cp copper = 390 J/kgλK
- NOTE 4 Thicknesses of insulation based on inner diameter of pipe.
- NOTE 5 Local Climate data used for London based on average annual values. Temperature 11°C and wind velocity 4.4m/s.



Table 7 - Fire protection of ductwork

ULTIMATE[™] Protect applications:

- Supply and extract ventilation systems
- Smoke extraction
- Kitchen extraction please contact our Technical department on **01928 796 180** or email: **techinsulation@saint-gobain.com** for more information

ULTIMATE[™] Protect system performance summary:

Thickness requirements for Slabs

1 Hour fire protection horizontal ventilation and smoke extract ductwork; 60mm ULTIMATE™ Protect Slab

1 Hour fire protection vertical ventilation and smoke extract ductwork; 80mm ULTIMATE™ Protect Slab

2 Hour fire protection horizontal ventilation ductwork; 80mm ULTIMATE™ Protect Slab

2 Hour fire protection horizontal smoke extract ductwork; 90mm ULTIMATE™ Protect Slab

2 Hour fire protection vertical ventilation and smoke extract ductwork; 100mm ULTIMATE™ Protect Slab

Thickness requirements for Wired Mats

1 Hour fire protection for all applications 75mm ULTIMATE™ Protect Wired Mat

2 Hours fire protection for all applications 120mm ULTIMATE™ Protect Wired Mat







ULTIMATE[™] Protect thickness table

Rectangular	Fire location	Fire	class	Duct	
Duct		1 hour	2 hours	orientation	
	Fire inside duct				
	Inside	60mm	80mm*	Horizontal	
		80mm	100mm	Vertical	
		Fire outs	ide duct		
	Outside	60mm	80mm*	Horizontal	
		60mm	80mm*	Vertical	
	In cas	e both fire locatio	ons need to be co	vered	
	Both	60mm	80mm*	Horizontal	
		80mm	100mm	Vertical	
	Use	of 1 product for b	oth duct orientat	ions	
	Outside	60mm	80mm*	Both	
	Inside	80mm	100mm		
		Use of 1 produ	uct for all cases		
	Both	80mm	100mm	Both	
Circular	Fire location	Fire	class	Duct	
Circular Duct	Fire location	Fire	class 2 hours	Duct orientation	
Circular Duct	Fire location	Fire 1 hour Fire insi	class 2 hours de duct	Duct orientation	
Circular Duct	Fire location	Fire of 1 hour Fire insi 75mm	2 hours de duct 120mm	Duct orientation Horizontal	
Circular Duct	Fire location	Fire of 1 hour Fire insi 75mm 75mm	class 2 hours de duct 120mm 120mm	Duct orientation Horizontal Vertical	
Circular Duct	Fire location	Fire of 1 hour Fire insi 75mm 75mm Fire outs	class 2 hours de duct 120mm 120mm ide duct	Duct orientation Horizontal Vertical	
Circular Duct	Fire location	Fire of 1 hour Fire insi 75mm 75mm Fire outs 75mm	2 hours 2 hours de duct 120mm 120mm ide duct 100mm	Duct orientation Horizontal Vertical Horizontal	
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Circular Duct	Fire location	Fire of the second seco	class 2 hours de duct 120mm 120mm ide duct 100mm 100mm 120mm oth duct orientat 100mm 120mm 120mm 120mm	Duct orientation	

*Smoke extraction requires 2 hour fire protection. Note that for rectangular horizontal ducts these thicknesses of insulation should be increased from 80mm as shown in the table to 90mm.

Thickness tables

Table 8 - ULTIMATE[™] Protect accessories

Typical coverage rates for a penetration

ULTIMATE[™] BSF Intumescent Paint

Supplied in 15kg tubs. Volume 7.9 litres. Supplied in 310ml tubes. Weight 0.59kg.

ULTIMATE[™] BSK Adhesive

Supplied in 15kg tubs. Volume 7.9 litres. Supplied in 310ml tubes. Weight 0.59 kg.

Coverage rates are given below per linear metre of joint in ULTIMATE™ Protect Slab & Wired Mat, based on a thickness of 2mm. On-site usage of paint / glue will vary - these coverage rates should therefore be used for guidance purposes only.

How much paint and glue is required:

of BSF Intumescent Paint

- 1) Calculate the total linear metreage of the penetration using the following sum: (4 x Width of duct) + 4 x (Height of duct - (2 x Insulation thickness in metres)
- 2) Select the insulation thickness requirement from the table below, read across the table to identify the approximate weight (Kg) of BSF Intumescent paint and BSK Adhesive required per linear metre

NOTE: Insulation greater than 50mm will require the use

- 3) To calculate the total paint / glue required for this job use the following: Total linear metreage of the penetration (calculated in step 1) x approximate weight (Kg) of BSF Intumescent paint / BSK Adhesive (identified in step 2)
- 4) Use this final figure to determine if the job requires a 15kg Tub or a 310ml (0.59kg) tube, by considering the total weight calculated in step 3 to the corresponding tub/tube weight

ULTIMATE[™] BSK Adhesive Thickness ULTIMATE™ BSF Intumescent Paint of ULTIMATE[™] Slab Approximate volume Approximate weight Approximate volume Approximate weight (kg) of BSF Intumescent (I) of BSF Intumescent (kg) of BSK Adhesive (I) of BSK Adhesive Paint per linear metre per linear metre at per linear metre at Paint per linear metre at penetration penetration at penetration penetration 0.06 0.12 0.06 30 40 0.15 0.08 0.15 0.08 0.10 0.19 0.10 50 0.19 0.10 0.24 0.12 60 70 0.20 0.10 0.26 0.14 80 0.32 0.16 90 0.10 0.36 0.18

For further details on how to install ULTIMATE[™] Protect please request a copy of our ULTIMATE™ Protect Installation and specification handbook by

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calling: 0115 969 8010

or email: techinsulation@saint-gobain.com

for technical advice call 01928 796 180.

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Marine Guide to Marine Insulation

Military Ships

Bulkheads, Deckheads & Hull Engine rooms & Machinery spaces Living quarters <u>Thermal ship</u> sides

Commercial

Bulkheads, Deckheads & Hull Engine rooms & Machinery spaces Accommodation Thermal ship sides Composite constructions

HVAC solutions

Isover Foil Pipe Sections Isover High Performance Duct Wrap Isover High Performance Duct Slab

Marine Solutions



Marine Solutions

At Isover, we recognise that the requirements for shipbuilding are becoming increasingly challenging. Our range of marine products provides excellent fire, thermal and acoustic performances combined with substantial weight savings. Whether its designing the hull so there is less water resistance, allowing the vessel to move faster or space saving improving manoeuvrability of technical equipment on board.

With its performance characteristics and its unrivalled product range, ULTIMATE™ Marine offers superior insulation solutions for the shipbuilding industry.

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Bulkheads, Deckheads & Hull
Engine rooms & Machinery spaces
Living quarters
Thermal ship sides

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Isover High Performance Duct Slab	42









Marine Solutions Product Selector

Isover ULTIMATE[™] Marine product range





Fire protection

ULTIMATE[™] Marine meets A-60 and A-30 fire rated requirements.



Outstanding weight saving

Up to 50% lighter than many conventional thermal, acoustic and fire resistance solutions.





Excellent thermal insulation performance

Achieve the same lambda value as traditional solutions with a thinner and lighter solution.

Easy and fast installation

Due to the unique flexibility of ULTIMATE[™], it perfectly adapts to onsite conditions, such as uneven surface structures. Installation is very quick and easy, the insulation can be bent around stiffeners, easily saving on time-consuming work of encasing or the cost of expensive pre-fabrications.

Off cuts can be utilised for filling niches and holes, making the whole installation process faster and virtually waste-free.

Features	Benefits
Meets Def Stan 713 requirements for military vessels	Suitable for military refurbishments and new builds
 Fully certified in accordance to the IMO/ MED Resolution 	 Suitable for military refurbishments and new builds
• Up to A-60 fire rating	Fire safe solutions for steel, aluminium and composite constructions
High levels of thermal insulation	Achieve the same lambda value as traditional solutions with a thinner lighter solution
• Up to 50% better sound absorption than stone wool	Acoustic insulation at the highest level
• Outstanding weight savings of up to 50% compared to	Helping to reduce the weight of any vessel on board
competitor products	 Long term economic advantages
	 Faster and easier installation
Standard pin spacing applies	Ease of installation
• Flexible	Can be easily fitted around bulkhead and deckhead stiffeners
 Wide range of factory fitted facings available including; unfaced, foil faced and glass cloth or tissue 	Facings to meet any requirement



ULTIMATE[™] Marine range – Military Ships Bulkhead, Deckhead & Hull

All products below are available in a selection of facings; unfaced, foil faced, glass cloth or lightweight tissue faced.

Steel Bulkheads – A-15, A-30, A-60



Fire rating	Product flat surface	Stiffener options	Page
A-60	ULTIMATE™ Marine Slab 66kg (70mm)	ULTIMATE™ Marine Slab 66kg (30mm)	40
A-30	ULTIMATE™ Marine Roll / Slab 36kg (60mm)	ULTIMATE™ Marine Slab 66kg (30mm) or	39/40
		ULTIMATE™ Marine Roll / Slab 36kg (60mm)	39
		0, ,	

Steel Deckhead – A-15, A-30, A-60



Fire rating	Product flat surface	Stiffener options	Page
A-60	ULTIMATE™ Marine Roll / Slab 36kg (60mm)	ULTIMATE™ Marine Roll / Slab 36kg (60mm)	39
A-60	ULTIMATE™ Marine Roll / Slab 36kg (60mm)	ULTIMATE™ Marine Slab 66kg (30mm)	39/40
A-30	ULTIMATE™ Marine Roll / Slab 24kg (50mm)	ULTIMATE™ Marine Roll / Slab 36kg (60mm)	38/39

Engine room & Machinery spaces

Steel Bulkheads – A-15, A-30, A-60

Fire rating	Product flat surface	Stiffener options	Page
A-60	ULTIMATE™ Marine Slab 66kg (70mm)	ULTIMATE™ Marine Slab 66kg (30mm)	40
A-30	ULTIMATE™ Marine Roll / Slab 36kg (60mm)	ULTIMATE™ Marine Slab 66kg (30mm) or ULTIMATE™ Marine Roll / Slab 36kg (60mm)	39/40 39

Steel Deckhead – A-15, A-30, A-60

Fire rating	Product flat surface	Stiffener options	Page
A-60	ULTIMATE™ Marine Roll / Slab 36kg (60mm)	ULTIMATE™ Marine Roll / Slab 36kg (60mm)	39
A-60	ULTIMATE™ Marine Roll / Slab 36kg (60mm)	ULTIMATE™ Marine Slab 66kg (30mm)	39/40
A-30	ULTIMATE™ Marine Roll / Slab 24kg (50mm)	ULTIMATE™ Marine Roll / Slab 36kg (60mm)	38/39

ULTIMATE[™] Marine range – Military Ships Living quarters

Bulkhead

Fire rating	Product flat surface	Stiffener options	Page
A-60	ULTIMATE™ Marine Slab 66kg (70mm)	ULTIMATE™ Marine Slab 66kg (30mm)	40

Deckhead

Fire rating	Product flat surface	Stiffener options	Page
A-60	ULTIMATE™ Marine Roll / Slab 36kg (60mm)	ULTIMATE™ Marine Roll / Slab 36kg (60mm) or ULTIMATE™ Marine Slab 66kg (30mm)	40

Thermal ship sides

Product	Page
Isover High Performance Duct Wrap / Isover High Performance Duct Slab	42

Product facing options for military ships & commercial applications



Unfaced Roll or Slab

- For use in panel construction applications or behind joiner's linings.







Aluminium Foil faced Roll or Slab

- For use in areas where surface spread of flame considerations are required. This can provide a vapour barrier when used in conjunction with aluminium foil self-adhesive tape.

Glass cloth faced Roll or Slab

- A white close weave glass cloth facing for use in areas where aesthetic appearance and additional mechanical protection is required.

Lightweight tissue faced Roll or Slab

- For use in areas where acoustic absorption is required. White or black options are available.



All products below are available in a selection of facings; unfaced, foil faced or glass cloth.

Steel Bulkheads – A-15, A-30, A-60



Fire rating	Product between stiffeners	Stiffener options	Page
A-60	ULTIMATE™ Marine Slab 66kg (70mm)	ULTIMATE™ Marine Slab 66kg (30mm)	40
A-60	ULTIMATE™ Marine Wired Mat (70mm)	ULTIMATE™ Marine Wired Mat (70mm) or ULTIMATE™ Marine Slab 66kg (30mm)	41 40
A-30	ULTIMATE™ Marine Roll / Slab 36kg (60mm)	ULTIMATE™ Marine Slab 66kg (30mm) or ULTIMATE™ Marine Roll / Slab 36kg (60mm)	39/40 39

Steel Deckhead – A-15, A-30, A-60



Fire rating	Product between stiffeners	Stiffener options	Page
A-60	ULTIMATE™ Marine Roll / Slab 36kg (60mm)	ULTIMATE™ Marine Roll / Slab 36kg (60mm)	39
A-60	ULTIMATE™ Marine Roll / Slab 36kg (60mm)	ULTIMATE™ Marine Slab 66kg (30mm)	39/40
A-30	ULTIMATE™ Marine Roll / Slab 24kg (50mm)	ULTIMATE™ Marine Roll / Slab 36kg (60mm)	38/39

Aluminium Bulkhead – A-60



Fire rating	Product	Stiffener options	Page
A-60	ULTIMATE™ Marine Wired Mat (70mm)	ULTIMATE™ Marine Wired Mat (70mm)	41
A-60	ULTIMATE™ Marine Slab 66kg (2x30mm)	ULTIMATE™ Marine Slab 66kg (2x30mm)	40

Aluminium Deckhead – A-15, A-30, A-60



Fire rating	Product	Stiffener options	Page
A-60	ULTIMATE™ Marine Slab 66kg (2x30mm) or ULTIMATE™ Marine Wired Mat (70mm)	ULTIMATE™ Marine Slab 66kg (30mm)	40

ULTIMATE[™] Marine range – Commercial Engine room & Machinery spaces

Steel Bulkheads – A-15, A-30, A-60

Fire rating	Product between stiffeners	Stiffener options	Page
A-60	ULTIMATE™ Marine Slab 66kg (70mm)	ULTIMATE™ Marine Slab 66kg (30mm)	40
A-60	ULTIMATE™ Marine Wired Mat (70mm)	ULTIMATE™ Marine Wired Mat (70mm) or ULTIMATE™ Marine Slab 66kg (30mm)	41 40
A-30	ULTIMATE™ Marine Roll / Slab 36kg (60mm)	ULTIMATE™ Marine Slab 66kg (30mm) or ULTIMATE™ Marine Roll / Slab 36kg (60mm)	39/40 39

Steel Deckhead – A-15, A-30, A-60

Fire rating	Product between stiffeners	Stiffener options	Page
A-60	ULTIMATE™ Marine Roll / Slab 36kg (60mm)	ULTIMATE™ Marine Roll / Slab 36kg (60mm)	39
A-60	ULTIMATE™ Marine Roll / Slab 36kg (60mm)	ULTIMATE™ Marine Slab 66kg (30mm)	39/40
A-30	ULTIMATE™ Marine Roll / Slab 24kg (50mm)	ULTIMATE™ Marine Roll / Slab 36kg (60mm)	38/39

Accommodation

For further details on our range of accommodation solutions please contact us:



on: 01928 796 180

or email: techinsulation@saint-gobain.com

Thermal ship sides

ProductPageIsover High Performance Duct Wrap / Isover High Performance Duct Slab42

Composite constructions

Composite Bulkhead

Product flat surface		
FRD 60	ULTIMATE™ Marine Slab 66kg (50mm)	
FRD 30	ULTIMATE™ Marine Slab 66kg (50mm)	

Composite Deckhead

	Product flat surface	Stiffener options	Page
FRD 60	ULTIMATE™ Marine Slab 66kg (50mm)	ULTIMATE™ Marine Slab 66kg (2 x 50mm)	41
FRD 30	ULTIMATE™ Marine Slab 66kg (50mm)	ULTIMATE™ Marine Slab 66kg (2 x 50mm)	41

To arrange a presentation from our Key Account Manager for Marine or for more information on the benefits of ULTIMATE™ Marine range...

> Please email us at: techinsulation@saint-gobain.com or contact us on 0115 969 8010.

For technical enquiries please call **01928 796 180**

Marine Solutions Product Information

ULTIMATE[™] Marine 24 – Roll & Slab

Nominal density

• 24kg/m³

Fire classification

- Non-combustible according to IMO Resolution A799 (19)
- EC type approval



Unfaced

Thermal Conductivity (lambda λ)

Mean Temperature	(°C)	0	10	50	100	150	200	250
Thermal Conductivity	Roll (W/mK)	0.032	0.033	0.039	0.049	0.062	0.077	0.095
	Slab (W/mK)	0.032	0.033	0.039	0.048	0.062	0.077	0.095

Product Range

Product	Order code	Thickness (mm)	Width (mm)	Length (mm)	Slabs per pack	m² per pack	Packs per pallet	m² per pallet
ULTIMATE™ Marine Roll Unfaced 24kg	5200403711	50	1200	14000	1	16.80	12	201.60
ULTIMATE™ Marine Roll Foil faced 24kg	5200403716	50	1200	14000	1	16.80	12	201.60
ULTIMATE [™] Marine Roll Glass cloth faced (220g) 24 kg	5200403719	50	1200	14000	1	16.80	12	201.60

Product	Order code	Thickness (mm)	Width (mm)	Length (mm)	Slabs per pack	m² per pack	Packs per pallet	m² per pallet
ULTIMATE™ Marine Slab Unfaced 24kg	5200403730	50	600	1200	10	7.20	16	115.20
ULTIMATE™ Marine Slab Foil faced 24kg	5200403734	50	600	1200	10	7.20	16	115.20
ULTIMATE [™] Marine Slab Glass cloth faced (420g) 24kg	5200445799	50	625	1200	10	7.50	16	120.00

Certificates also apply for foil faced products. Available on request.

ULTIMATE[™] Marine 36 – Roll & Slab

Nominal density

• 36kg/m³

Fire classification

- Non-combustible according to IMO Resolution A799 (19)
- EC type approval

Product Facings

Glass Cloth (white) 220, 420 g/m²

foil

Unfaced

Thermal Conductivity (lambda λ)

Mean Temperature	(°C)	0	10	50	100	150	200	250	300
Thermal Conductivity	Roll (W/mK)	0.031	0.032	0.038	0.047	0.057	0.070	0.084	0.095
	Slab (W/mK)	0.031	0.032	0.038	0.047	0.057	0.070	0.084	0.099

Product Range

Product	Order code	Thickness (mm)	Width (mm)	Length (mm)	Slabs per pack	m² per pack	Packs per pallet	m² per pallet
ULTIMATE™ Marine Roll Foil faced 36kg	5200403726	60	1200	6500	1	7.80	12	93.60
ULTIMATE™ Marine Roll Glass cloth faced (220g) 36kg	5200445814	60	1200	6500	1	7.80	12	93.60

Product	Order code	Thickness (mm)	Width (mm)	Length (mm)	Slabs per pack	m² per pack	Packs per pallet	m² per pallet
ULTIMATE™ Marine Slab Unfaced 36kg	5200403680	60	600	1200	6	4.32	12	51.84
ULTIMATE™ Marine Slab Foil faced 36kg	5200403650	60	600	1200	6	4.32	12	51.84
ULTIMATE™ Marine Slab Glass cloth faced (220g) 36kg	5200403753	60	625	1200	6	4.50	12	54.00
ULTIMATE [™] Marine Slab Glass cloth faced (420g) 36kg	5200403754	60	625	1200	6	4.50	12	54.00

Certificates also apply for foil faced products. Available on request.







Marine Solutions Product Information

ULTIMATE[™] Marine 66 – Slab

Nominal density

• 66kg/m³

Fire classification

- Non-combustible according to IMO Resolution A799 (19)
- EC type approval



Glass Cloth (white) 220, 420 g/m²



Unfaced

Thermal Conductivity (lambda λ)

Mean Temperature	(°C)	0	10	50	100	150	200	250	300	350
Thermal Conductivity	(W/mK)	0.029	0.030	0.035	0.042	0.050	0.058	0.067	0.078	0.090

Product Range

Product	Order code	Thickness (mm)	Width (mm)	Length (mm)	Slabs per pack	m² per pack	Packs per pallet	m² per pallet
ULTIMATE™ Marine Slab Unfaced 66kg	5200403681	30	600	1200	13	9.36	12	112.32
ULTIMATE™ Marine Slab Unfaced 66kg	5200403766	70	600	1200	5	3.60	12	43.20
ULTIMATE™ Marine Slab Foil faced 66kg	5200403682	30	600	1200	13	9.36	12	112.32
ULTIMATE™ Marine Slab Foil faced 66kg	5200403767	40	600	1200	10	7.20	12	86.40
ULTIMATE™ Marine Slab Foil faced 66 kg	5200445007	70	600	1200	5	3.60	12	43.20
ULTIMATE [™] Marine Slab Glass cloth faced (220 g) 66kg	5200403772	30	625	1200	13	9.75	12	117.00
ULTIMATE [™] Marine Slab Glass cloth faced (220g) 66kg	5200403774	70	625	1200	5	3.75	12	45.00
ULTIMATE [™] Marine Slab Glass cloth faced (420g) 66kg	5200403775	30	625	1200	13	9.75	12	117.00
ULTIMATE [™] Marine Slab Glass cloth faced (420g) 66kg	5200445354	40	625	1200	10	7.50	12	90.00
ULTIMATE [™] Marine Slab Glass cloth faced (420g) 66kg	5200445355	50	625	1200	8	6.00	12	72.00
ULTIMATE [™] Marine Slab Glass cloth faced (420g) 66kg	5200445349	70	625	1200	5	3.75	13	48.75

Certificates also apply for foil faced products. Available on request.

ULTIMATE[™] Marine Wired Mat 66

Nominal density

• 66kg/m³

Fire classification

- Non-combustible according to IMO Resolution A799 (19)
- EC type approval







Reinforced aluminium foil

Thermal Conductivity (lambda λ)

Mean Temperature	(°C)	10	50	100	200	300	400	500	600
Thermal Conductivity	(W/mK)	0.031	0.035	0.042	0.058	0.078	0.100	0.127	0.160

Product Range

Product	Order code	Thickness (mm)	Width (mm)	Length (mm)	Slabs per pack	m² per pack	Packs per pallet	m² per pallet
ULTIMATE™ Marine Wired Mat 66kg Unfaced	5200445817	30	600	10000	2	12.00	18	216.00
ULTIMATE™ Marine Wired Mat 66kg Unfaced	5200445739	70	600	4300	2	5.16	18	92.88
ULTIMATE™ Marine Wired Mat 66kg Foil faced	5200445824	30	600	10000	2	12.00	18	216.00
ULTIMATE™ Marine Wired Mat 66kg Foil faced	5200445030	70	600	4300	2	5.16	18	92.88

Certificates also apply for foil faced products. Available on request.

For further information on our ULTIMATE™ Marine range please contact us:

on: 0115 969 8010.



email: techinsulation@saint-gobain.com

For Technical enquiries please call 01928 796 180

High Performance Duct Wrap / High Performance Duct Slab

Fire classification

- Non-combustible according to IMO Resolution A799 (19)
- EC type approval



Available foil faced only

Features	Benefits
High levels thermal insulation	 Achieve better thermal performance than traditional solutions with a thinners lighter solution
Superior acoustic performance	 50% better sound absorphian than typical competitor product.
 Meets Def Stan 713 requirements for military vessels 	 Suitable for military refurbishments and new builds
 Fully certified in accordance to the IMO/ MED Resolution 	 Suitable for military refurbishments and new builds
 Outstanding weight savings of up to 40% compared to 	 Helping to reduce the weight of any vessel offering long
typical stone mineral wool products	term ergonomic and economic advantages
	 Faster and easier to handle and install
 Standard pin spacing applies 	Traditional installation method
• Easy to cut and flexible to bend	 Fast installation / Can be easily fitted around bulkhead and deckhead stiffeners
Durable with consistent density and thickness	No soft edges and excellent compression resistance, not easily damaged in storage transportation or installation
Factory applied aluminium foil facing	Inherent vapour barrier
• Up to 75% more product from every roll	 Long roll length and compression resulting in space savings in storage and transportation
• High quality mineral wool	 Is chemically inert - will not accelerate corrosion of steel, copper or aluminium Performance will not deteriorate over time - long product life, no ageing of product Compression resistance - product will not sag or consolidate over time in normal applications
 Up to 86% recycled post – consumer glass 	Excellent environmental credentials

For product range information please refer to pages 10 and 12





Acoustic attenuators Acoustic silencers







OEM Solutions

High performance for high temperatures

At Isover, we focus on the unique thermal, acoustic and fire protection solutions. Our range of OEM products will provide efficient insulation solutions for original equipment including; acoustic attenuators and silencers, where noise control is required.

Content

Product selection by name: Isover Technical Slabs and Rolls

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Isover Technical Slabs and Rolls

Ideal for original equipment, these glass mineral wool slabs provide thermal and acoustic performances suited for noise control.

These unfaced slabs are available in a variety of densities, thicknesses and dimensions and are easy to handle, cut and install.

Features	Benefits
High levels of thermal and acoustic performance	Meets all UK thermal building regulations and offers energy
	savings
 Euroclass A1 fire rating; superior to Class 	 Completely fire safe – totally non-combustible
'O'compliance	
 Easy to cut and flexible to bend 	Fast installation
Durable with consistent density and thickness	• No soft edges and excellent compression resistance, not easily
	damaged in storage, transportation or installation
High quality mineral wool	Will not absorb moisture and is chemically inert - will not
	accelerate corrosion of steel, copper or aluminium
	• Performance will not deteriorate over time - long product life.
	no ageing of product
	• Compression resistance - product will not sag or consolidate over
	time in normal applications
Generic BRE Green Guide A+ Summary Rating	Excellent environmental credentials
• Up to 86% recycled post – consumer glass	

Fire classification - Euroclass A1 fire rating.

Isover Technical slabs and rolls are made form inherently non-combustible materials and are completely fire safe

- Maximum service temperature Suitable for use with equipment operating at a maximum service temperature of 230°C.
- · Acoustic Performance Data on all sizes available on request

CE Certified to EN13162 and EN1372 + A1:2001

For technical support on choosing the right product and thickness of insulation for the job please contact our dedicated help line



on: **01928 796 180**

or email us at: techinsulation@saint-gobain.com



Isover Technical Slabs and Rolls

Thermal Conductivity (lambda λ)

Product		TS16	TS24	TS32	TS48	TR16	TR20
Mean Temperature		10	10	10	10	10	10
Thermal Conductivity	(W/mK)	0.036	0.024	0.032	0.031	0.036	0.35

Product	Order code	Thickness (mm)	Width (mm)	Length (mm)	Slabs per pack	m² per pack	Packs per pallet	m² per pallet
Isover Technical Slab								
Isover Technical Slab TS16kg	5200013708	50	600	1200	20	14.40	16	230.40
	5200013639	75	600	1200	16	11.52	16	184.32
	5200013652	100	600	1200	10	7.20	20	144.00
Isover Technical Slab TS24kg	5200013641	40	600	1200	20	14.40	16	230.40
	5200013642	50	600	1200	16	11.52	16	184.32
	5200013643	75	600	1200	10	7.20	16	115.20
Isover Technical Slab TS32kg	5200013645	25	600	1200	20	14.40	16	230.40
	5200013646	40	600	1200	12	8.64	16	138.24
	5200013638	50	600	1200	10	7.20	16	115.20
	5200013648	75	600	1200	8	5.76	16	92.16
	5200013644	100	600	1200	6	4.32	12	51.84
Isover Technical Slab TS48kg	5200013649	25	600	1200	16	11.52	16	184.32
	5200013651	50	600	1200	8	5.76	16	92.16
	5200013637	75	600	1200	6	4.32	16	69.12
Isover Technical Roll								
Isover Technical Roll 16kg	5200013794	25	1200	20000	1	24.00	24	576.00
	5200013795	40	1200	16000	1	19.20	24	460.80
Isover Technical Roll 20kg	5200013798	25	1200	20000	1	24.00	24	576.00





Isover are pleased to work with...

TIMSA is an industry association which represents the major manufacturers and many of the suppliers and distributors to the thermal insulation industry.



TIMSA has representation on BSI and CEN committees responsible for drafting standards relating to the thermal and acoustic insulation industry and has played a major part in the revision of BS 5422 and BS 5970 as well as producing the TIMSA Guidance for achieving compliance with Part L of the Building Regulations.

www.timsa.org.uk



The HVCA represents the interests of firms active in the design, installation, commissioning and maintenance of heating, ventilating, air conditioning and refrigeration (hvacr) products and equipment. The HVCA produces many industry publications in response to industry demand including technical specifications such as DW144/DW172/TR19 etc

The HVCA is itself a member of the Specialist Engineering Contractors' (SEC) Group, which provides a united voice for engineering specialists and of the Trade Association Forum.





TICA stands for Thermal Insulation Contractors Association. TICA is a Trade Association representing anyone in the industrial thermal insulation industry. TICA emerged to ensure the industry is highly represented with the express intention of creating and improving standards. TICA is also responsible for running the industry's training programmes for Thermal Insulation Apprentices. Isover sponsors the TICA Training Academy.

www.tica-acad.co.uk



The ASFP (Association for Specialist Fire Protection) is the foremost trade association for passive fire protection. It publishes a range of technical publications containing third party certificated systems such as fire rated and smoke extract ductwork. The ASFP is recognised in the Building Regulations Approved Document B.

www.asfp.org.uk



Isover is a founding member of EiiF (European Industrial Insulation Foundation). EiiF is a non-profit foundation located in Geneva, Switzerland. It has been set up to promote and establish the use of industrial insulation as a widely understood and accepted means of achieving sustainability.

Industrial insulation is a proven method of driving sustainability across industry and some service sectors. The European Industrial Insulation Foundation exists to promote sustainable insulation as a widely accepted means of achieving rapid returns both financially and environmentally.

www.eiif.org

Technical Insulation including HVAC, Marine and OEM

Dedicated Technical Helpline Tel: 01928 796 180 e-mail: techinsulation@saint-gobain.com Order placement or order enquiries Tel: 0800 032 2555 Fax: 0800 917 9188

Advice on

- Compliance with UK Building Regulations for Ductwork Systems
- Consultant Performance Specifications

Technical Product Range and System Applications

Heat Loss and Energy Savings Calculations

www.isover.co.uk





Your environment. It's the nature of our business

www.3pointplan.co.uk

www.isover.co.uk

Isover Order Placement or Order Enquiries: Tel: 0800 032 2555 Fax: 0800 917 9188

Technical Insulation - Technical Enquiries Tel: 01928 796 180 Email: techinsulation@saint-gobain.com

> Isover Saint-Gobain Isover UK Commercial Centre Gotham Business Park Leake Road Gotham Nottinghamshire NG11 0LB Tel: 0115 969 8010 Fax: 0115 983 1675 Email: isover@saint-gobain.com

FSC Mixed Sources www.fscarg Centro.565:00C005429 01996 Forest Stewardship Council



Inserveness the right to revise product specifications without notice. The information in this document was correct to the best of our innowledge at the time of publication. It is the users responsibility to ensure that it remains current poler to use. The information in this document is for guidance only and should not be read in isolation. Users should read and familiarie themselves with all the information contained in this document and ensure that they are fully comenant with the products and systems being used, before subsequent specification or installation. For comprehensive and use to date little provide interval in the theory evelopite.

