Fletcher Insulation

Building Better, Together

HVAC and Industrial Insulation Product Selection Guide

Designing for NCC 2019

We are in the business of building

Fletcher Insulation was selected for the prestigious project The Hedberg, Tasmania. The exceptional acoustic properties were an ideal choice for the concert hall.
Design by Liminal Architecture with WOHA architects, Rendering by Doug + Wolf.

Front cover: The Hedberg, Tasmania.

As a leading manufacturer to the Australian building industry, Fletcher Insulation has been at the forefront of insulation technology since the 1930's. With a national distribution footprint, we pride ourselves on providing excellent service to our customers. Our two Australian manufacturing plants in Sydney and Melbourne are supported with research and development, customer service, sales and technical support.

Sustainability is at the heart of what we do. Our strong focus on well-being, comfort and improving quality of life inspires us to design, manufacture and deliver world class insulation solutions for the built environment.

HVAC and Industrial Solutions

Whether you are designing or selecting materials for a residential, commercial or industrial project, you can trust Fletcher Insulation to deliver the best insulation solution for your HVAC applications.

Built in Australia, the Fletcher Insulation range has been tested to Australian Standards and Australian conditions. Designed to meet the strict requirements of the latest National Construction Code (NCC), our products meet and exceed the NCC's deemed-to-satisfy requirements anywhere in Australia. Our specialist range of fire rated, thermal, acoustic, condensation control and indoor air quality solutions ensure your project is covered, with the full backing of our experienced sales and support team.

Certified Product - AS/NZS4859.1
Global-Mark.com.au®
ID Number: 100577

bsi. ISO 9001 Quality Management

bsi. AS/NZS 4801:2001 Occupational Health and Safety Management

Contents

FLETCHER INSULATION BUILDING SOLUTIONS

All-in-one Ductboard

Lightweight alternative product in comparison to a rigid sheetmetal insulated ductwork system. Ductboard is also suitable for fabrication of cushion head boxes.

Products:

- Ductboard®
- Pirformatherm®

HVAC Internal Duct Liner

Insulation for internal lining of rigid sheet metal ductwork.

Products:

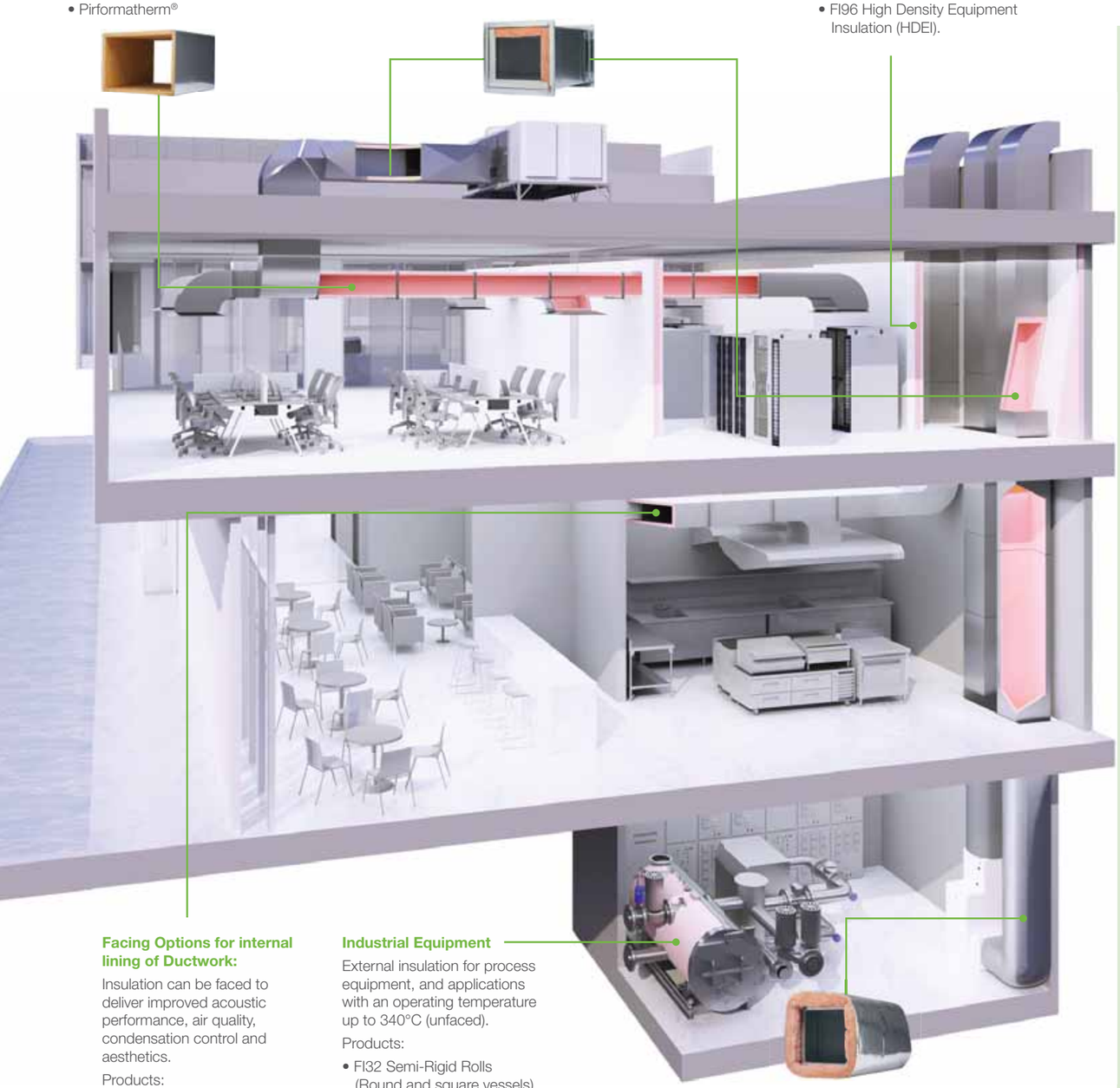
- FI32 Semi-Rigid
- FI48 Rigid Glasswool.

Wall Insulation

High performance thermal and acoustic insulation for data centre and plant room walls.

Products:

- FI32 Semi-Rigid
- FI48 Rigid Glasswool
- FI96 High Density Equipment Insulation (HDEI).



Facing Options for internal lining of Ductwork:

Insulation can be faced to deliver improved acoustic performance, air quality, condensation control and aesthetics.

Products:

- Sisalation® Heavy Duty (HD) or Perforated (HDP)
- Vapastop® 883
- Black Matt Facing

Industrial Equipment

External insulation for process equipment, and applications with an operating temperature up to 340°C (unfaced).

Products:

- FI32 Semi-Rigid Rolls (Round and square vessels)
- FI48 Rigid Glasswool (Square vessels)

HVAC Duct Wrap

Externally lagged insulation for rigid metal ductwork.

Products:

- FI22 Ductwrap
- FI18/FI22/FI24 General Purpose

Insulation plays an integral role in the design of high-performance buildings. Factors such as the climatic conditions, building design and usage can have a significant impact on the comfort and well-being of occupants.

Fletcher Insulation has an extensive range of HVAC and industrial insulation products to suit your project and application.

1: DESIGNING FOR THERMAL PERFORMANCE

The right level of thermal performance can optimise the performance and energy efficiency of a HVAC or industrial system. Fletcher Insulation product complies with thermal performance (AS/NZS 4859.1.2002 include Amendment 1).

The Product Selector (page 8 to 11) will determine the most suitable product to meet National Construction Code 2016 Deemed-to-satisfy requirements.

2: DESIGNING FOR ACOUSTIC CONTROL

Minimising noise is an important consideration when designing buildings. For projects requiring high levels of acoustic control such as concert halls, studios and auditoriums, Fletcher Insulation has a range of facing options with superior noise reduction properties.

3: DESIGNING FOR CONDENSATION CONTROL

Condensation control is an important consideration when designing HVAC ductwork in high humidity areas. Fletcher Insulation has a range of facing options which provide a superior water and vapour barrier providing long term durability against condensation.

4: DESIGNING FOR INDOOR AIR QUALITY

Indoor Air Quality (IAQ) is an important design factor for the health and well-being of building occupants. Airborne contaminants can lead to a range of negative health outcomes such as asthma, allergies and sick building syndrome (SBS). Fletcher Insulation FI32 Semi-Rigid insulation has been tested to ASTM D5116 and exceeds the strict requirements set by the Green Building Council of Australia Green Star Office Design IEQ-13 for VOC and Formaldehyde emissions. For applications requiring the highest levels of IAQ, insulation can be faced with Vapastop® 883 continuous acoustic membrane (CAM) to minimise the risk of fibres in the air stream.

5: DESIGNING FOR FIRE RESISTANCE

Fletcher Insulation products are fire rated according to Combustibility AS 1530.1-1994 (R2016), Ignitability, Flame Propagation, Heat Release and Smoke Release (AS/NZS 1530.3) and UL181.11-2013 Burning Test (AS 4254.2-2012). Refer to the Technical Data Sheets for comprehensive fire testing results.

PRODUCT SELECTOR - HVAC AND INDUSTRIAL INSULATION

Product	Applications	Product Description	Thermal[1]	Acoustic[2]	Condensation Control[3]	Indoor Air Quality[4]	Fire Resistant[5]
FI22 Ductwrap		FI22 Ductwrap glasswool insulation is a flexible blanket designed for external lagging of rigid ducting. Faced (standard) with Sisalation® HD Foil to perform as a vapour barrier.	Faced	n/a	Ductwork Facing options: Sisalation® Medium Duty (MD), Sisalation® Heavy Duty (HD)	n/a	Refer to Technical Data for test results
FI18, FI22 and FI24 General Purpose		General Purpose glasswool is a flexible blanket designed for external lagging of rigid ducting. Faced (standard) with Sisalation® HD Foil to perform as a vapour barrier.					
FI24 Flexible Ductliner		FI24 Flexible Ductliner glasswool insulation a lightweight and flexible internal liner used in air conditioning ductwork.	Unfaced or faced	Unfaced or faced. Ductwork Facing options: Sisalation® Heavy Duty (HD), Sisalation® Heavy Duty Perforated (HDP), Vapastop® 883 or Black Matt Facing.	Ductwork Facing options: Sisalation®, Sisalation® Heavy Duty (HD) or Vapastop® 883	Ductwork Facing options: Vapastop® 883	Refer to Technical Data for test results
FI32 Semi-Rigid		FI32 Semi-Rigid glasswool insulation is a high performing thermal and acoustic insulation used for internal lining of air conditioning ductwork, or for insulating process equipment.					
FI48 Rigid Glasswool		FI48 Rigid glasswool is a high density insulation suitable for use as HVAC internal ductliner, process equipment and plant room walls for applications requiring superior thermal and acoustic performance.					
Ductboard®		Ductboard® is a lightweight alternative product to sheetmetal, it is used to fabricate an all-in-one duct system. Ductboard is also suitable for fabrication of cushion head boxes. The insulation is high density glasswool faced with Sisalation® Heavy Duty foil.	All-in-one	All-in-one	Ductboard® is supplied faced with Sisalation® Heavy Duty (HD)	n/a	Refer to Technical Data for test results
Pirformatherm®		Pirformatherm polyisocyanurate (PIR) is a lightweight composite rigid board insulation with superior thermal properties. It is used to fabricate an all-in-one duct system.	All-in-one	All-in-one	n/a	n/a	Refer to Technical Data for test results
FI96 High Density Equipment Insulation (HDEI)		FI96 High Density Equipment Insulation (HDEI) is an ultra high density rigid glasswool sheet intended for applications requiring greater compressive strength, high acoustic absorption and sound transmission loss. Used for the fabrication of acoustic panels, the acoustic treatment of plant rooms and industrial equipment operating at temperatures up to 340°C.	Unfaced	Unfaced	n/a	n/a	Refer to Technical Data for test results

(1) Thermal peformance complied with AS/NZS 4859.1:2002 incl Amendment 1.
(2) Refer to Technical Data Sheets for NRC acoustic properties
(3) Condensation control is achieved when facing is applied.
(4) When Vapastop® 883 facing is applied, a fully sealed and continous barrier prevents fibres entering the air stream.
(5) Refer to Technical Data Sheets for Fire test results.

PRODUCT SELECTOR - DUCTWORK FACING OPTIONS

Product	Description	Acoustic[2]	Vapour Barrier	Condensation Control	Indoor Air Quality[4]
Applications					
Sisalation® Vapastop® 883	Sisalation® Vapastop® 883 Aluminium Facing Foil is a fully sealed continuous acoustic membrane (CAM) minimising the risk of fibres entering the duct's air stream. It is ideal for applications where superior indoor air quality and NRC acoustic performance is required. Vapastop® 883 can sustain mechanical cleaning.	★★★★★	★★★★★	-	★★★★★
Sisalation® Heavy Duty (HD)	Sisalation® Heavy Duty (HD) Reflective Facing Foil delivers a superior water and vapour barrier providing long term durability against condensation. It is ideal for externally lagged ductwork where resistance to water vapour transmission is essential.	★★★	★★★★	★★★★	-
Sisalation® Medium Duty (MD)	Sisalation® Medium Duty (MD) Reflective Facing Foil delivers a water and vapour barrier providing long term durability against condensation. It is ideal for externally lagged ductwork where resistance to water vapour transmission is essential.	-		★★★	-
Sisalation® Heavy Duty Perforated (HDP)	Sisalation® Heavy Duty Perforated (HDP) Reflective Facing Foil delivers superior NRC acoustic performance and is ideal for internally lined ductwork where noise minimisation is essential.	★★★★	-	-	-
Black Matt	Black Matt Facing (BMF) is a light duty glass tissue facing which delivers an aesthetic solution for applications where the duct lining is visible. It is ideal for internally lined ductwork where noise minimisation is essential. It is unsuitable for mechanical cleaning.	★★★	-	-	-

Applications

- HVAC Internal Duct Liner
- HVAC External Duct Wrap
- All-in-one Duct Board
- Process Equipment Insulation
- Wall Insulation
- Plant Room Wall Insulation

Features

- Thermal Control
- Acoustic Control
- Condensation Control
- Indoor Air Quality Control
- Fire Resistant

Star Rating

★★★★★ Excellent ★★★★ Superior ★★★ Good

PRODUCT SELECTOR - NATIONAL CONSTRUCTION CODE 2019

DESIGNING FOR THERMAL PERFORMANCE

Selecting the correct level of thermal performance has a direct impact on building comfort. The right type of ductwork insulation can optimise the performance and energy efficiency of a HVAC system. The minimum performance level for insulation will vary depending on the climate zone of the project, building type and its application.

Use the following tables to select the right Fletcher Insulation product for your project. The recommended insulation will provide a Deemed-to-Satisfy solution to meet the requirements of Section J of the National Construction Code 2019.

Step 1: Identify your climate zone in accordance with the NCC.
Step 2: Identify your building class, location / system type, and element.
Step 3: Identify the minimum required material R-value for Deemed-to-Satisfy compliance.
Step 4: Select the appropriate Fletcher Insulation product based on the minimum required material R-value.

Zone 1

Compliance to NCC 2019 and NCC 2016

Building Class	Location / System Type	Element	Minimum Required R Value	Internal Duct Liner		External Ductwrap	
2 - 9	Conditioned space	Ductwork	1.2	FI32 Semi-Rigid	38mm	FI22 Ductwrap	41mm
		Fittings				FI22 General Purpose	41mm
	Exposed to direct sunlight	Ductwork	3.0	FI32 Semi-Rigid	100mm	Not Applicable	
		Fittings		FI24 Flexible Ductliner	108mm		
	All other locations	Ductwork	2.0	FI32 Semi-Rigid	75mm	FI22 Ductwrap	75mm
		Fittings		FI24 Flexible Ductliner	70mm	FI18 & FI22 General Purpose	75mm
1 & 10	Heating only system	Ductwork	1.0	Please contact your Fletcher Insulation Representative for more information			
		Fittings	0.4				
	Cooling only system including Evaporative Cooling	Ductwork	1.0				
		Fittings	0.4				
	Combined heating and refrigerated cooling system	Ductwork	1.5[1]				
		Fittings	0.4				

Zone 2

Compliance to NCC 2019 and NCC 2016

Building Class	Location / System Type	Element	Minimum Required R Value	Internal Duct Liner		External Ductwrap	
2 - 9	Conditioned space	Ductwork	1.2	FI32 Semi-Rigid	38mm	FI22 Ductwrap	41mm
		Fittings				FI22 General Purpose	41mm
	Exposed to direct sunlight	Ductwork	3.0	FI32 Semi-Rigid	100mm	Not Applicable	
		Fittings		FI24 Flexible Ductliner	108mm		
	All other locations	Ductwork	2.0	FI32 Semi-Rigid	75mm	FI22 Ductwrap	75mm
		Fittings		FI24 Flexible Ductliner	70mm	FI18 & FI22 General Purpose	75mm
1 & 10	Heating only system	Ductwork	1.0	Please contact your Fletcher Insulation Representative for more information			
		Fittings	0.4				
	Cooling only system including Evaporative Cooling	Ductwork	1.0				
		Fittings	0.4				
	Combined heating and refrigerated cooling system	Ductwork	1.0				
		Fittings	0.4				

[1] The minimum material R-Value for ductwork may be reduced by 0.5 for combined heating and refrigerated cooling systems in Climate Zones 1, 3, 4, 6, and 7 if the ducts are:
- under a suspended floor with an enclosed perimeter; or
- in a roof space that has insulation of not less than R0.5 directly beneath the roofing.

Zone 3

Compliance to NCC 2019 and NCC 2016

Building Class	Location / System Type	Element	Minimum Required R Value	Internal Duct Liner		External Ductwrap	
2 - 9	Conditioned space	Ductwork	1.2	FI32 Semi-Rigid	38mm	FI22 Ductwrap	41mm
		Fittings				FI22 General Purpose	41mm
	Exposed to direct sunlight	Ductwork	3.0	FI32 Semi-Rigid	100mm	Not Applicable	
		Fittings		FI24 Flexible Ductliner	108mm		
	All other locations	Ductwork	2.0	FI32 Semi-Rigid	75mm	FI22 Ductwrap	75mm
		Fittings		FI24 Flexible Ductliner	70mm	FI18 & FI22 General Purpose	75mm
1 & 10	Heating only system	Ductwork	1.0	Please contact your Fletcher Insulation Representative for more information			
		Fittings	0.4				
	Cooling only system including Evaporative Cooling	Ductwork	1.0				
		Fittings	0.4				
	Combined heating and refrigerated cooling system	Ductwork	1.5[1]				
		Fittings	0.4				

Zone 4

Compliance to NCC 2019 and NCC 2016

Building Class	Location / System Type	Element	Minimum Required R Value	Internal Duct Liner		External Ductwrap	
2 - 9	Conditioned space	Ductwork	1.2	FI32 Semi-Rigid	38mm	FI22 Ductwrap	41mm
		Fittings				FI22 General Purpose	41mm
	Exposed to direct sunlight	Ductwork	3.0	FI32 Semi-Rigid	100mm	Not Applicable	
		Fittings		FI24 Flexible Ductliner	108mm		
	All other locations	Ductwork	2.0	FI32 Semi-Rigid	75mm	FI22 Ductwrap	75mm
		Fittings		FI24 Flexible Ductliner	70mm	FI18 & FI22 General Purpose	75mm
1 & 10	Heating only system	Ductwork	1.0	Please contact your Fletcher Insulation Representative for more information			
		Fittings	0.4				
	Cooling only system including Evaporative Cooling	Ductwork	1.0				
		Fittings	0.4				
	Combined heating and refrigerated cooling system	Ductwork	1.5[1]				
		Fittings	0.4				

[1] The minimum material R-Value for ductwork may be reduced by 0.5 for combined heating and refrigerated cooling systems in Climate Zones 1, 3, 4, 6, and 7 if the ducts are:
- under a suspended floor with an enclosed perimeter; or
- in a roof space that has insulation of not less than R0.5 directly beneath the roofing.

PRODUCT SELECTOR - NATIONAL CONSTRUCTION CODE 2019

DESIGNING FOR THERMAL PERFORMANCE

Selecting the correct level of thermal performance has a direct impact on building comfort. The right type of ductwork insulation can optimise the performance and energy efficiency of a HVAC system. The minimum performance level for insulation will vary depending on the climate zone of the project, building type and its application.

Use the following tables to select the right Fletcher Insulation product for your project. The recommended insulation will provide a Deemed-to-Satisfy solution to meet the requirements of Section J of the National Construction Code 2019.

Step 1: Identify your climate zone in accordance with the NCC.
Step 2: Identify your building class, location / system type, and element.
Step 3: Identify the minimum required material R-value for Deemed-to-Satisfy compliance.
Step 4: Select the appropriate Fletcher Insulation product based on the minimum required material R-value.

Zone 5

Compliance to NCC 2019 and NCC 2016

Building Class	Location / System Type	Element	Minimum Required R-Value	Internal Duct Liner	External Ductwrap
2 - 9	Conditioned space	Ductwork	1.2	FI32 Semi-Rigid 38mm	FI22 Ductwrap 41mm
		Fittings			FI22 General Purpose 41mm
	Exposed to direct sunlight	Ductwork	3.0	FI32 Semi-Rigid 100mm	Not Applicable
		Fittings		FI24 Flexible Ductliner 108mm	
	All other locations	Ductwork	2.0	FI32 Semi-Rigid 75mm	FI22 Ductwrap 75mm
		Fittings		FI24 Flexible Ductliner 70mm	FI18 & FI22 General Purpose 75mm
1 & 10	Heating only system	Ductwork	1.0	Please contact your Fletcher Insulation Representative for more information	
		Fittings	0.4		
	Cooling only system including Evaporative Cooling	Ductwork	1.0		
		Fittings	0.4		
	Combined heating and refrigerated cooling system	Ductwork	1.0		
		Fittings	0.4		

Zone 6

Compliance to NCC 2019 and NCC 2016

Building Class	Location / System Type	Element	Minimum Required R-Value	Internal Duct Liner	External Ductwrap
2 - 9	Conditioned space	Ductwork	1.2	FI32 Semi-Rigid 38mm	FI22 Ductwrap 41mm
		Fittings			FI22 General Purpose 41mm
	Exposed to direct sunlight	Ductwork	3.0	FI32 Semi-Rigid 100mm	Not Applicable
		Fittings		FI24 Flexible Ductliner 108mm	
	All other locations	Ductwork	2.0	FI32 Semi-Rigid 75mm	FI22 Ductwrap 75mm
		Fittings		FI24 Flexible Ductliner 70mm	FI18 & FI22 General Purpose 75mm
1 & 10	Heating only system	Ductwork	1.0	Please contact your Fletcher Insulation Representative for more information	
		Fittings	0.4		
	Cooling only system including Evaporative Cooling	Ductwork	1.0		
		Fittings	0.4		
	Combined heating and refrigerated cooling system	Ductwork	1.5[1]		
		Fittings	0.4		

[1] The minimum material R-Value for ductwork may be reduced by 0.5 for combined heating and refrigerated cooling systems in Climate Zones 1, 3, 4, 6, and 7 if the ducts are:
- under a suspended floor with an enclosed perimeter; or
- in a roof space that has insulation of not less than R0.5 directly beneath the roofing.

Zone 7

Compliance to NCC 2019 and NCC 2016

Building Class	Location / System Type	Element	Minimum Required R-Value	Internal Duct Liner	External Ductwrap
2 - 9	Conditioned space	Ductwork	1.2	FI32 Semi-Rigid 38mm	FI22 Ductwrap 41mm
		Fittings			FI22 General Purpose 41mm
	Exposed to direct sunlight	Ductwork	3.0	FI32 Semi-Rigid 100mm	Not Applicable
		Fittings		FI24 Flexible Ductliner 108mm	
	All other locations	Ductwork	2.0	FI32 Semi-Rigid 75mm	FI22 Ductwrap 75mm
		Fittings		FI24 Flexible Ductliner 70mm	FI18 & FI22 General Purpose 75mm
1 & 10	Heating only system	Ductwork	1.0	Please contact your Fletcher Insulation Representative for more information	
		Fittings	0.4		
	Cooling only system including Evaporative Cooling	Ductwork	1.0		
		Fittings	0.4		
	Combined heating and refrigerated cooling system	Ductwork	1.5[1]		
		Fittings	0.4		

Zone 8

Compliance to NCC 2019. Refer to Fletcher HVAC and Industrial Product Guide for NCC 2016 compliance.

Building Class	Location / System Type	Element	Minimum Required R-Value	Internal Duct Liner	External Ductwrap
2 - 9	Conditioned space	Ductwork	2.0	FI32 Semi-Rigid 75mm	FI22 Ductwrap 75mm
		Fittings			FI22 General Purpose 75mm
	Exposed to direct sunlight	Ductwork	3.0	FI32 Semi-Rigid 100mm	Not Applicable
		Fittings			
	All other locations	Ductwork	3.0	FI32 Semi-Rigid 100mm	Not Applicable
		Fittings		FI24 Flexible Ductliner 108mm	
1 & 10	Heating only system	Ductwork	1.5	Please contact your Fletcher Insulation Representative for more information	
		Fittings	0.4		
	Cooling only system including Evaporative Cooling	Ductwork	1.5		
		Fittings	0.4		
	Combined heating and refrigerated cooling system	Ductwork	1.5[1]		
		Fittings	0.4		

[1] The minimum material R-Value for ductwork may be reduced by 0.5 for combined heating and refrigerated cooling systems in Climate Zones 1, 3, 4, 6, and 7 if the ducts are:
- under a suspended floor with an enclosed perimeter; or
- in a roof space that has insulation of not less than R0.5 directly beneath the roofing.

MATERIAL R-VALUE BY INSULATION TYPE

DESIGNING FOR THERMAL PERFORMANCE

Fletcher Insulation have a range of high thermal performance insulation products which meet or exceed the minimum R-value recommended by the NCC.

Once an insulation type is selected (page 8 to 11), higher thermal performance (R-value) can be achieved by increasing the insulation thickness or combining multiple sheet thicknesses.

	Application	Insulation Thickness (mm)													
		20	25	30	33	38	41	50	60	70	75	80	90	100	108
FI22 Ductwrap		–	R0.7	–	–	R1.1	R1.2	R1.5	–	–	R2.0	–	–	–	–
FI18 General Purpose		–	–	–	–	–	–	R1.3	–	–	R2.0	–	–	–	–
FI22 General Purpose		–	R0.7	–	–	R1.1	R1.2	R1.5	–	–	R2.0	–	–	–	–
FI24 General Purpose		–	R0.7	–	–	–	–	R1.5	–	–	–	–	–	–	–
FI24 Flexible Ductliner		–	–	–	–	–	–	–	–	R2.0	–	–	–	–	R3.0
FI32 Semi-Rigid		–	R0.8	–	–	R1.2	–	R1.5	–	–	R2.3	–	–	R3.0	–
FI48 Rigid Glasswool		–	R0.8	–	–	–	–	R1.5	–	–	R2.3	–	–	R3.0	–
Ductboard®		–	R0.8	–	R1.0	–	–	–	–	–	–	–	–	–	–
Pirformatherm®		R1.0	R1.25	R1.5	–	–	R2.0 (40mm)	R2.5	R3.0	R3.5	R3.75	R4.0	R4.5	R5.0	–
FI96 High Density Equipment Insulation (HDEI)		–	R0.8	–	–	–	–	R1.5	–	–	–	–	–	–	–

NOISE REDUCTION CO-EFFICIENTS

DESIGNING FOR ACOUSTIC PERFORMANCE

Minimising noise is an important consideration when designing buildings. For projects requiring high levels of acoustic control such as concert halls, studios and auditoriums, Fletcher Insulation has a range of specialty facings to provide higher levels of acoustic control.
The performance of sound absorption for insulation is described by the Noise Reduction Coefficient (NRC). In sound absorption applications, the NRC is used as an acoustic performance measure. The higher the NRC, the greater the sound absorption at the representative frequencies. The NRC is the calculated average result of four frequencies: 250 Hz, 500 Hz, 1000 Hz and 2000 Hz.

Sound Absorption

FI32 Semi-Rigid Insulation achieves the following sound absorption coefficients when tested in accordance with AS ISO 354 – 2006:

Product	Nominal Thickness mm	Sound Absorption Coefficients at Frequencies (Hz) of:									NRC	α_w
		100	125	250	500	1000	2000	3150	4000	5000		
Vapastop® 883	25	0.08	0.11	0.42	0.81	1.06	0.87	0.59	0.46	0.40	0.80	0.65 (M)
Sisalation® HD Perforated	25	0.05	0.06	0.22	0.63	0.87	1.00	0.92	0.88	0.83	0.70	0.55 (MH)
Unfaced/Plain	25	0.08	0.08	0.24	0.55	0.82	0.93	0.97	0.97	0.98	0.65	0.55 (MH)
Black Matt Facing (BMF)	25	0.06	0.06	0.25	0.61	0.83	0.95	0.99	1.03	1.03	0.65	0.55 (MH)
Mylar with Sisalation® HD Perforated	25	0.09	0.12	0.41	1.07	0.62	0.25	0.15	0.15	0.13	0.60	0.30 (LM)
Vapastop® 883	38	0.09	0.19	0.77	1.02	1.09	0.78	0.57	0.51	0.41	0.90	0.70 (LM)
Sisalation® HD Perforated	38	0.08	0.16	0.57	0.89	1.08	1.02	0.98	0.99	0.94	0.90	0.85
Unfaced/Plain	38	0.04	0.12	0.43	0.90	1.06	0.99	0.93	0.92	0.92	0.85	0.70 (MH)
Black Matt Facing (BMF)	38	0.08	0.15	0.59	0.85	1.02	1.02	1.07	1.09	1.02	0.85	0.85 (H)
Mylar with Sisalation® HD Perforated	38	0.13	0.23	0.98	0.98	0.55	0.24	0.12	0.12	0.10	0.70	0.25 (LM)
Unfaced/Plain	50	0.07	0.19	0.68	1.09	1.16	1.02	1.01	1.00	0.97	1.00	1.00
Vapastop® 883	50	0.15	0.30	0.90	1.06	1.03	0.77	0.60	0.52	0.37	0.95	0.70 (LM)
Sisalation® HD Perforated	50	0.07	0.19	0.68	1.07	1.05	1.01	0.91	0.96	0.86	0.95	1.00
Black Matt Facing (BMF)	50	0.12	0.18	0.69	1.00	1.10	1.03	1.05	1.04	1.05	0.95	0.95
Sisalation® HD	50	0.18	0.30	1.24	0.92	0.43	0.19	0.15	0.12	0.12	0.70	0.25 (LM)
Mylar with Sisalation® HD Perforated	50	0.16	0.33	1.09	0.94	0.50	0.23	0.15	0.15	0.10	0.70	0.25 (LM)
Unfaced/Plain	75	0.16	0.29	1.08	1.23	1.03	0.99	1.00	0.99	0.97	1.10	1.00
Black Matt Facing (BMF)	75	0.22	0.45	1.19	1.07	1.04	1.04	1.06	1.06	1.04	1.10	1.00
Sisalation® HD Perforated	75	0.22	0.52	1.16	1.07	0.99	1.01	0.99	0.97	0.90	1.05	1.00
Vapastop® 883	75	0.28	0.59	1.17	0.97	0.94	0.83	0.64	0.54	0.41	1.00	0.75 (LM)
Sisalation® HD	75	0.28	0.45	1.25	0.92	0.49	0.23	0.16	0.12	0.10	0.70	0.25 (LM)
Mylar with Sisalation® HD Perforated	75	0.30	0.62	1.16	0.81	0.47	0.22	0.16	0.13	0.12	0.65	0.30 (LM)
Unfaced/Plain	100	0.39	0.50	1.26	1.21	1.08	1.03	0.99	0.97	0.94	1.15	1.00
Black Matt Facing (BMF)	100	0.41	0.73	1.26	1.13	1.09	1.03	1.00	1.06	1.03	1.15	1.00
Sisalation® HD Perforated	100	0.45	0.82	1.19	1.14	1.06	1.06	1.01	1.01	0.96	1.10	1.00
Vapastop® 883	100	0.44	0.85	1.15	1.03	0.91	0.78	0.56	0.47	0.36	0.95	0.65 (LM)
Sisalation® HD	100	0.54	0.80	1.17	0.88	0.53	0.24	0.13	0.11	0.12	0.70	0.25 (LM)
Mylar with Sisalation® HD Perforated	100	0.51	1.01	1.08	0.86	0.50	0.23	0.13	0.13	0.08	0.65	0.25 (LM)

Flow Resistivity

Tested in accordance with ASTM Standard C522-03 Standard Test method for Airflow Resistance of Acoustic Materials.

The following table rates the flow resistivity of FI32 Semi Rigid products:

Product	Thickness	RAYLS/m
FI32 Semi Rigid R1.5	50mm	21.040
FI32 Semi Rigid R2.3	75mm	20.220
FI32 Semi Rigid R3.0	100mm	17.100

TECHNICAL INFORMATION

Product	FI22 Ductwrap	FI18, FI22, FI24 General Purpose			FI24 Flexible Ductliner
Applications					
MATERIAL PROPERTIES					
Density (kg/m³)	22	18, 22, 24			24
Max. Recommended Air Velocity (m/s)	Not applicable	Not applicable			16[1]
THERMAL PROPERTIES					
Thermal Conductivity @20°C (W/m²K)	0.036	0.033			0.033
Thermal performance (AS/NZS 4859.1:2002 incl Amendment 1)	Complies	Complies			Complies
Material R-Value (m²K/W) — Thickness, mm	FI22	FI18	FI22	FI24	FI24
25	R0.7	-	R0.7	R0.7	-
33	-	-	-	-	-
38	R1.1	-	R1.1	-	-
41	R1.2	-	R1.2	-	-
50	R1.5	R1.3	R1.5	R1.5	-
70	-	-	-	-	R2.0
75	R2.0	R2.0	R2.0	-	-
100	-	-	-	-	-
108	-	-	-	-	R3.0
ACOUSTIC PERFORMANCE					
NRC value for given thickness — Thickness, mm	Sisalation® HD	Sisalation® HD			
25	-	-			
38	0.60	0.60			
50	0.60	0.60			
75	-	-			
100	-	-			
FIRE HAZARD PROPERTIES					
Combustibility (AS/NZS 1530.1: 1994)	Non-combustible (Unfaced)	Non-combustible (Unfaced)			Non-combustible (Unfaced)
Ignitability, Flame Propagation, Heat Release and Smoke Release (AS/NZS 1530.3)	Sisalation® HD Facing Foil	Sisalation® HD Facing Foil	Unfaced	Sisalation® HDP	Black Matt Facing
Ignitabiity Index	0	0	0	0	0
Spread of Flame Index	0	0	0	0	0
Heat Evolved Index	0	0	0	0	0
Smoke Developed Index	2	2	1	2	2
Heat and Smoke Release (AS/NZS 3837:1998)	-	-	-	-	-
UL181.11-2013 Burning Test (AS 4254:2002)	Not applicable	Not applicable	-	-	-

[1] Sample prepared as per clause 12.7.1 of ASTM C 1071 and tested in accordance with UL 181 clause 18, without prior impact test. Under test conditions no erosion or degradation of the duct lining was evident.

Product	FI32 Semi-Rigid Glasswool	FI48 Rigid Glasswool	Ductboard®	Heavy Duty Equipment Insulation (HDEI)
Applications				
MATERIAL PROPERTIES				
Density (kg/m³)	32	48	96	96
Max. Recommended Air Velocity (m/s)	16[1] (with Vapastop® 883 Facing)	Not applicable	12	Not applicable
THERMAL PROPERTIES				
Thermal Conductivity @20°C (W/m²K)	0.033	0.032	0.032	0.033
Thermal performance (AS/NZS 4859.1:2002 incl Amendment 1)	Complies	Complies	Complies	Complies
Material R-Value (m²K/W) — Thickness, mm	FI32	FI48	FI96	HDEI
25	R0.8	R0.8	R0.8	R0.8
33	-	-	R1.0	-
38	R1.2	-	-	-
41	-	-	-	-
50	R1.5	R1.5	-	-
70	-	-	-	-
75	R2.3	R2.3	-	-
100	R3.0	R3.0	-	-
108	-	-	-	-
ACOUSTIC PERFORMANCE				
NRC value for given thickness — Thickness, mm	Unfaced	Sisalation® HDP	Vapastop® 883	Black Matt Facing	Unfaced	Unfaced	Unfaced
25	0.65	0.70	0.80	0.65	0.70	-	0.70
38	0.85	0.90	0.90	0.85	-	-	-
50	1.00	0.95	0.95	0.95	1.05	-	-
75	1.10	1.05	1.00	1.10	-	-	-
100	1.15	1.10	0.95	1.15	-	-	-
FIRE HAZARD PROPERTIES							
Combustibility (AS/NZS 1530.1: 1994)	Non-combustible (Unfaced)				Non-combustible (Unfaced)	Not applicable	Not applicable
Ignitability, Flame Propagation, Heat Release and Smoke Release (AS/NZS 1530.3)	Unfaced	Sisalation® HDP	Vapastop® 883	Black Matt Facing	Unfaced	Unfaced	Unfaced
Ignitabiity Index	0	0	0	0	0	0	0
Spread of Flame Index	0	0	0	0	0	0	0
Heat Evolved Index	0	0	0	0	0	0	0
Smoke Developed Index	1	3	2	1	3	1	1
Heat and Smoke Release (AS/NZS 3837:1998)	Group 1	-	-	-	-	Group 1	Group 1
UL181.11-2013 Burning Test (AS 4254:2002)	-	Complies	Complies	Complies	-	Complies	-

[1] Sample prepared as per clause 12.7.1 of ASTM C 1071 and tested in accordance with UL 181 clause 18, without prior impact test. Under test conditions no erosion or degradation of the duct lining was evident.

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