Fletcher Insulation
Building Better, Together

Technical data sheet

FI32 Semi-Rigid Insulation
HVAC internal duct liner

Description

FI32 Semi-Rigid Insulation is manufactured from up to 80% recycled glass using a thermoset resin, producing fine non-combustible fibres which form either a Medium Density Board or an Insulation blanket. A foil or tissue facing material is typically applied to one side for increased acoustic performance or when hygiene and mechanical cleaning capabilities are a requirement.

Applications

FI32 Semi-Rigid Insulation is suitable for a large range of HVAC and light industrial applications.

Most commonly applied as an internal liner for air conditioning sheet metal ductwork. Further suitable applications for FI32 Semi-Rigid Insulation include storage tanks, process vessels, appliance cabinets, plant rooms, under soffit, and under slab.

Product limitations of use

- Modifications not permissible, as suitability and/or compliance may be compromised.
- This product is not designed for use as a wall wrap or roof sarking.
- Unfaced Glasswool is not a water or vapour barrier, cannot be used where a water or vapour control is required.
- This product cannot be used in exposed/lining applications where a group number is required in accordance with AS 5637.1 (NCC V1 Amdt 1 C1.10(4) NCC 2022 V1 S7C4)
- When faced, this product does not meet AS1530.1 and is not suitable where non-combustible material is required.
- The foil facing product should not come into contact with wet concrete, or alkaline materials.

Features and benefits:

Exceptional (NRC) Acoustic Sound Absorption performance	→	Minimises the impact on excessive noise by reducing sound transmission created by overall HVAC ducting systems, providing a more comfortable and healthy work or living space.
Meets the NCC fire performance requirements of AS/NZS 1530.3 and complies with UL181.11 Burn Test – Air Duct	→	Offers specifier, mechanical engineer and contractor peace of mind that product complies with NCC requirements.
FBS-1 Bio-Soluble product	→	Safe and comfortable to handle.
Codemark certified to AS 4859.1 for thermal performance	→	Assurance that the product meets thermal compliance for the requirements of National Construction Code (NCC).

Facing options

A number of facing options can be applied to unfaced FI32 Semi-Rigid Insulation, making it ideal for a broader range of applications.

Sisalation Vapastop® 883 Facing Foil:

Vapastop® 883 Aluminium Foil Facing is a lightweight facing most suitable in applications where a Continuous Acoustic Membrane (CAM) combined with a superior NRC acoustic performance is required. This facing option has a fully sealed membrane barrier minimising the risk of fibres entering the ducts air stream, whilst still delivering excellent acoustic absorption. Vapastop® 883 can sustain mechanical cleaning.

Sisalation® Heavy Duty Perforated (HDP) Facing Foil:

Sisalation® Heavy Duty Perforated (HDP) Reflective Foil is most suitable in applications where a superior balance of thermal and acoustic performance is required. Unsuitable for use as a vapour barrier or for mechanical cleaning.

Black Matt Facing Glass Tissue:

Black Matt Facing (BMF) is an affordable acoustic option in applications where the duct lining may be somewhat visible. It is a light duty tissue made from bonded continuous glass fibres, unsuitable for mechanical cleaning and as a vapour barrier.

Product data

Material R-value m^2K/W	Nominal thickness mm	Sheet dimensions width x length mm	Roll dimensions width x length mm	Density kg/m^3	Mass/unit area kg/m^2
R0.71	25	1200 x 2400	1200 x 15000	32	0.8
		1500 x 2400	1380 x 12000		
		1500 x 3000	1500 x 12000		
R1.2	38	1200 x 2400	-	32	1.2
		1500 x 2400			
		1500 x 3000			
R1.5	50	1200 x 2400	1200 x 7500	32	1.6
			1200 x 10000		
		1500 x 2400	1380 x 8000		
			1500 x 8000		
		1410 x 3000	1500 x 10000		
R2.2	75	1200 x 2400	1380 x 8000	32	2.4
		1500 x 2400			
		1410 x 3000	1500 x 7500		
R3.0	100	1200 x 2400	1380 x 8000	32	3.2
		1500 x 2400	1500 x 7500		

Note: Not all sizes may be held in stock. Contact your Fletcher Insulation Representative for further details.

Physical properties

Property	Test method/standard	Result	Unit
Nominal density	ASTM C167	32	kg/m^3
Thermal conductivity @ 23°C	AS/NZS 4859.1	Complies	W/Mk
Thermal resistance @ 23°C	ASTM C518	Complies	m^2K/W
Maximum service temperature	ASTM C411/C447	Glasswool: 340 Facing Materials: 70	°C
Fungi resistance of insulation materials	ASTM C1338-14	Pass (no growth)	
Moisture absorption	When exposed to environmental conditions of 50°C and 95% relative humidity for four days	<0.2	% by volume

Recommended air velocities for duct linings

The recommended maximum design velocities for duct linings has been determined for FI32 Semi-Rigid Insulation faced with Sisalation® Vapastop® 883 by testing in accordance with the requirements of UL181–US Standard for Safety for Factory-Made Air Ducts and Connectors (UL, 2013) Clause 18 at velocities of up to 40m/s, with a safety factor of 0.4 applied (in accordance with the above UL181 standard), results in a safe working velocity of 16m/sec.

In applications where ductwork is operating at higher air flow velocities or where alternate duct linings are applied, it is recommended the insulation be applied behind perforated metal and mechanically fastened to the duct wall.

Fire hazard properties

FI32 Semi-Rigid Insulation exhibits the following characteristics when tested in accordance with the following standards:

Property	Test method/ standard	Test results			
		Unfaced	Sisalation® Vapastop® 883 Facing Foil	Sisalation® HDP Facing Foil	Black Matt Facing (BMF) Glass Tissue
Combustibility	AS/NZS 1530.1	Non-combustible	Not applicable on faced HVAC products		
Early Fire Hazard Indices	AS/NZS 1530.3				
Ignitability Index		0	0	0	0
Spread of Flame Index		0	0	0	0
Heat Evolved Index		0	0	0	0
Smoke Developed Index		1	2	3	2
Burn test	UL181.11 (Compliance to AS 4252.2)	Complies	Complies	Complies	Complies

Compliance

When correctly specified and installed, the product complies or assists to comply with below NCC clauses and relevant standards:

NCC 2019

- Complies with AS/NZS 4859.1 as referenced in NCC 2019, Volume 1 Clause J1.2(a) and NCC 2019, Volume 2 Clause 3.12.1..
- When tested to AS/NZS 1530.3 this product does not exceed the 'Spread of Flame' or 'Smoke Developed' indices as required by NCC 2019 Volume 1, Specification C1.10 Clause 5 for Air-handling ductwork and Clause 7 for insulation materials.

NCC 2022

- Complies with AS/NZS 4859.1 as referenced in NCC 2022, Volume 1 Clause J4D3(1) and NCC 2022, Volume 2 Housing Provisions Clause 13.2.2(1).
- When tested to AS/NZS 1530.3 this product does not exceed the 'Spread of Flame' or 'Smoke Developed' indices as required by NCC 2022 Volume 1, Specification 7 'Fire Hazard Properties S7C5 for Air-handling ductwork and Table S7C7 for insulation materials

Acoustic performance

Sound absorption

The performance of sound absorption for insulation is described by either the αw or 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, 1,000 Hz and 2,000 Hz. FI32 Semi-Rigid Insulation achieves the following sound absorption coefficients when tested in accordance with AS ISO 354:

Product	Thickness mm	Sound absorption coefficients at frequencies (Hz) of: 100	125	250	500	1000	2000	3150	4000	5000	NRC	αw
Sisalation® HD Perf	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)
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 Perf	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)
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 Perf	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
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 Perf	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)
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 Perf	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)

Flow resistivity

Acoustic performance of FI32 Semi-Rigid products used in sound absorption applications can be measured by their resistance to air flow, this is recognised as 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 mm	RAYLS/m
FI32 Semi-Rigid R1.5	50	21,040
FI32 Semi-Rigid R2.2	75	20,220
FI32 Semi-Rigid R3.0	100	17,100

Health and safety

FI32 Semi-Rigid Glasswool is manufactured from FBS-1 Glasswool Bio-Soluble Insulation®.
Refer to Fletcher Insulation SUIS for more information.

Environmental properties

FI32 Semi-Rigid Glasswool is manufactured from up to 80% recycled glass which would otherwise go into landfill and be unsuitable for alternative manufacturing processes.

Fletcher Insulation avoids the use of Ozone Depleting Potential (ODP) substances in the manufacture or composition of its FBS-1 Glasswool Bio-Soluble Insulation® and Sisalation® reflective foil products.

The use of FI32 Semi-Rigid Glasswool guarantees the use of Zero ODP insulation while also ensuring that no harmful levels of Volatile Organic Compounds (VOCs) are released. This allows the incorporation of environmentally preferable insulation whilst also maintaining indoor air quality.

Maintenance and conditions of use

- Product should be kept dry, not to be exposed to weather in any condition including prior, during and after installation.
- For installation please refer to AS4254.2 for installation requirement for air handling ductwork.
- Use of pressure cleaners or mineral based cleaners must not be used on the facing product.
- Where insulation can be inspected, where appropriate ensure any tears in the facing are repaired with appropriate tape as highlighted in the AS4254.2 for installation requirement for air handling ductwork.

Technical specification

When specifying, please state the following:
The insulation material shall be Fletcher Insulation FI32 Semi-Rigid Insulation with a nominal thickness of _____mm (specify nominal thickness) faced with _____ (insert facing type) and with a Material R-value of R _____m^2K/W (specify Material R-value).

The following performance attributes must be specified:
Product must be FBS-1 Biosoluble.
Product must recover to the requirements of AS/NZS 4859.1.
Where sound performance is required for the project, Sound Absorption level shall be _____.