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 decorative 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.

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	1500 x 10000	32	1.2
		1500 x 2400			
		1500 x 3000			
R1.5	50	1200 x 2400	1200 x 7500	32	1.6
		1500 x 2400	1380 x 8000		
		1410 x 3000	1500 x 8000		
R2.2	75	1200 x 2400	1200 x 7500	32	2.4
		1500 x 2400	1380 x 8000		
		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		32	kg/m^3
Thermal conductivity @ 23°C	AS/NZS 4859.1	Complies	W/Mk
Thermal resistance @ 23°C	ASTM C518	Complies	m^{2}K/W

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 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

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.

Health and safety

FI32 Semi-Rigid Glasswool is manufactured from FBS-1 Glasswool Bio-Soluble Insulation®. FBS-1 Glasswool Bio-Soluble Insulation® is safe to use and meets the criteria of the Australian Safety and Compensation Council (formerly NOHSC) to be classified as non-hazardous. Fletcher Insulation glasswool can be used with confidence in any residential, commercial or HVAC application.

Acoustic performance

Sound absorption

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, 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
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 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)
Mylar with Sisalation® HD Perf	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 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)
Mylar with Sisalation® HD Perf	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 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
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 Perf	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 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)
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 Perf	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 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)
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 Perf	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

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.

Flow resistivity performance is valuable when evaluating products of the same thickness and density that have varying fibre attributes.

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 R2.3	75	20,220
FI32 Semi-Rigid R3.0	100	17,100

Technical specification

When specifying, 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).