



NEXUS FUSION

Firesafe lamella boards for
insulating spandrel panels

FIRESAFE STONEWOOL INSULATION FOR SPANDREL PANELS IN CURTAIN WALL SYSTEMS

- Euroclass A1 Fire performance
- Unique manufacturing process creates optimum performance and cost efficient manufacturing
- Precision engineering leads to easier manufacturing and installation
- The unique open filament net facilitates a strong adhesive bond to the glazing system

SIDERISE NEXUS FUSION OFFERS BOTH SPECIFIERS AND MANUFACTURERS A SUPERB FIRESAFE INSULATION MATERIAL WITH EXCELLENT INTEGRITY, RIGIDITY, FLATNESS AND RESISTANCE TO BUILDING MOVEMENT.

Our unique lamella technology offers a dramatic advantage to glass manufacturers and installers of curtain wall/ bespoke glazing systems.



NEXUS FUSION BENEFITS

- Siderise Nexus Fusion has a European Fireclass A1 performance in its intended application
- The product has been tested in conjunction with the Siderise Cavity Wall Fire Stop achieving a EI30 performance
- Precision manufacturing and tight tolerances ensure that there are no gaps between boards when installed thus maintaining fire, thermal and acoustic performance
- The Nexus lamella process facilitates a strong homogeneous board which, when bonded to the glazing system, will resist building movement over time thus avoiding the risk of slumping which would lead to gaps. Any gaps would in turn compromise fire, thermal and acoustic performance
- Siderise Fusion removes the need for costly bespoke trays and the time-consuming process to install lightweight insulation on pins with washers
- The branded foil makes it easy to ensure that the correct material has been used

STANDARD SPECIFICATIONS

The standard grade of Nexus Fusion has a nominal density of 77kg/m³. Other grades are available on request. Please contact the Nexus team at nexus@siderise.com to discuss your requirements.

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SIDERISE NEXUS FUSION TECHNICAL INFORMATION

Siderise Nexus Fusion boards provide a cost effective prefinished rigid insulation with excellent fire, thermal and acoustic performance for use in curtain wall and bespoke glazing systems.

Product Features

Fire Safety

- Euroclass A1 in its intended application
- Will not contribute to the spread of a fire
- High temperature resistance, the melting point is more than 1000°C
- Does not cause smoke or burning droplets
- No aggressive or environmentally unfriendly substances or gases are released

Water resistance

- Repels water due to water repellent additives
- Non-hygroscopic and non-capillary – the manufacturing process ensures that no capillary gaps can occur between adjacent strips

Chemical

- Chemically neutral and does not cause or promote corrosion
- Resistant to most acids and weak alkaline solutions

Condensation control

- Vapour resistance is negligible and considered to be the same as that for air, helping to avoid condensation
- Moisture condensing from air within the core material is less than 0.02% by volume at 95% humidity

Environmental

- No CFCs or HCFCs are used in the manufacture of the base materials
- Base stonewool material is fully recyclable

Biological

- Vermin and rot proof
- Does not encourage the growth of fungi, mould or bacteria
- Suitable for use (with suitable facings) in hygienic areas

Physical Properties

Composition

Siderise Nexus Fusion boards are produced using stonewool slab material which has been Euroclass rated A1 and is specifically formulated to a Siderise specification for use in this exacting application.

Stonewool is manufactured from volcanic rock that has been melted in a furnace to temperatures in excess of 1500°C. The molten product is then spun into a wool-like substance which has excellent fire, acoustic and thermal properties.

The unique Nexus process takes this insulating material which is then cut into strips and rotated through 90 degrees so the fibres are perpendicular to the board surface. Additionally, the strips are subjected to lateral compression which eliminates any gaps and produces a more homogeneous board with substantially better rigidity than a standard stonewool slab of the same density. Whilst under compression, the product is faced one side with foil and on the other side with an open filament net which both maintain the compression and aid handleability.

Bonding

The Fusion board should be bonded on the net face to the glazing system.

Siderise maintains a close working partnership with major adhesive suppliers to ensure compatibility of materials and the attainment of optimum bond strengths.

For advice regarding manufacturers of appropriate adhesives please contact the Nexus team on nexus@siderise.com

Grade

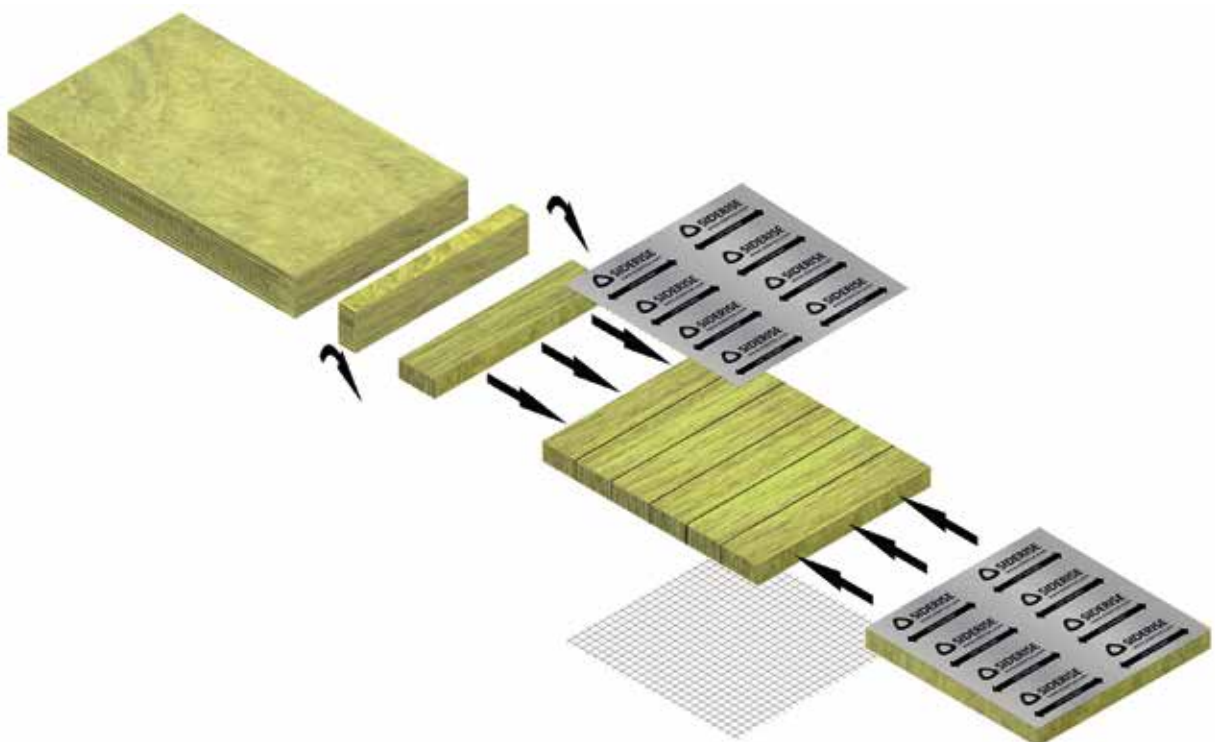
Siderise Nexus Fusion boards can be manufactured in different grades, however the standard grade has a nominal density of 77kg/m³.

The grade of the Siderise Nexus Fusion board will depend on the individual construction and/or performance requirements.

Material suitability is dependent upon the intended application of the product and is determined by the relevant trial investigation / testing of the material by the end user. This is typically undertaken in conjunction with the Siderise Technical Team who are able to provide application and design advice.

Please contact the Nexus team at nexus@siderise.com to discuss your requirements.

TABLE 1: Dimensions		Tolerance
Width	Up to 1200mm in 1mm increments	+/- 2.0mm
Length	Standard Boards up to 2400mm in 1mm increments	+/- 2.0mm
Thickness	Thickness between 20mm and 200mm in 1mm increments	+/- 0.5mm



Fire classification, testing and performance

EU Fire Classification

The introduction of a single classification system for the Reaction to Fire¹ performance of construction materials across all member states of the EU, has made it possible to directly compare different construction materials.

Testing is standardised through the use of BS EN 13501-1: Fire classification of construction products and building materials.

The Scope of this standard considers the products only in relation to their end use application.

For insulation products there are seven possible Reaction to Fire levels – A1, A2, B, C, D, E and F. Additionally, for products with

a classification of A2 or lower, the material's tendency to produce smoke and flaming droplets/particles is rated. The level of smoke release has three possible levels: s1, s2 and s3 with s3 being the worst.

Nexus Fusion Testing and Performance

Nexus Fusion samples were tested at Efectis (France) in 2018 in accordance with the requirements of BS EN 13501-1 with the following results:

Reaction to Fire Classification Nexus Fusion²

Fire	A1
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Fire Resistance¹ of Curtain Wall Systems

The fire rating of a panel system will depend on a variety of factors including:

- Nexus Fusion grade and thickness as insulation to the spandrel panel
- Nexus Core grade and thickness for any composite panels
- Facing type and thickness
- Panel cover width, span, joint detail and fixings

To properly determine fire resistance of a system a fire test is necessary.

Over the past 25 years many curtain wall systems incorporating Nexus products have been independently tested

Intermediate scale testing

A glazing assembly, of the following construction, was tested at Exova in May 2018 using the principles of EN 1366 part 4 and EN 1363 part 1.

- Glass: 8mm clear ceramic glass (graphite grey)
- Insulation: Nexus Fusion 100mm thick with nominal density 77kg/m³

Result was an insulation pass at 90 minutes and an integrity pass of 2 hours with no issues on either.



Test rig at two hours testing



Back of test sample after two hours testing showing the furnace exposed face of the Fusion insulation

¹ Reaction to Fire is the measurement of how a material will contribute to the fire development and spread. This is different to Fire Resistance where a system is tested to see how well it resists fire breaking through due to flames, combustible gasses or elevated temperature on the reverse of the system

² Results applicable to standard density material in thickness range 75-120mm

Large scale testing

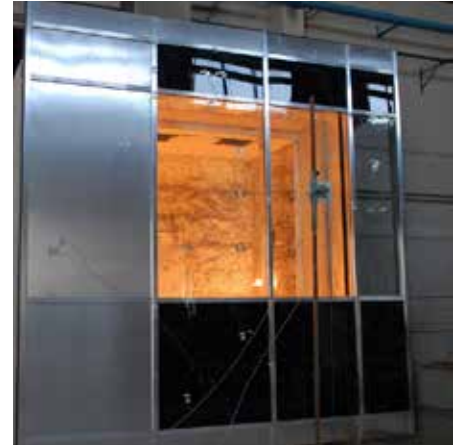
As a guide to performance a full curtain wall assembly was tested to BS EN 1364-3:2006 Fire resistance test for non-load bearing elements. The assembly consisted of the following:

- Fire rated façade system to suit specific fire rating
- Siderise Passive Fire Protection seals to all juncture with furnace
- Standard 'Pyro glass' 28mm IGU's
- Non-fire rated 6mm toughened glass ceramic spandrels protected with Nexus Fusion boards at nominal density of 77kg/m³ and 146mm thickness

- Bonded composite panel with 28mm rebate and the following construction:

- **Outer skin:** 2mm polyester powder coated aluminium
- **Core:** Nexus Core with nominal density 124kg/m³
- **Inner skin:** 0.9mm galvanised steel tray

The use of Nexus Fusion and Core products will contribute significantly to the fire performance of a curtain walling system. The above system achieved a tested performance of REI 30 with no issues regarding integrity or insulation.



Acoustic performance

Siderise Nexus Fusion boards offer exceptional acoustic performance.

As with fire performance the acoustic performance is system specific and is heavily influenced both by the materials used and the way they are put together.

Siderise Nexus Fusion has been used in many different systems over the past two decades. Siderise acoustic experts are on hand to help clients to offer advice which can help manufacturers to design the optimal performance.

As the Nexus Fusion product is bonded to glass it isn't possible to test or predict the acoustic performance of the unit.

Environmental

Siderise is committed to the use of innovative materials and the development of products and technologies for a more sustainable future. We consider the environment in everything we do from the purchasing of our raw materials, the manufacturing processes we use to produce our products, through to their final end use.

Nexus Fusion production

The Nexus technology delivers multiple sustainable benefits which include:

- Automated system optimises the mechanical properties of the end product whilst minimises waste and raw material usage
- Single process can be used for a wide range of products used in multiple sectors
- Fire products are made in one piece enabling fast, simple and economical installation

- The unmatched movement characteristics of the Nexus products increases their service life and maintains fire integrity

In addition Siderise Nexus Fusion has the following features

- It contains no Volatile Organic Compounds (VOC's) and no very Volatile Organic Compounds (vVOC's)
- Zero ozone depleting potential
- Zero global warming potential
- Stonewool material is infinitely recyclable

Thermal performance

For a given construction, the thermal resistance is determined by a combination of the grade of material and its thickness. The standard grade of Nexus Fusion has a nominal density of 77kg/m³ and a thermal conductivity of 0.038W/mK.

Siderise Nexus Fusion does not age and the heat transmission coefficient remains constant providing permanently durable properties.

As the material does not shrink or warp, thermal bridges cannot be formed between the insulating boards.

Please contact the Siderise Technical Sales Team for advice regarding the thermal characteristics of the bonded panel in conjunction with all interfacing and surrounding elements.

U Value of glazing alone (W/m ² K)	R Value of glazing (m ² KW)	Required U Value improvement (W/m ² K)	Required Fusion thickness to achieve improved U Value (mm)	R value of Fusion by thickness (m ² KW)
2.7	0.370	0.35	93	2.45
		0.30	112	2.95
		0.25	135	3.55
		0.20	172	4.53
2.0	0.500	0.35	88	2.32
		0.30	108	2.84
		0.25	132	3.47
		0.20	168	4.42
1.5	0.666	0.35	82	2.16
		0.30	100	2.63
		0.25	125	3.29
		0.20	165	4.34
1.2	0.833	0.35	78	2.05
		0.30	95	2.50
		0.25	118	3.63
		0.20	155	4.08



Service and Support

- Specification advice – including fire, acoustic and thermal performance
- Full technical support
- Bespoke manufacturing and kit supply service to close tolerances
- Built-in independently-qualified fire performance
- Advice and training on best way to handle and use our products



SALES AND TECHNICAL SUPPORT

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