

# **NXR | NEXUS CORE FOR BONDED COMPOSITE STRUCTURES**

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## **Technical Data Sheet**

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**SIDERISE**<sup>®</sup>  
*integrity in all we do*

Acoustic, fire and thermal insulation specialists

## Application

**Siderise Nexus Core** provides a fire-safe stone wool core for composite structures such as architectural panels and doors.

**Siderise Nexus Core** provides a cost-effective pre-finished rigid core to be used wherever thermal, fire, and acoustic insulation is required within a bonded composite structure.

## Product Description

**Siderise Nexus Core** boards are produced using stone wool slab material which has been Euroclass rated A1 and is specifically formulated to a Siderise specification for use in this exacting application

Stone wool is manufactured from volcanic rock which has been melted in a furnace to temperatures in excess of 1500°C. The molten product is then spun into a wool-like substance that 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 a substantially better rigidity than a standard stone wool slab of the same density. Whilst under compression the product is faced with an open filament net which both maintains the compression and aids handleability.

The Core board should be bonded on the net face. Siderise maintains a close working partnership with major adhesive suppliers to ensure the compatibility of materials and attainment of optimum bond strengths.

For advice regarding manufacturers of appropriate adhesives please contact the customer service team on [salesteam@siderise.com](mailto:salesteam@siderise.com)

## Fire Performance

**Siderise Nexus Core** is used as a core material for composite structures. In this application it:

- Will not contribute to the spread of a fire
- Has high-temperature resistance, the melting point is more than 1000°C
- Does not cause smoke or burning droplets
- Releases no aggressive or environmentally unfriendly substances or gases.

### Fire Resistance of Panel Systems

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

- Nexus Core grade and thickness
- Facing type and thickness
- Panel cover width, span, joint detail and fixings

**Table 1 : Fire performance for typical glazing panel comprising Siderise Nexus Core board**

Effective density	Thickness (mm)	U Value	Fire rating	
			Integrity (E)	Insulation (I)
124kg/m <sup>3</sup>	86	0.51 W/m <sup>2</sup> .K	30	30
124kg/m <sup>3</sup>	112	0.39 W/m <sup>2</sup> .K	60	60
124kg/m <sup>3</sup>	135	0.33 W/m <sup>2</sup> .K	60	60*
124kg/m <sup>3</sup>	160	0.27 W/m <sup>2</sup> .K	60	60*

\*Although these panels have a minimum rating of 60/60, increased ratings are achievable depending on the curtain walling system used. This would require an independent assessment.

Please note: Only 110 kg/m<sup>3</sup> and 160 kg/m<sup>3</sup> density products are supplied as standard. Other product densities may be made available upon request, subject to minimum volume order requirements. Please contact Siderise Technical Team for further assistance.

## Acoustic Performance

The acoustic performance of Siderise Nexus Core is system-specific and is heavily influenced both by the materials used and the way they are assembled. The acoustic performance of a given panel using Nexus Core depends primarily on the surface mass of the panel linings and the depth of the cavity.

Siderise Nexus Core has been used in many different systems over the past decades. Siderise acoustic experts are on hand to help clients and to offer guidance that can help manufacturers to design to the optimal performance.

Table 2 gives acoustic performance values that have been estimated using predictive software. Due to manufacturing changes we now offer Nexus Core in 110 kg/m<sup>3</sup> density. As noted above, the acoustic performance is controlled by the other elements of the panel. We anticipate the below values are representative of the performance of a panel using 110 kg/m<sup>3</sup> Nexus. We advise that panel performance is discussed with the project acoustician.

**Table 2 : Acoustic performance for composite panels with Siderise Nexus Core\***

Outer Face	Inner Face	Nexus Core Density (kg/m <sup>3</sup> )	Nexus Core Thickness (mm)	Rw*	Rw + Ctr*
2.0mm (A)	0.7mm (S)	104	30	34dB	27dB
2.0mm (A)	2.0mm (A)	104	30	34dB	27dB
1.2mm (S)	1.2mm (S)	104	30	40dB	31dB
1.5mm (A)	1.5mm (A)	124	50	33dB	26dB
1.5mm (A)	0.9mm (S)	124	50	36dB	28dB
0.9mm (S)	0.9mm (S)	124	50	39dB	30dB
0.7mm (S)	0.9mm (S)	124	100	43dB	29dB
1.5mm (A)	0.9mm (S)	124	100	41dB	29dB
1.5mm (A)	1.5mm (A)	124	100	37dB	27dB

Key: (A) = Aluminium (S) = Steel

\* These values are estimated by our acoustic experts using 'Predictive Software'. These values should be discussed with the project noise consultant for confirmation/acceptance.

Please note: Only 110 kg/m<sup>3</sup> and 160 kg/m<sup>3</sup> density products are supplied as standard. Other product densities may be made available upon request, subject to minimum volume order requirements. Please contact Siderise Technical Team for further assistance.

## Thermal Performance

**Siderise Nexus Core boards** exhibit thermal conductivity's between 0.041 W/mK and 0.048 W/mK.

For a given construction, the thermal resistance is determined by a combination of the grade of material and its thickness.

Siderise Nexus Core 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 Team for advice regarding the thermal characteristics of the bonded panel in conjunction with all interfacing and surrounding elements.

**Table 3 : Thermal performance for Siderise Nexus Core**

Nominal density	Thermal Conductivity $\lambda_{10}$ (90/90 Lambda for 100 sample)
110kg/m <sup>3</sup>	0.041 W/mK
124kg/m <sup>3</sup>	0.044 W/mK
164kg/m <sup>3</sup>	0.048 W/mK

Please note: Only 110 kg/m<sup>3</sup> and 160 kg/m<sup>3</sup> density products are supplied as standard. Other product densities may be made available upon request, subject to minimum volume order requirements. Please contact Siderise Technical Team for further assistance.

## Technical Specification

**Siderise Nexus Core** boards are available in different grades to suit the performance specification required for the composite panel.

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

Material suitability is dependent upon the intended application of the project 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.

For further information please contact the customer service team on [salesteam@siderise.com](mailto:salesteam@siderise.com)

## Dimensional Properties

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 25mm and 175mm in 1mm increments	+/- 0.5mm

## Mechanical values typical characteristic for standard grades

Effective Density	Compression Strength (min)	Tensile Delamination Strength (min)
110kg/m <sup>3</sup>	55 kPa	100 kPa
124kg/m <sup>3</sup>	75 kPa	150 kPa
164kg/ m <sup>3</sup>	130 kPa	190 kPa

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## 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.

**Siderise Nexus Core** boards are environmentally friendly:

- They contain no Volatile Organic Compounds (VOCs) and no very Volatile Organic Compounds (VOCs).
- Zero Ozone Depleting Potential
- Zero Global Warming Potential
- Recyclable

## Additional Information

The following information is available for download via the website:

- Standard Details
- NBS Specification Clauses
- Safety Data Sheet

## Technical Support

For technical advice or support please contact: [technical.services@siderise.com](mailto:technical.services@siderise.com)

For Installation Training or Site Inspections please contact: [site.services@siderise.com](mailto:site.services@siderise.com)

## Context

The information in this datasheet is believed to be accurate at the date of publication. Siderise has a policy of continuous product improvement and reserves the right to alter or amend the specifications of products without prior notice. Siderise does not accept responsibility for the consequences of using the products described outside of the recommendations within this datasheet. Expert advice should be sought where there is any doubt about the correct specification or installation of Siderise products.

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