Reaction to
Fire Classification

A2-s1,d0

EN 13501-1: 2018

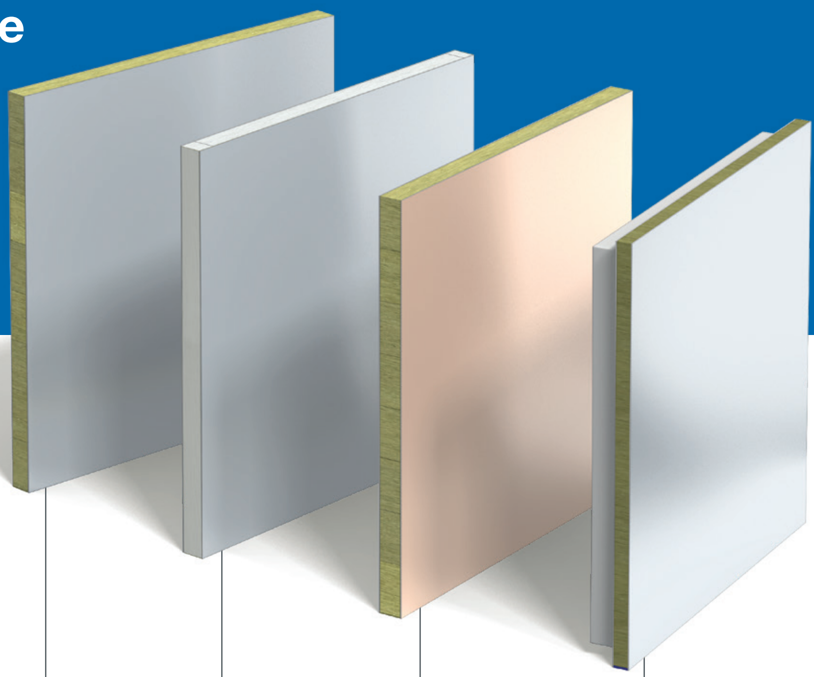
FR-A Non-Combustible Architectural Panels

For Glazing & Curtain Wall Applications

Product Data Sheet

panelsystems.co.uk

A range of non-combustible A2-rated architectural insulated panels suitable for glazing and curtain wall applications.



In recent years, changes have been made to Approved Document B (ADB) of the building regulations, to improve the fire safety of properties.

One of the changes, Regulation 7(2), makes it a legal requirement that, for *Relevant Buildings*, external wall materials (all the way through the wall to the internal decoration) have a Euroclass reaction to fire performance classification of either A1 or A2-s1,d0.

Panel Systems' range of non-combustible architectural panels includes four types of A2 rated insulated panels for glazing and curtain walling applications.

Manufactured at the company's Sheffield based facility to ISO 9001: 2015 management standards, the FR-A panel range achieves A2-s1,d0 classification when tested against the procedures detailed in EN 13501-1: 2018.

FR-A panels are specifically designed with a fire resisting, non-combustible core of Nexus Lamella, the fire safe material for composite structures. Panels are subject to a bespoke, controlled manufacturing process, which includes stringent quality checks on each component to ensure the required standard of the tested specifications is achieved.

FR-A non-combustible panels offer Architects, Specifiers & Developers an ideal glazing panel that is compliant with UK Building Regulations. Due to the large range of finishes and thicknesses available, FR-A panels are ideal for use in both new construction projects and for the replacement of existing non-compliant spandrel panels.

FR-A Type 2

External face: PPC aluminium

Core: Non-combustible Nexus lamella

Internal face: PPC or mill finish aluminium

FR-A Type 2a

External face: PPC aluminium

Core: Non-combustible Nexus lamella with high-density calcium silicate hard edge to all sides

Internal face: PPC or mill finish aluminium

FR-A Type 3

External face: Anodised aluminium

Core: Non-combustible Nexus lamella

Internal face: Anodised or mill finish aluminium

FR-A Type 4

External face: PPC aluminium

Core: Non-combustible Nexus lamella with high-density Nexus lamella hard edge to all sides

Internal face: PPC or mill finish aluminium

The panels also have excellent acoustic properties (calculations of which are available upon request from Panel Systems' experienced technical team) and can be manufactured to meet specific U-value and wind loading requirements. In addition, the technical team can offer a full support service to meet the performance criteria for your specific application.

Testing Process

To receive a classification against EN 13501-1: 2018, Panel Systems' range of FR-A Non-Combustible Architectural Panels required testing against two standards:

EN ISO 1716: 2018

Determination of the gross heat of combustion.

A sample of each material used in the panel was tested to determine the gross heat of combustion, also known as the calorific value. This value represents the maximum amount of thermal energy the material could contribute to a fire.

EN 13501-1 classification imposes strict limits on both the overall calorific value of the assembled panel, as well as limits on each component of the panel.

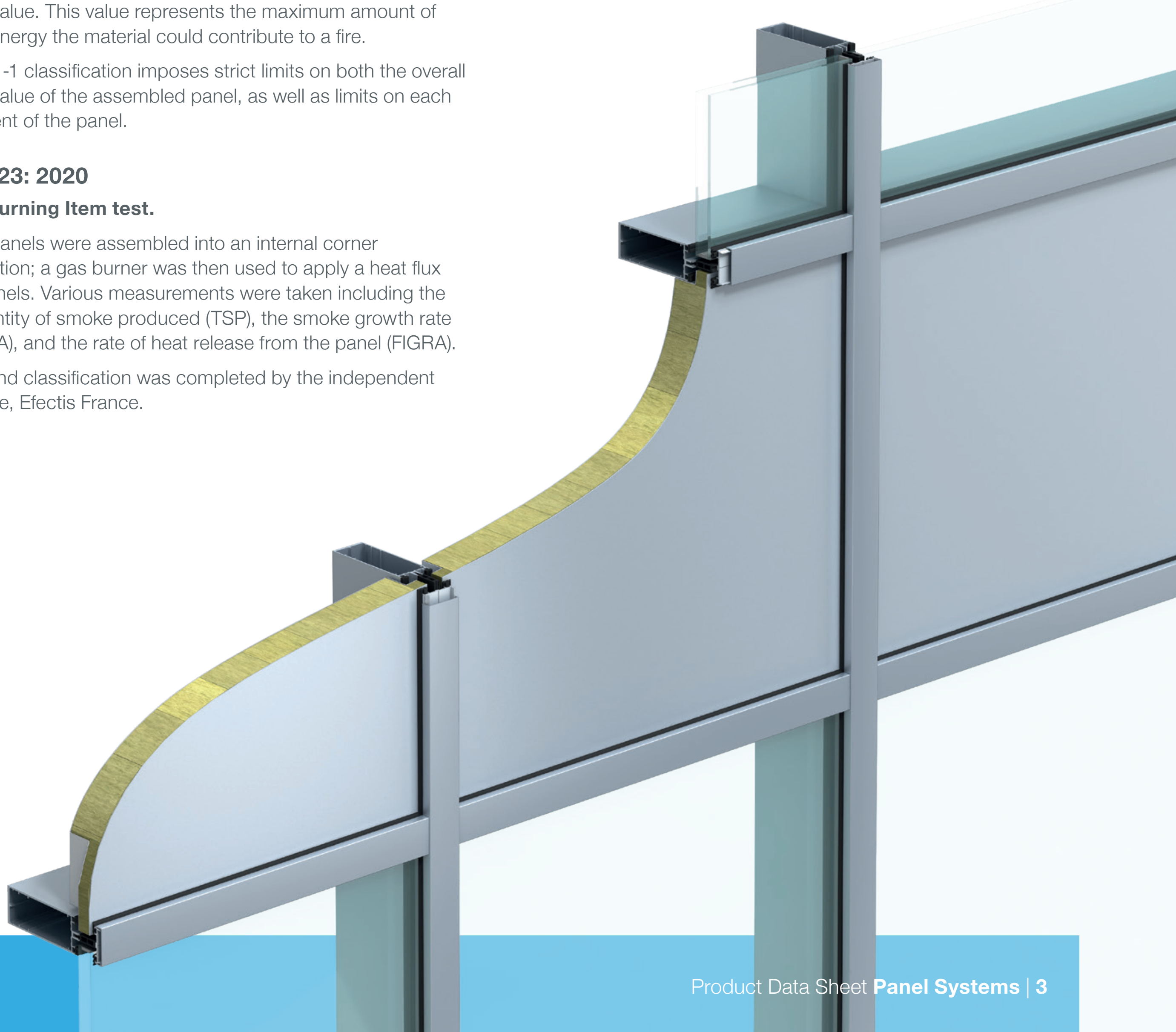
EN 13823: 2020

Single Burning Item test.

Pairs of panels were assembled into an internal corner configuration; a gas burner was then used to apply a heat flux to the panels. Various measurements were taken including the total quantity of smoke produced (TSP), the smoke growth rate (SMOGRA), and the rate of heat release from the panel (FIGRA).

Testing and classification was completed by the independent test house, Efectis France.

- **Achieves A2-s1,d0 classification.**
- **Available in PPC or anodised aluminium.**
- **Available with 1.5 mm, 2.0 mm or 3.0 mm facings.**
- **Excellent thermal properties.**
- **Good compressive strength.**
- **Over 45 years industry experience.**
- **Manufactured to quality standard ISO 9001: 2015.**
- **Available with high density edging for demanding applications.**



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FR-A Type 2
Composite Panel

Panel Build-up

Outer face: 1.5 mm, 2.0 mm or 3.0 mm polyester powder coated (PPC) aluminium

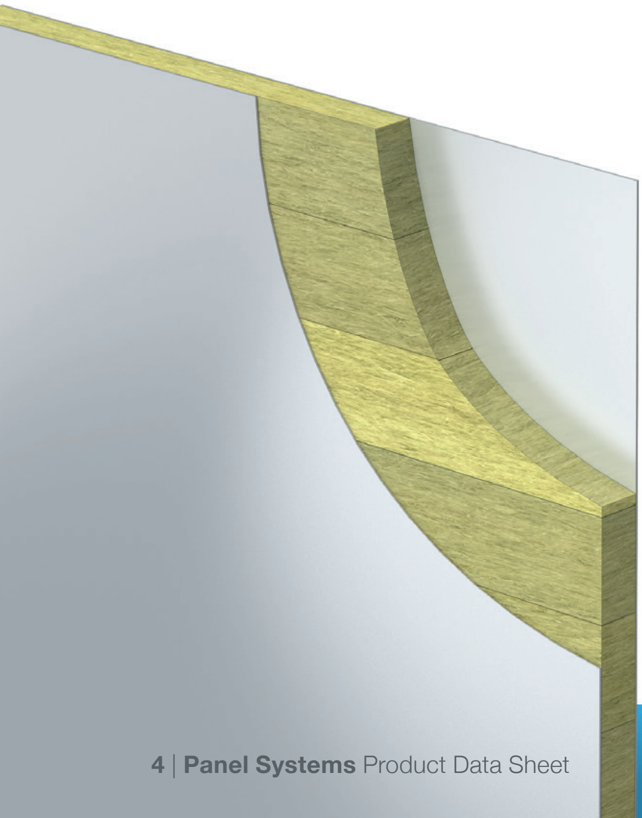
Core: Nexus lamella stone wool

Inner face: 1.5 mm, 2.0 mm or 3.0 mm polyester powder coated (PPC) or mill finish aluminium

Panels are bonded using a two-part polyurethane adhesive.

Core

Nexus:		
	Thermal conductivity:	0.048 W/mK
	Density:	160 kg/m^3
	Compressive strength:	130 kPa



Weight

Panel weight is determined by panel size. The following weights are for 25 mm and 53 mm thick panels, per m^2. For panel weights of specific thicknesses, please contact the technical team.

	1.5 mm faces	2.0 mm faces	3.0 mm faces
25 mm	11.9 kg/m^2	14.4 kg/m^2	N/A
53 mm	16.5 kg/m^2	19.0 kg/m^2	24.1 kg/m^2

U-values

The following U-values are based on 28 mm thick panels. For U-value calculations for other thicknesses, please contact the technical team.

1.5 mm / 1.5 mm faces: 1.43 W/m^{2}K

2.0 mm / 2.0 mm faces: 1.47 W/m^{2}K

3.0 mm / 3.0 mm faces: 1.57 W/m^{2}K

Tolerances

Length: ± 2 mm

Width: ± 2 mm

Thickness: ± 1 mm

Fire Performance

Reaction to Fire

This panel specification has been tested in accordance with the procedures given in **EN 13501-1: 2018** at the independent testing laboratory Efectis.

This product (Panel Systems FR-A Type 2 Composite Panel) in relation to its reaction to fire behavior is classified **A2-s1,d0**. The test covers panels with an overall thickness ranging from 25 mm - 53 mm thick.

The panel specification tested was:

1.5 mm PPC aluminium / Nexus core 160 kg/m^3 / 1.5 mm PPC (or mill finish) aluminium.

The Siderise Nexus core is made from European Fireclass A1 material. A separate data sheet is available upon request.

Reaction to
Fire Classification

A2-s1,d0

EN 13501-1: 2018

FR-A Type 2a
Composite Panel

Panel Build-up

Outer face: 1.5 mm, 2.0 mm or 3.0 mm polyester powder coated (PPC) aluminium

Core: Nexus lamella stone wool

Inner face: 1.5 mm, 2.0 mm or 3.0 mm polyester powder coated (PPC) or mill finish aluminium

Edging: Calcium silicate hard edge surround

Panels are bonded using a two-part polyurethane adhesive.

Core

Nexus:	Thermal conductivity:	0.048 W/mK
	Density:	160 kg/m^3
	Compressive strength:	130 kPa
Calcium silicate:	Thermal conductivity:	0.189 W/mK.
	Dry density:	750 kg/m^3 (approx)
	Compressive strength:	6600 kPa
	Fire classification:	A1 (non-combustible)

Weight

Panel weight is determined by panel size. The following weights are for 25 mm and 53 mm thick panels, per m^2. For panel weights of specific thicknesses, please contact the technical team.

	1.5 mm faces	2.0 mm faces	3.0 mm faces
25 mm	13.2 kg/m^2	15.7 kg/m^2	N/A
53 mm	19.5 kg/m^2	21.9 kg/m^2	26.9 kg/m^2

U-values

The following U-values are based on 28 mm thick panels. For U-value calculations for other thicknesses, please contact the technical team.

1.5 mm / 1.5 mm faces: 1.43 W/m^{2}K

2.0 mm / 2.0 mm faces: 1.47 W/m^{2}K

3.0 mm / 3.0 mm faces: 1.57 W/m^{2}K

Tolerances

Length: ± 2 mm

Width: ± 2 mm

Thickness: ± 1 mm

Fire Performance

Reaction to Fire

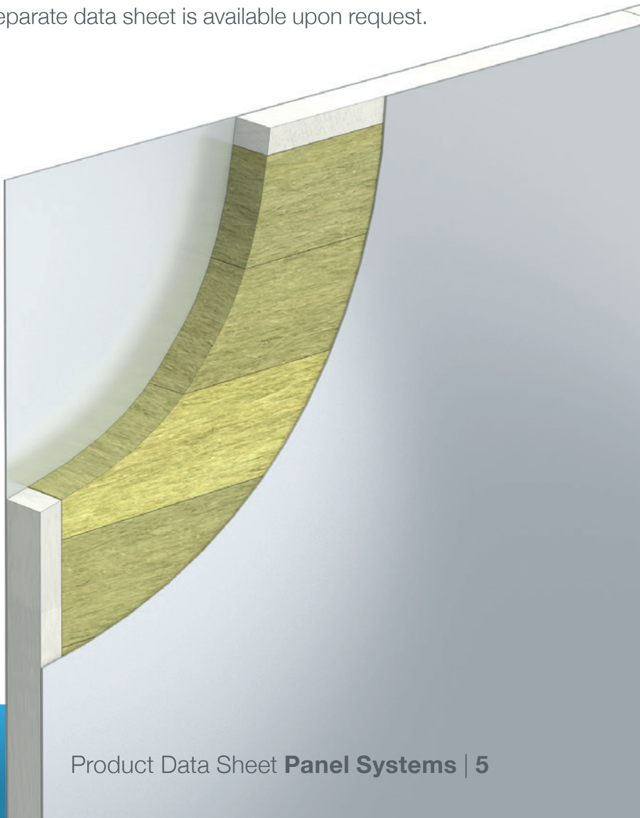
This panel specification has been tested in accordance with the procedures given in **EN 13501-1: 2018** at the independent testing laboratory Efectis.

This product (Panel Systems FR-A Type 2a Composite Panel) in relation to its reaction to fire behavior is classified **A2-s1,d0**. The test covers panels with an overall thickness ranging from 25 mm - 53 mm thick.

The panel specification tested was:

1.5 mm PPC aluminium / Nexus core 160 kg/m^3 / 1.5 mm PPC (or mill finish) aluminium, plus calcium silicate hard edge surround.

The Siderise Nexus core is made from European Fireclass A1 material. A separate data sheet is available upon request.



Panel Systems

Reaction to Fire Classification

A2-s1,d0

EN 13501-1: 2018

FR-A Type 3

Composite Panel

Panel Build-up

Outer face: 1.5 mm, 2.0 mm or 3.0 mm anodised aluminium including Anolok and Anolok Bronze colours

Core: Nexus lamella stone wool

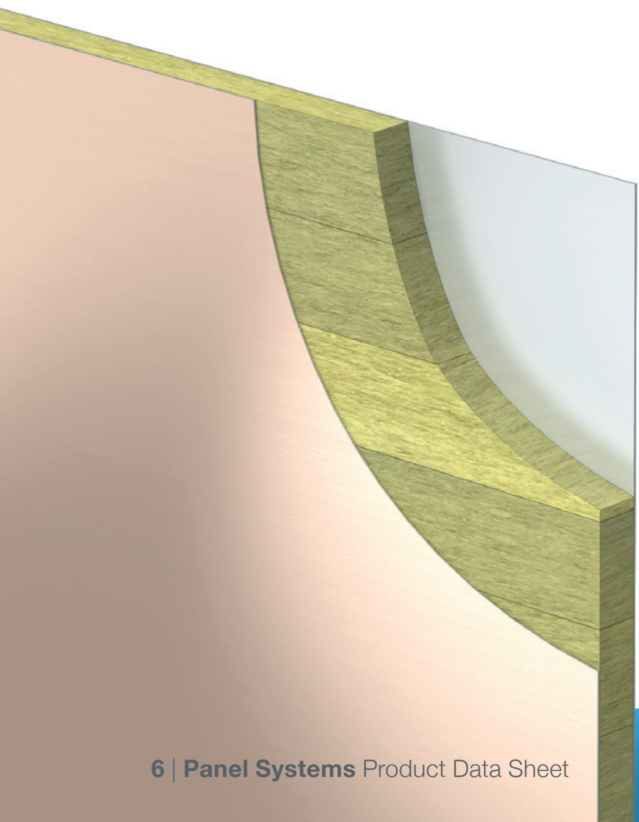
Inner face: 1.5 mm, 2.0 mm or 3.0 mm anodised or mill finish aluminium

Panels are vacuum bonded using a two-part polyurethane adhesive.

Core

Nexus:

Thermal conductivity:	0.048 W/mK
Density:	160 kg/m^3
Compressive strength:	130 kPa



Weight

Panel weight is determined by panel size. The following weights are for 25 mm and 53 mm thick panels, per m^2. For panel weights of specific thicknesses, please contact the technical team.

	1.5 mm faces	2.0 mm faces	3.0 mm faces
25 mm	11.9 kg/m^2	14.4 kg/m^2	N/A
53 mm	16.5 kg/m^2	19.0 kg/m^2	24.1 kg/m^2

U-values

The following U-value is based on a 28 mm thick panel.
For U-value calculations for other thicknesses, please contact the technical team.

1.5 mm / 1.5 mm faces: 1.43 W/m^{2}K

2.0 mm / 2.0 mm faces: 1.47 W/m^{2}K

3.0 mm / 3.0 mm faces: 1.57 W/m^{2}K

Tolerances

Length: ± 2 mm

Width: ± 2 mm

Thickness: ± 1 mm

Fire Performance

Reaction to Fire

This panel specification has been tested in accordance with the procedures given in **EN 13501-1: 2018** at the independent testing laboratory Efectis.

This product (Panel Systems FR-A Type 3 Composite Panel) in relation to its reaction to fire behavior is classified **A2-s1,d0**. The test covers panels with an overall thickness ranging from 25 mm - 53 mm thick.

The panel specification tested was:

2.0 mm anodised aluminium / Nexus core 160 kg/m^3 / 2.0 mm anodised (or mill finish) aluminium.

The Siderise Nexus core is made from European Fireclass A1 material. A separate data sheet is available upon request.

Reaction to
Fire Classification

A2-s1,d0

EN 13501-1: 2018

FR-A Type 4
Composite Panel

Panel Build-up

Outer face: 2.0 mm polyester powder coated (PPC) aluminium

Core: Nexus lamella stone wool

Inner face: 2.0 mm polyester powder coated (PPC) or mill finish aluminium

Panels formed into a 'top hat' style arrangement with Nexus lamella hard edging within the glazing edge. Panels are vacuum bonded using a two-part polyurethane adhesive.

Core

Nexus: Thermal conductivity: 0.041 W/mK
Density: 110 kg/m^3
Compressive strength: 55 kPa

Nexus Hard Edge: Density: 200 kg/m^3

Weight

Panel weight is determined by panel size. The following weights are for 41 mm and 150 mm thick panels, per m^2. For panel weights of specific thicknesses, please contact the technical team.

	1.5 mm faces	2.0 mm faces	3.0 mm faces
41 mm	12.2 kg/m^2	14.8 kg/m^2	20.0 kg/m^2
150 mm	23.5 kg/m^2	26.1 kg/m^2	31.3 kg/m^2

U-values

The following U-values are based on 41 mm and 138 mm thick panels. For U-value calculations for other thicknesses, please contact the technical team.

41 mm:	**1.5 mm / 1.5 mm faces:**	0.91 W/m^{2}K
	2.0 mm / 2.0 mm faces:	0.93 W/m^{2}K
	3.0 mm / 3.0 mm faces:	0.97 W/m^{2}K
138 mm:	**1.5 mm / 1.5 mm faces:**	0.29 W/m^{2}K
	2.0 mm / 2.0 mm faces:	0.29 W/m^{2}K
	3.0 mm / 3.0 mm faces:	0.29 W/m^{2}K

Tolerances

Length: ± 2 mm

Width: ± 2 mm

Thickness: ± 1 mm

Fire Performance

Reaction to Fire

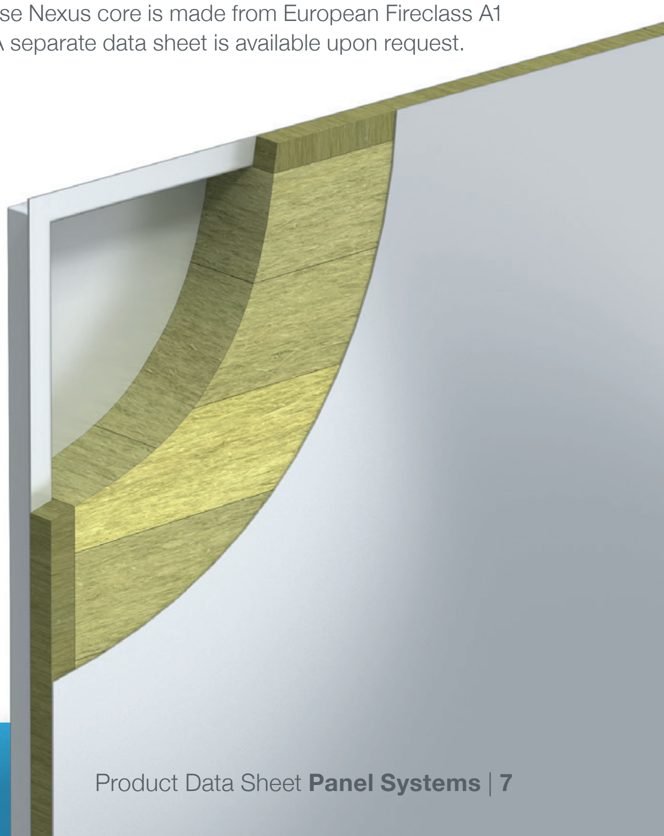
This panel specification has been tested in accordance with the procedures given in **EN 13501-1: 2018** at the independent testing laboratory Efectis.

This product (Panel Systems FR-A Type 4 Composite Panel) in relation to its reaction to fire behavior is classified **A2-s1,d0**. The panels are formed into a 'top hat' arrangement and incorporate the Nexus lamella hard edging. The test covers panels with an overall thickness ranging from 41 mm - 140 mm thick.

The panel specification tested was:

2.0 mm PPC aluminium / Nexus core 110 kg/m^3 / 2.0 mm PPC (or mill finish) aluminium.

The Siderise Nexus core is made from European Fireclass A1 material. A separate data sheet is available upon request.



Panel Systems

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Our reputation for excellence and proven track record make us **a manufacturer you can always rely on.**

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