

SEALING & BONDING  
SIKA FIRE PROTECTION  
SOLUTIONS FOR JOINTS AND  
PENETRATIONS

BUILDING TRUST





## BENEFITS OF OUR SOLUTIONS

Sika provides comprehensive solutions where fire resistant construction is required such as tunnels, commercial and residential buildings and steel structures. Fire resistant mortars and specially designed sealants enable the building of safer buildings and infrastructure.

Our fire rated sealants and foams comply with the latest relevant standards and can be used for inside and outside applications on various substrates.

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# SIKA SOLUTIONS FULFILL THE HIGHEST STANDARDS

## SIKA SOLUTIONS HELP TO SAVE LIVES

When there is a fire, smoke and heat will spread through penetrations and joints in the building endangering residents and blocking escape paths.

Fire protection solutions from Sika seal penetrations and joints and help retain fire and smoke where they occur for a certain time, allowing inhabitants to exit the building safely. Sika fire rated products and systems comply with the most relevant standards (EN, ETAG, UL, ASTM) in order to ensure the highest fire resistance.

It is important to distinguish two different types of fire testing for building materials:

- **Reaction to fire (i.e combustibility):** How does the product react to an open flame? The reaction to fire is described by the combustibility, smoke development and dripping behaviour.
- **Fire Resistance:** How long can a product that is built into a fire protection system withstand the impact of fire? This is described by the resistance time during standardized fire tests.

For the fire resistance of a building, only the combined resistance of the system's individual components counts. For example a fire resistant door together with the fire resistant sealant and wall can hinder the spreading of fire and smoke. Therefore fire resistant tests are much more important than the reaction of a product to a flame.

## REACTION OF BUILDING MATERIALS TO FIRE (COMBUSTIBILITY)

The reaction of building materials to fire is determined by exposing the single product in its not installed state to fire and heat. Clause 8.1.1 Combustibility of MBIE's Building Product Specifications (effective 28 July 2025) specifies the methods that can be used to determine whether a material is non-combustible, limited combustible or combustible. One standard is EN 13501-1 which classifies how easily materials can catch fire, how smoke develops and if dripping occurs. (It does not, however, provide any information about how long the product resists fire in a system.)

Building material class according to EN 13501-1*	Building inspection designation	Test standards
A1	non-combustible and not containing any combustible components	EN ISO 1182, EN ISO 1716, EN ISO 9239
A2	non-combustible but containing certain amounts of combustible components	EN ISO 1182, EN ISO 1716, EN ISO 9239
A2, B, C	Flame retardant	EN ISO 9239-1
D	Normally flammable	EN ISO 9239-1
E	Normally flammable	EN ISO 11925-1
F	Easily flammable	No test required

\* For additional sub-classes for smoke development and occurrence of dripping see EN 13501-1

## RESISTANCE TO FIRE OF INSTALLED BUILDING MATERIALS

There are many fire resistance testing standards for building materials or building elements. The most relevant for joint sealants and penetration seals are:

- AS 1530: Methods for tests on building materials, components, structures, Part 4: Fire-resistance tests of elements of construction. Part 10: Service penetrations and control joints.
- BS 476-20: Fire resistance test for linear joints
- EN 1366: Fire resistance tests for service installations - Part 3: Penetration seals, Part 4: Linear joint seals
- ETAG 026: Fire stopping and fire sealing products - Part 3: Linear joint and gap seals
- UL 2079: Tests for fire resistance of building joint systems
- ASTM E119: Fire tests of building construction and materials

These tests not only include the sealant but an entire section of the building where the sealant is installed with a backing rod into a joint formed by a relevant building material - concrete in most cases.

## FIRE RESISTANCE LEVEL

Clause 8.2.1 Fire Resistance Ratings of MBIE'S Building Product Specifications (effective 28 July 2025) specifies testing in accordance with AS 1530.4 and NZS/BS 476.21/22. Testing to other standards would constitute an alternative solution under the Building Code.

The test results provided in this brochure are in accordance with AS1530.4.

The performance of building materials or elements which are fire tested according to AS 1530 Part 4 are expressed in terms of their fire resistance level (FRL). The FRL describes the minimum fire resistance of the building material or element.

The FRL is expressed in terms of three numbers, giving the time in minutes for which each of the three criteria of *structural adequacy, integrity and insulation* are satisfied.

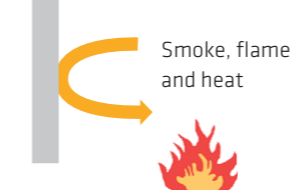
Examples of FRLs are:

- /120/120 indicating structural adequacy 0 minutes, integrity 120 minutes, insulation 120 minutes.
- 30/-/- indicating structural adequacy 30 minutes, but no resistance level for integrity or insulation.

The integrity and insulation functions are described below.

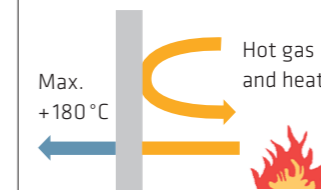
### Integrity Function

Integrity is the capability of a building element, when exposed to fire on one side, to prevent the passage of flames, smoke and hot gases to the unexposed side. There is no temperature limit on the non-fire side.



### Insulating Function

Thermal insulation is the capability of a building element to maintain its required thermal insulation separating function in case of fire (with a max. 180 ° temperature rise on the non-fire side).



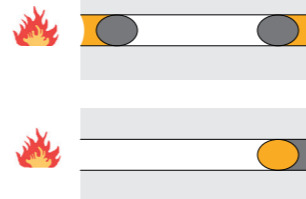
# JOINT INFORMATION

Information needed to choose the best fire rated joint sealing solution



## INFORMATION NEEDED:

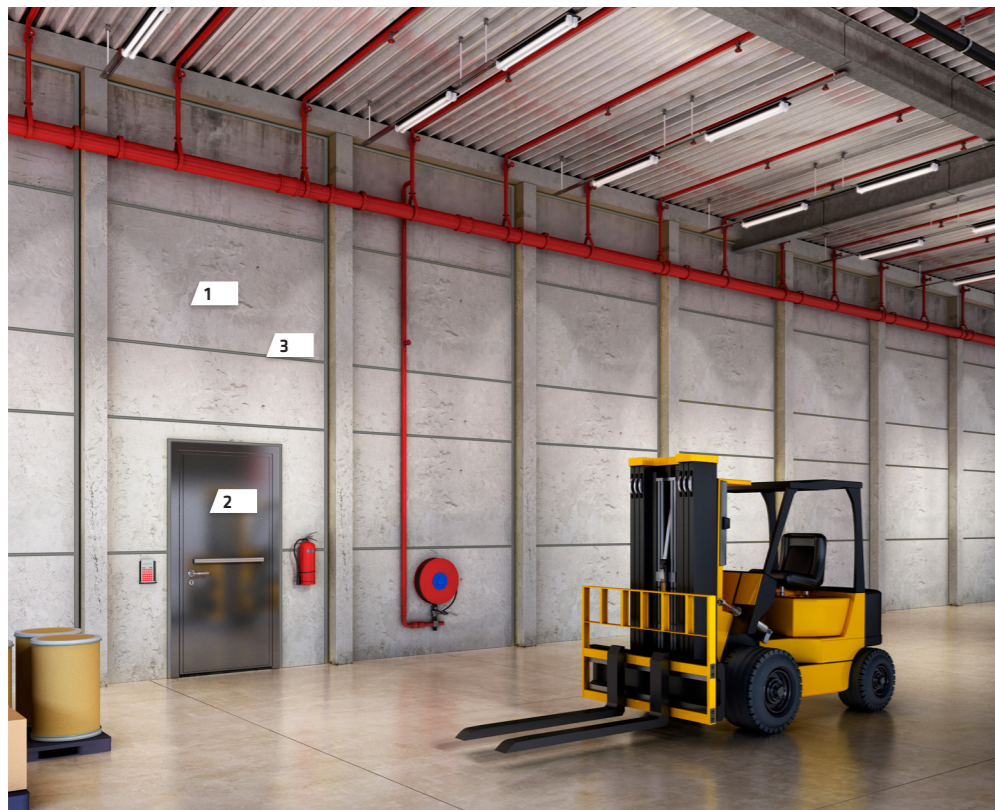
1. Substrates e.g. Concrete/Steel
2. Wall joint or floor joint
3. Wall or floor thickness
4. Joint width
5. Fire rated sealant applied single or double sided



Many parameters have an influence on the fire resistance of a sealant in the applied and cured state in a joint. Therefore it is crucial to know the details of the joint.

Without the joint details the fire protection information *Integrity* and *Insulation* cannot be derived from the classification charts and the correct product cannot be chosen.

## EXAMPLE OF FIRE RATED SEALANT APPLICATION



- 1 Precast concrete elements
- 2 Fire protection door
- 3 Sika fire protection sealant: Sikaflex®-400 Fire

In the image above a possible application of fire rated sealants and protective coatings is illustrated. A big distribution centre and warehouse is divided into several sections. To avoid the spread of fire and smoke between the sections several fire protection measures are taken. The

walls are made of precast concrete elements and the joints between the precast elements are sealed with Sikaflex®-400 Fire. This solution combines efficient installation, best sealing properties and highest fire protection. Choose Sika fire protection solutions for best performance.

# SIKA FIRE RATED PRODUCTS

## Sikaflex®-400 Fire

1-part, fire rated moisture curing elastic joint sealant



### Use

Sikaflex®-400 Fire is designed for fire rated movement and connection joints on porous and non-porous substrates. It is suitable for interior and exterior applications.

### Key Advantages & Benefits

- Up to 4 hours fire resistance according to AS 1530.4
- Up to 4 hours fire resistance according to EN 1366-4
- Movement capability of ± 35% (ASTMC719)
- Easy to smooth and very good workability
- Good adhesion to many different substrates
- Long open time

### Approvals/Standards

- AS1530.4 FRL
- EN 1366-4
- ASTM C920 class 25
- ISO 11600 class 25 LM
- EN 15651-1 F EXT-INT CC

## Sika Boom®-420 Fire

Fire resistant polyurethane expanding foam for gun and nozzle application



### Use

Restores the fire resistance performance of a floor or wall which incorporates linear seals. Interior use only.

### Key Advantages & Benefits

- Fire resistance up to 240 minutes depending on the joint configuration according to EN 1366-4
- Combi-valve for gun or nozzle application
- 1-part ready to use
- Safety valve for extended shelf life
- Cured foam can be cut, trimmed and sanded

### Approvals/Standards

- CE Marking and Declaration of Performance to ETA 24/0105, based on EAD 350140-00-1106:2017 - Fire stopping and fire sealing products, linear joint and gap seals
- EN 1366-4

## Emseal® Emshield

Fire rated pre-compressed sealant solutions



### Use

**Emseal® Emshield** is a pre-compressed, fire-rated expansion joint system that combines watertight silicone sealing surfaces with fire-retardant foam to provide a durable, flexible barrier against fire, water, air, and sound in both new and retrofit construction. Available in different options.

### Key Advantages & Benefits

- Provides certified 1, 2, or 3-hour fire resistance in line with UL 2079 standards
- Easily installed into both new construction and existing joints
- Dual silicone facing resists water ingress, even in demanding external environments

### Approvals/Standards

- UL 2079

# FIRE RESISTANCE OF JOINTS WITH Sikaflex®-400 Fire



Resistance to fire of **vertical** linear seals in **rigid walls** (wall thickness  $\geq 120$  mm) sealed with Sikaflex®-400 Fire. Tested according to AS 1530.4.

Substrates	Configuration	Joint width (mm)	Joint depth (mm) min.	Fire resistance rating to AS 1530.4
Concrete <sup>1</sup> /Concrete <sup>1</sup>	Double seal	$\leq 20$	0.5 x width	-/120/120
	Single seal, unexposed side	$\leq 50$	0.5 x width	-/120/90
	Single seal, exposed side	$\leq 50$	0.5 x width	-/60/60

<sup>1</sup> Concrete or masonry wall systems with an established FRL of 120/120/120 or -/120/120.

Resistance to fire of **vertical** linear seals in **rigid walls** (wall thickness  $\geq 150$  mm) sealed with Sikaflex®-400 Fire. Tested according to AS 1530.4.

Substrates	Configuration	Joint width (mm)	Joint depth (mm) min.	Fire resistance rating to AS 1530.4
Concrete <sup>2</sup> /Concrete <sup>2</sup>	Double seal	$\leq 20$	0.5 x width	-/240/180
	Single seal, exposed side	$\leq 30$	0.5 x width	-/240/-
Concrete <sup>3</sup> /Concrete <sup>3</sup>	Double seal	$\leq 12$	0.5 x width	-/240/240
		12-40	0.5 x width	-/180/120
	Single seal, unexposed side	$\leq 12$	0.5 x width	-/240/120
		12-40	0.5 x width	-/120/120

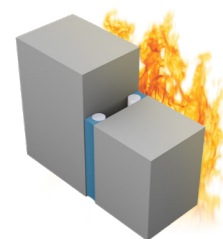
<sup>2</sup> Concrete

<sup>3</sup> Concrete or aerated concrete with a density  $\geq 760\text{kg/m}^3$

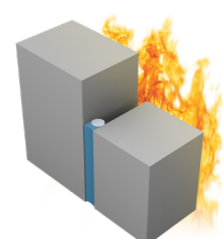
Resistance to fire of linear seals in **rigid floors** (floor thickness  $\geq 150$  mm) sealed with Sikaflex®-400 Fire. Tested according to AS 1530.4.

Substrates	Configuration	Joint width (mm)	Joint depth (mm) min.	Fire resistance rating to AS 1530.4
Concrete <sup>3</sup> /Concrete <sup>3</sup>	Double seal	$\leq 40$	0.8 x width	-/240/240
	Single seal, unexposed side	$\leq 12$	0.8 x width	-/180/120
		12-40	0.8 x width	-/120/120

<sup>3</sup> Concrete or aerated concrete with a density  $\geq 760\text{kg/m}^3$



Double seal



Single seal, unexposed side



Single seal, exposed side

Resistance to fire of **head and bottom** linear seals in **plasterboard walls** sealed with Sikaflex®-400 Fire. Tested according to AS 1530.4.

Substrates	Configuration	Joint width (mm)	Joint depth (mm) min.	Fire resistance rating to AS 1530.4
90mm thick wall <sup>4</sup>	Double seal	$\leq 25$	13	-/60/60
96mm thick wall <sup>5</sup>	Double seal	$\leq 25$	16	-/90/90
116mm thick wall <sup>6</sup>	Double seal	$\leq 25$	26	-/120/120

<sup>4</sup> Minimum 90 mm thick plasterboard wall system, with 1 x 13 mm fire-rated plasterboard on both sides of the wall.

<sup>5</sup> Minimum 96 mm thick plasterboard wall system, with 1 x 16 mm fire-rated plasterboard on both sides of the wall.

<sup>6</sup> Minimum 116 mm thick plasterboard wall system, with 2 x 13 mm fire-rated plasterboard on both sides of the wall.

Resistance to fire of **vertical** linear seals in **plasterboard walls** sealed with Sikaflex®-400 Fire. Tested according to AS 1530.4.

Substrates	Configuration	Joint width (mm)	Joint depth (mm) min.	Fire resistance rating to AS 1530.4
90mm thick wall <sup>4</sup>	Double seal	$\leq 20$	10	-/60/60
		20-50	0.5 x width	-/60/60
96mm thick wall <sup>5</sup>	Double seal	$\leq 20$	10	-/90/90
		20-50	0.5 x width	-/90/90
116mm thick wall <sup>6</sup>	Double seal	20-50	0.5 x width	-/120/120

<sup>4</sup> Minimum 90 mm thick plasterboard wall system, with 1 x 13 mm fire-rated plasterboard on both sides of the wall.

<sup>5</sup> Minimum 96 mm thick plasterboard wall system, with 1 x 16 mm fire-rated plasterboard on both sides of the wall.

<sup>6</sup> Minimum 116 mm thick plasterboard wall system, with 2 x 13 mm fire-rated plasterboard on both sides of the wall.

# FIRE RESISTANCE OF JOINTS WITH Sika® Boom-420 Fire



Resistance to fire of **vertical** linear joints in **rigid walls\*** (wall thickness  $\geq 150$  mm) sealed with Sika Boom®-420 Fire. Movement  $\pm 7.5\%$ . Tested according to EN 1366-4 and assessed in accordance with AS 1530.4 and AS 4072.1

Substrates	Configuration	Application	Joint width (mm)	Joint depth (mm)	Fire resistance rating to AS 1530.4
Concrete* / Concrete	Single seal, exposed or unexposed side	Gun or adapter	$\leq 20$	$\geq 150$	-/60/60
			$\leq 10$	$\geq 150$	-/180/180
Concrete* / Softwood	Single seal, exposed or unexposed side	Gun or adapter	$\leq 20$	$\geq 150$	-/120/120
Concrete* / Softwood with 50 x 18 mm wood architrave on both sides	Single seal, exposed or unexposed side	Gun or adapter	$\leq 20$	$\geq 150$	-/90/90

\* Brickwork, concrete or aerated concrete with a density  $\geq 760$  kg/m<sup>3</sup>



Single seal, exposed or unexposed side

Resistance to fire of **horizontal** linear joints in **rigid walls\*** (wall thickness  $\geq 150$  mm) sealed with Sika Boom®-420 Fire. Movement  $\pm 7.5\%$ . Tested according to EN 1366-4 and assessed in accordance with AS 1530.4 and AS 4072.1

Substrates	Configuration	Application	Joint width (mm)	Joint depth (mm)	Fire resistance rating to AS 1530.4
Concrete* / Concrete	Single seal, exposed or unexposed side	Gun or adapter	$\leq 20$	$\geq 150$	-/60/60
Concrete* / Softwood	Single seal, exposed or unexposed side	Gun or adapter	$\leq 20$	$\geq 150$	-/120/120
Concrete* / Softwood with 50 x 18 mm wood architrave on both sides	Single seal, exposed or unexposed side	Gun or adapter	$\leq 20$	$\geq 150$	-/120/120

\* Brickwork, concrete or aerated concrete with a density  $\geq 760$  kg/m<sup>3</sup>

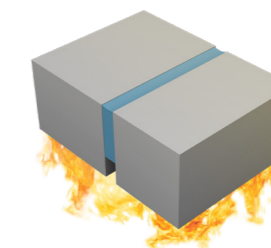


Single seal, exposed or unexposed side

Resistance to fire of linear joints in **floors\*** (wall thickness  $\geq 200$  mm) sealed with Sika Boom®-420 Fire. Movement  $\pm 7.5\%$ . Tested according to EN 1366-4 and assessed in accordance with AS 1530.4 and AS 4072.1

Substrates	Configuration	Application	Joint width (mm)	Joint depth (mm)	Fire resistance rating to AS 1530.4
Concrete* / Concrete	Single seal, exposed or unexposed side	Gun or adapter	$\leq 20$	$\geq 200$	-/90/90
			$\leq 10$	$\geq 200$	-/120/120
		Adapter only	$\leq 20$	$\geq 200$	-/120/120
Concrete* / Softwood	Single seal, exposed or unexposed side	Gun or adapter	$\leq 20$	$\geq 200$	-/120/120
Concrete* / Softwood with 50 x 18 mm wood architrave on both sides	Single seal, exposed or unexposed side	Gun or adapter	$\leq 20$	$\geq 200$	-/120/120

\* Brickwork, concrete or aerated concrete with a density  $\geq 760$  kg/m<sup>3</sup>



Single seal, exposed or unexposed side

# FIRE RESISTANCE OF JOINTS WITH Emseal Emshield

Resistance to fire of **vertical** linear seals in **rigid walls** sealed with Emseal Emshield. Assessed according to AS 1530.4 and AS 4072.1.

Substrates	Configuration	Joint width (mm)	Joint depth (mm) min.	Fire resistance rating to AS 1530.4
Concrete <sup>1</sup> /Concrete <sup>1</sup>	Single seal <sup>2</sup>	25-50	100	-/120/120
			150	-/180/180
			175	-/240/240
		51-100	100	-/120/120
			150	-/180/180
			175	-/240/240
		101-150	100	-/90/90
			150	-/90/180
			175	-/90/240

<sup>1</sup> Concrete walls in accordance with AS 3600 or masonry walls in accordance with AS 3700, with an established minimum FRL matching or exceeding that of the vertical linear seal.

<sup>2</sup> The single seal may be aligned with the exposed side or the unexposed side, and may also be centred within the wall joint.

Resistance to fire of linear seals in **rigid floors** sealed with Emseal Emshield. Assessed according to AS 1530.4 and AS 4072.1.

Substrates	Configuration	Joint width (mm)	Joint depth (mm) min.	Fire resistance rating to AS 1530.4
Concrete <sup>1</sup> /Concrete <sup>1</sup>	Single seal <sup>2</sup>	25-50	100	-/120/120
			150	-/180/180
			175	-/240/240
		51-100	100	-/120/120
			150	-/180/180
			175	-/240/240
		101-150	100	-/90/90
			150	-/90/180
			175	-/90/240

<sup>1</sup> Concrete floors in accordance with AS 3600, with an established minimum FRL matching or exceeding that of the vertical linear seal.

<sup>2</sup> The single seal may be aligned with the upper face or lower face, and may also be centred within the floor joint.

# FIRE PROTECTION MORTAR FOR TUNNELS

Sikacrete<sup>®</sup>-213 F: Sprayed fire protection mortar for concrete

In the case of fire in a tunnel, the concrete can be exposed to extreme temperatures within a very short time. This heat causes high vapour pressure within the concrete that fractures and destroys it from the inside. Sikacrete<sup>®</sup>-213 F is a spray-applied mortar providing an insulating layer, which protects the load-bearing structural concrete from high temperatures.



This pre-batched mortar is classed as a passive fire protection system and is applied by the wet-spray process.

Sikacrete<sup>®</sup>-213 F is a fire protection mortar with exceptional heat insulation properties, applied in thin layers to provide reliable fire protection for concrete structures. The material is straightforward and easy to apply, with effective insulation being achieved with relatively low quantities and thickness of the material.

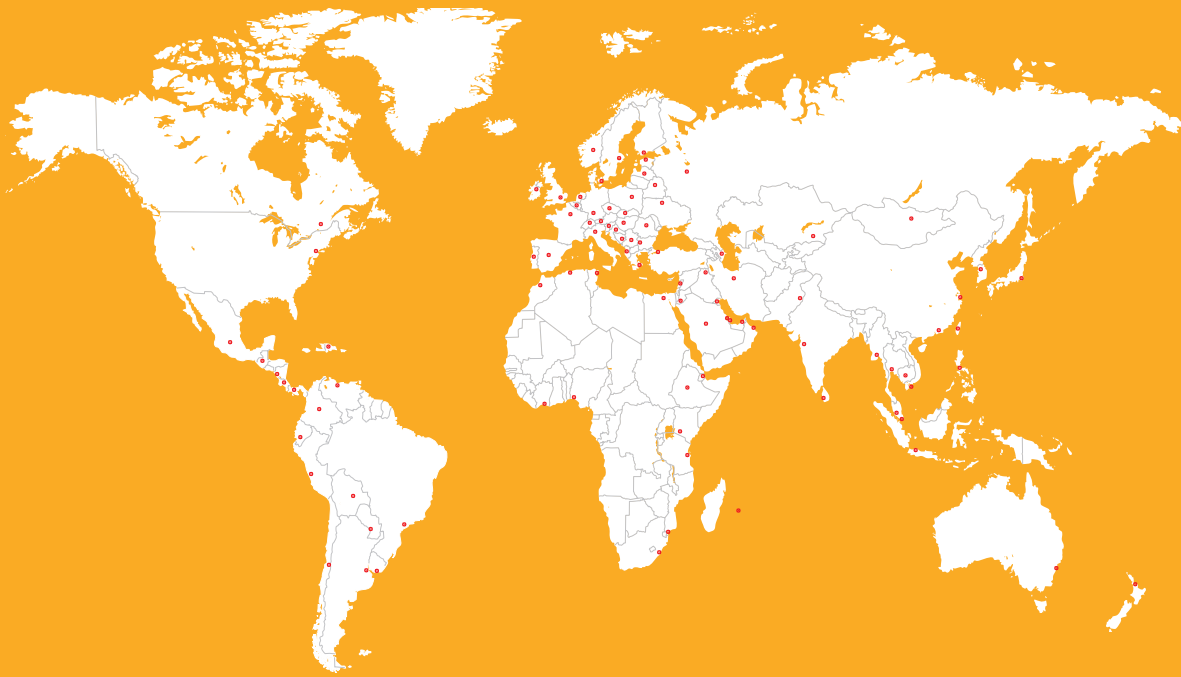
Sikacrete<sup>®</sup>-213 F is a fire protection mortar with high compressive strength and durability. This mortar is also designed to be frost resistant and is used in tunnels with high exposure stresses – such as lower temperatures, damp environments and abrasion from frequent cleaning.

## Advantages

- Thin-layer system
- High insulation
- Ready-to-use mortar
- Easy and fast application
- Low material consumption
- Tested according to RWS, ISO 834 and HCinc
- High durability
- Coatable with Sikagard-Wallcoat



# GLOBAL BUT LOCAL PARTNERSHIP



## FOR MORE FIRE-RATED SEALING & BONDING INFORMATION:



### WE ARE SIKA

Sika is a specialty chemicals company with a leading position in the development and production of systems and products for bonding, sealing, damping, reinforcing and protecting in the building sector and the motor vehicle industry. Sika's product lines feature concrete admixtures, mortars, sealants and adhesives, structural strengthening systems, flooring as well as roofing and waterproofing systems.

Our most current General Sales Conditions shall apply.  
Please consult the Data Sheet prior to any use and processing.



**SIKA (NZ) LTD**  
85-91 Patiki Road  
Avondale, Auckland 1026  
New Zealand  
**Phone 0800 745 269**  
**sika.co.nz**

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