SEALING & BONDING
SIKA FIRE PROTECTION SOLUTIONS

APPROVED AND RELIABLE: FOR JOINTS AND PENETRATIONS

BUILDING TRUST

BENEFIT OF OUR SOLUTION

Sika provides comprehensive solutions for fire resistant constructions such as tunnels, commercial and residential buildings and steel structures especially. Fire resistant mortars, intumescent coatings and specially designed sealants and backing materials enable to build secure buildings.
Sika fire rated sealants, foams and special backing material comply with the latest relevant standards. Sika solutions can be used for inside and outside applications on various substrates and give you freedom to connect different building materials fire proof and enable you to chose your most prefered architectural design without limitation with regard to safety.

CONTENT

SIKA SOLUTIONS FULFILL THE HIGHEST STANDARDS

SIKA SOLUTIONS HELP TO SAVE LIVES

Smoke and heat resulting from fire penetrates through openings and joints into adjacent rooms and endanger residents, especially during sleep.
Fire protection solutions from Sika seal penetrations and joints and prevent the spread of dangerous gases, smoke and fire. Sealed walls, floors and ceilings help to contain the fire in a smaller area which gives more time for a safe evacuation and reduces damages on the building and consequently costs. Sika fire rated products and systems comply with the most relevant standards (EN, ETAG, UL, ASTM) in order to ensure highest fire resistance.

It is important to distinguish two different types of fire testing for building materials:
- Reaction to Fire: Flammability, smoke development, dripping
- Fire Resistance: Resistance time during a standard fire test

For the fire-resistant capability of an entire building, the fire resistance of the product or system is much more important than the reaction to fire.

REACTION TO FIRE OF BUILDING MATERIALS

Reaction to fire of building materials is classified, for example, according EN 13501-1 and describes how easy materials can be set on fire and how smoke development and occurrence of dripping look like. It does not state any time or class how long the product or system resists to fire.

Building material class according EN 13501-1*	Building inspection designation	Test standards
A1	non-combustible without shares of combustible components	EN ISO 1182, EN ISO 1716, EN ISO 9239
A2	non-combustible with shares 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

FIRE RESISTANCE TESTING

There are many fire related testing standards for building materials and/or building elements. The following ones are most relevant for joint seals and penetration seals:

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

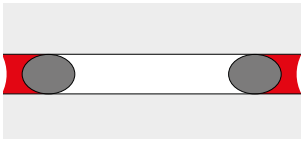
FIRE RESISTANCE CLASSIFICATION

Building materials/Elements which are tested acc. EN 1366-3 and/or EN 1366-4 can be classified according to EN 13501-2. This means the results determined during testing are transferred into classes considering various criteria out of which the following two are relevant for linear joints and penetrations.

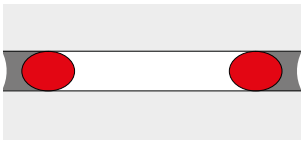
- E – integrity separation function
- I – thermal insulating separation function

In EN 13501-2 the following classes (minutes of resistance regarding either integrity or thermal insulation) are defined for sealants: 15, 20, 30, 45, 60, 90, 120, 180, 240.

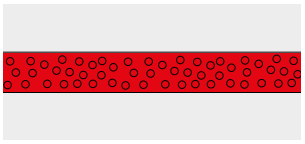
The tested Sika system consists of:



Fire rated sealant (red) combined with a standard PE backing rod

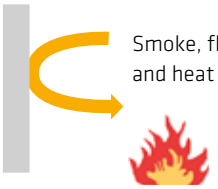


Standard sealant combined with a fire resistant backer rod (red)

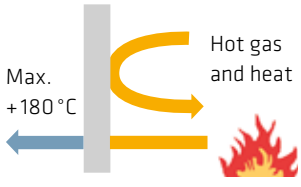


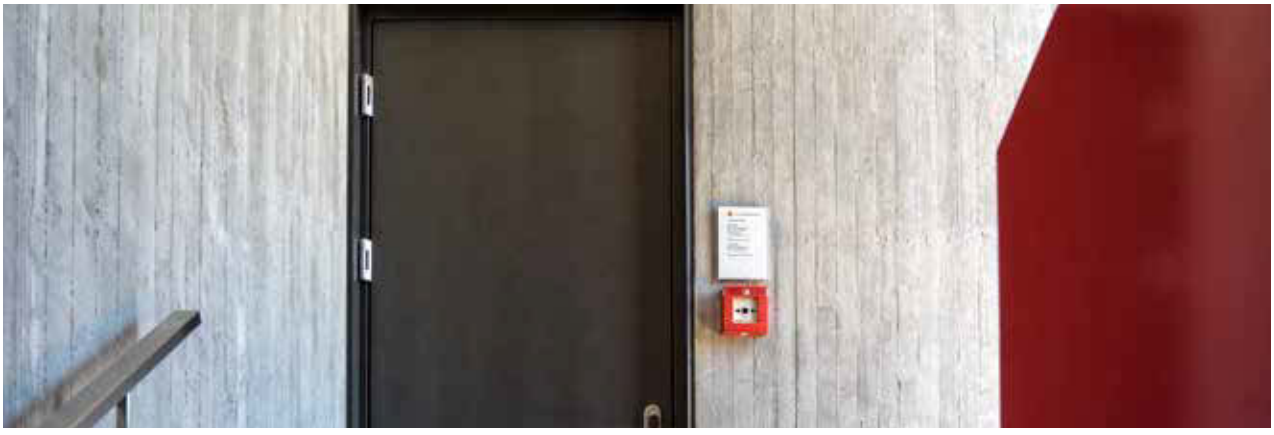
Fire retardant foam (red)

E – integrity separating function
Integrity E is the capability of a building element, when exposed to fire on one side, to prevent the passage of flames, smoke and hot gases and to prevent the occurrence of flames on the unexposed side (without temperature limit on the fire averted side).



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





SIKA FIRE RATED PRODUCTS

Sikasil®-670 Fire

1-part, elastic fire rated silicone joint sealant

Use
Fire resistant sealing of exterior and interior movement and connection joints in walls and floors.

Key Advantages & Benefits
- Can compensate movements up to ±25% and ensure tight joints even in case of expanding building materials during fire (ISO 11600 25 LM)
- Good primer-less adhesion to many substrates and excellent UV-resistance which guarantees outstanding durability.

Certificates available
- EN 1366-4
- ETAG 026
- EN 13501-1
- EN 13501-2
- BS 476-20

Sikacryl®-620 Fire

1-part, intumescent fire rated acrylic sealant

Use
Fire resistant sealing of connection joints and filling of openings around cables, pipes and other penetrations.

Key Advantages & Benefits
- Thanks to the intumescent property, the tightness of penetrations is given, because the sealant expands and fills the resulting cavity.
- Very easy to apply and overpaintable

Certificates available
- EN 1366-3
- EN 1366-4
- ETAG 026
- EN 13501-2
- BS 476-20

Sika Boom®-F & -FR

1-part, high yield, fire rated polyurethane foam

Use
Fire resistant sealing between brickwork and cladding, around ducting and through cavities carrying pipes and cables where fire protection is required.

Key Advantages & Benefits
- High yield
- Fast curing
- Excellent temperature insulation and effective sound dampening

Certificates available
- BS 476-20

* According EN1366-4, depending on system ** According BS476-20, depending on system

Sika® Backer Rod Fire

Universal fire resistant backer rod for movement and connection joints

System
To protect the backer rod against dust, moisture and mechanical influences apply Sikaflex® or SikaHyflex® sealants on top.

Use
Fire resistant sealing of movement and connection joints in walls and floors.

Key Advantages & Benefits
- Adapts superbly to all irregularities of the joints. Dimensional variations of the joint width are compensated by stretching and compressing.
- Can be combined with different Sikaflex® and SikaHyflex® sealants
- Fast application thanks to roll length of 20 meters.

Sika® RV-585

Fire resistant backing material for movement and connection joints

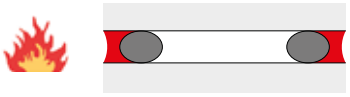
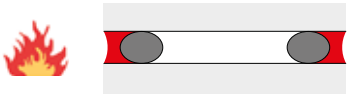
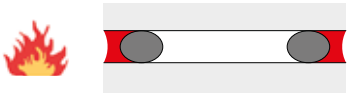
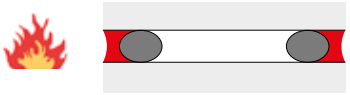
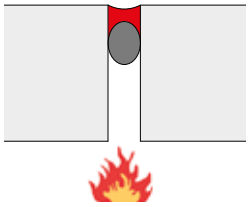
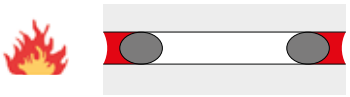
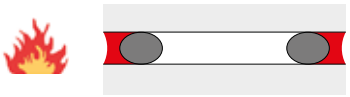
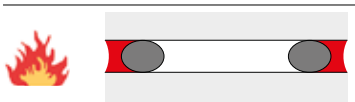
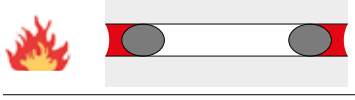
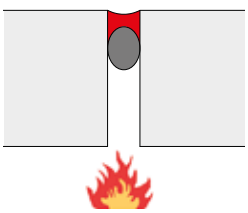
System
Sika® RV-585 has to be protected against dust, moisture and mechanical influences with SikaHyflex®-250 Facade sealant on top.

Use
Fire resistant sealing of movement and connection joints in walls and floors.

Key Advantages & Benefits
- Adapts to all irregularities of the joints. Dimensional variations of the joint width are compensated by stretching and compressing.

FIRE RESISTANCE OF JOINTS WITH Sikasil®-670 Fire AND Sikacryl®-620 Fire

FIRE RESISTANCE OF Sikasil®-670 Fire AND Sikacryl®-620 Fire TESTED ACCORDING EN 1366-4 AND CLASSIFIED ACCORDING EN 13501-2

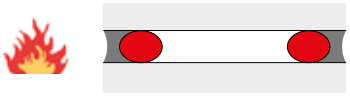
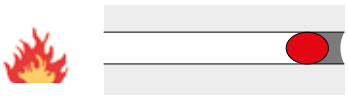
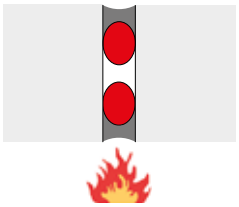
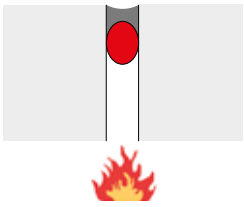
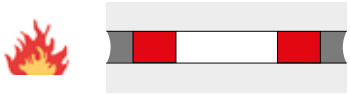
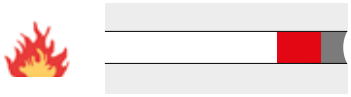
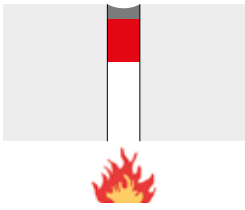
Scetch		Products	Resistance Class Acc. EN 13501-2
	double-seal concrete/concrete	Sikasil®-670 Fire PE Backer rod Sikasil®-670 Fire	E 240/EI 180
	double-seal concrete/softwood	Sikasil®-670 Fire PE Backer rod Sikasil®-670 Fire	E 180 /EI 120 EI 120
	double-seal concrete/hardwood	Sikasil®-670 Fire PE Backer rod Sikasil®-670 Fire	EI 120 EI 240
	double-seal concrete/steel	Sikasil®-670 Fire PE Backer rod Sikasil®-670 Fire	E 240 /EI 60 E 240 /EI 90 E 240 /EI 120
	single-seal concrete/concrete	Sikasil®-670 Fire PE Backer rod	E 240 /EI 120 E 240 /EI 60
	single-seal concrete/steel	Sikasil®-670 Fire PE Backer rod	E 240 /EI 30 E 180 /EI 30
	double-seal concrete/concrete	Sikacryl®-620 Fire PE Backer rod Sikacryl®-620 Fire	EI 240
	double-seal concrete/softwood	Sikacryl®-620 Fire PE Backer rod Sikacryl®-620 Fire	E 120/EI 60 EI 120 EI 180
	double-seal concrete/hardwood	Sikacryl®-620 Fire PE Backer rod Sikacryl®-620 Fire	EI 120 EI 180
	double-seal concrete/steel	Sikacryl®-620 Fire PE Backer rod Sikacryl®-620 Fire	E 240 /EI 90 E 240 /EI 120
	single-seal concrete/concrete	Sikacryl®-620 Fire PE Backer rod	E 240 /EI 180 E 240 /EI 120 E 240 /EI 180
	single-seal concrete/steel	Sikacryl®-620 Fire PE Backer rod	E 240 /EI 60 E 240 /EI 30

Joint Width	Width/Depth Ratio	Element Type	Element Thickness
12 – 50 mm	2:1	Wall	150 mm
12 mm	2:1	Wall	150 mm
13 – 50 mm	2:1	Wall	150 mm
12 – 29 mm	2:1	Wall	150 mm
30 – 50 mm	2:1	Wall	150 mm
12 – 29 mm	2:1	Wall	150 mm
30 – 49 mm	2:1	Wall	150 mm
50 mm	2:1	Wall	150 mm
12 – 30 mm	2:1	Floor	150 mm
31 – 50 mm	2:1	Floor	150 mm
12 – 30 mm	2:1	Floor	150 mm
31 – 50 mm	2:1	Floor	150 mm

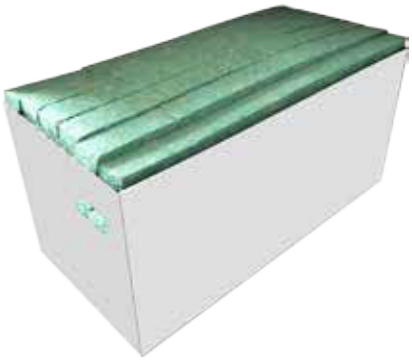
12 – 50 mm	2:1	Wall	150 mm
12 mm	2:1	Wall	150 mm
13 – 49 mm	2:1	Wall	150 mm
50 mm	2:1	Wall	150 mm
12 – 49 mm	2:1	Wall	150 mm
50 mm	2:1	Wall	150 mm
12 – 49 mm	2:1	Wall	150 mm
50 mm	2:1	Wall	150 mm
12 mm	2:1	Floor	150 mm
13 – 49 mm	2:1	Floor	150 mm
50 mm	2:1	Floor	150 mm
12 mm	2:1	Floor	150 mm
13 – 50 mm	2:1	Floor	150 mm

FIRE RESISTANCE OF JOINTS WITH Sika® Backer Rod Fire AND Sika® RV-585

FIRE RESISTANCE OF Sika® Backer Rod Fire/Sika® RV-585 COMBINED WITH SikaHyflex®-250 Facade TESTED ACCORDING EN 1366-4 AND CLASSIFIED ACCORDING EN 13501-2

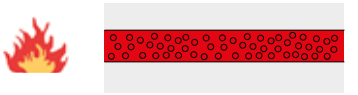
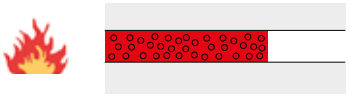
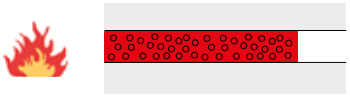
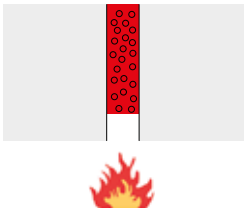
Scetch		Products	Resistance Class Acc. EN 13501-2
	double-seal concrete/concrete	SikaHyflex®-250 Facade Sika® Backer Rod Fire SikaHyflex®-250 Facade	EI 240
	single-seal concrete/concrete	SikaHyflex®-250 Facade Sika® Backer Rod Fire	E 240/EI 180
	double-seal concrete/concrete	SikaHyflex®-250 Facade Sika® Backer Rod Fire SikaHyflex®-250 Facade	EI 240
	single-seal concrete/concrete	SikaHyflex®-250 Facade Sika® Backer Rod Fire	E 240/EI 180
	double-seal concrete/concrete	SikaHyflex®-250 Facade Sika® RV-585 SikaHyflex®-250 Facade	EI 240
	single-seal concrete/concrete	SikaHyflex®-250 Facade Sika® RV-585	EI 240
	double-seal concrete/concrete	SikaHyflex®-250 Facade Sika® RV-585 SikaHyflex®-250 Facade	EI 240
	single-seal concrete/concrete	SikaHyflex®-250 Facade Sika® RV-585	EI 240

Joint Width	Joint Depth	Element Type	Element Thickness
10 – 30 mm	15 mm	Wall	150 mm
10 – 30 mm	15 mm	Wall	150 mm
10 – 30 mm	25 mm	Floor	150 mm
10 – 30 mm	25 mm	Floor	150 mm
10 – 25 mm	15 mm	Wall	150 mm
10 – 25 mm	15 mm	Wall	150 mm
10 – 25 mm	20 mm	Floor	150 mm
10 – 25 mm	20 mm	Floor	150 mm



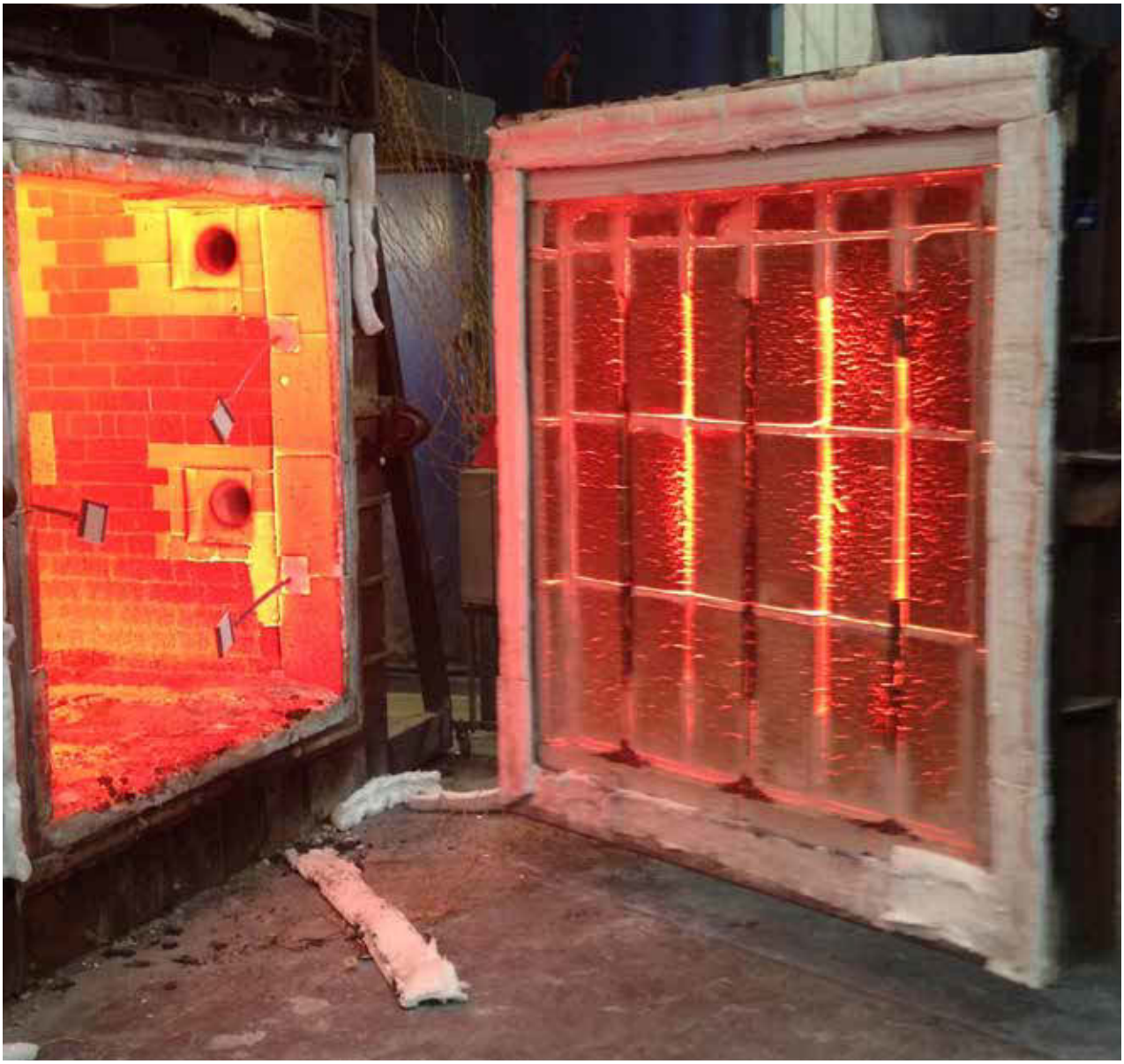
FIRE RESISTANCE OF JOINTS WITH Sika Boom® F/FR

FIRE RESISTANCE OF SikaBoom® F/FR ACCORDING BS 476-20

Scetch	Products	Resistance Time	Joint Width	Joint Depth*	Element Type
	Sika Boom® F/FR	I >300 E >300	15 mm	250 mm	Wall
	Sika Boom® F/FR	I 183 E 183	15 mm	150 mm	Wall
	Sika Boom® F/FR	I 193 E 193	20 mm	180 mm	Wall
	Sika Boom® F/FR	I >300 E >300	15 mm	250 mm	Floor
	Sika Boom® F/FR	I 59 E 59	15 mm	100 mm	Floor
	Sika Boom® F/FR	I 87 E 88	20 mm	140 mm	Floor

According BS 476-20 (I = Insulation, E = Integrity)

* Depth filled with Sika Boom® F/FR
  Joint substrate: Aerated concrete
  Element thickness: 250 mm



Testing of Sika fire rated sealants at Warrington Fire certification test institute, UK according EN 1366-4

FIRE PROTECTIVE COATINGS FOR STEEL STRUCTURES

Sika® Unitherm Platinum: Solvent free, intumescent, resistant

Steel structures are incombustible, but under the impact of fire they can lose their load-bearing capacity, and thus their static stability, within a few minutes. In order to prevent this Sika Unitherm and Sika Pyroplast fire-protection coatings protect the steel.
The thermal energy of the fire is transformed and the original millimetre-thin coating turns into a centimetre-thick, micro porous foam-like layer that insulates the steel surface against heat.
Sika® Unitherm Platinum revolutionized the fire protection market. Newly set standards lead to enormous advantages for the whole planning and realisation of a project.
Sika® Unitherm Platinum is a solvent-free, epoxy resin based fire protection coating (R 30 – R 120) for steel components in interior and exterior areas. The two pack EP-formulation is, as an in-shop coating, highly resistant to mechanical impact and against any atmospheric conditions. Furthermore the coated steel can be transported and installed after only 24 hours. This simplifies and accelerates the construction process, because traditional products are very sensitive, due to their physical characteristics that they have to be applied directly on the building site. At once Sika Unitherm Platinum combines fire protection and corrosion protection and is as a coating system with primer and top coat approved according to ISO 12944, C5-M / C5-I.

Advantages

- VOC 35 g/l
- Applicable without primer and top coat
- Excellent corrosion protection performance according to ISO 12944-5 to C5-I and C5-M as coating system
- Shortest clock cycle, application and drying time
- High mechanical impact, shock and abrasion-resistant, therefore no transport damages
- 100% total solid state, wet film thickness = dry film thickness
- In-shop application under controlled climatic conditions
- Ready for transport and handling only after 24 hours
- Film thickness up to 4 mm per application
- Simplifies and accelerates construction process
- Resistant against any atmospheric conditions
- Reduces project costs
- Cleaning of the coated surface possible with a high-pressure water jet washer
- Independent fire testing according to EN 13381-8
- Classified according to ETAG 018-2: 2006 Typ X
- Fire protection performance: Classification B-s2, d0 (EN 13501-1)

FIRE PROTECTION MORTAR FOR TUNNELS

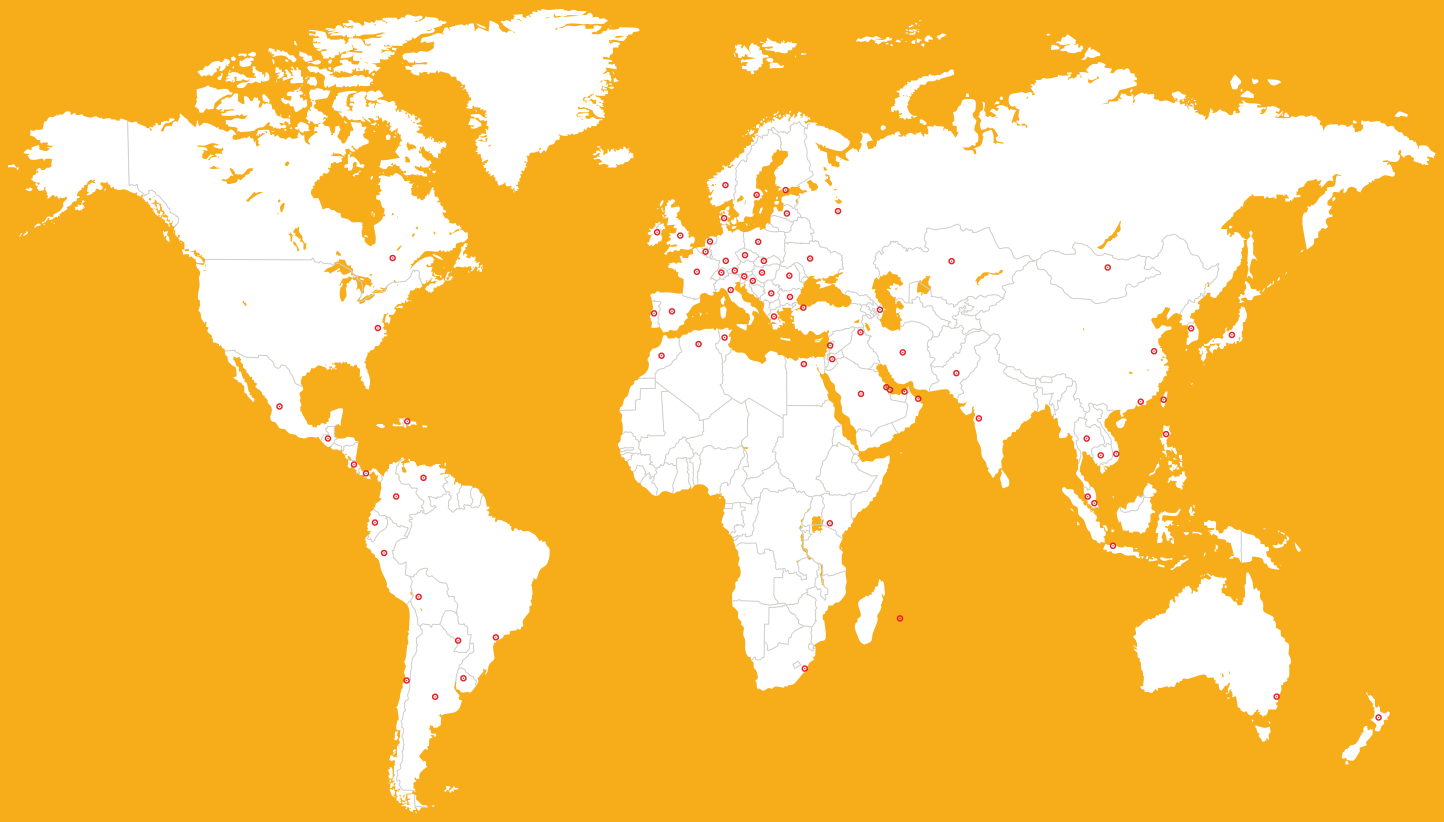
Sikacrete®-213 F and Sikacrete®-223 F: Sprayed fire protection mortars for concrete

In a tunnel fire, 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®-213 F and Sikacrete®-223 F are spray-applied mortars providing insulating layers, which protect the load-bearing structural concrete from high temperatures.
Both of these pre-batched mortars are classed as passive fire protection systems and are applied by the wet-spray process.
Sikacrete®-213 F is a fire protection mortar with exceptional insulation. It only needs to be 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 quantity and thickness of the material.

Sikacrete®-223 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 mortars
- 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 SEALING & BONDING INFORMATION:

WHO WE ARE

Sika AG, Switzerland, is a globally active specialty chemicals company. Sika supplies the building and construction industry as well as manufacturing industries (automotive, bus, truck, rail, solar and wind power plants, façades). Sika is a leader in processing materials used in sealing, bonding, damping, reinforcing and protecting loadbearing structures. Sika's product lines feature highquality concrete admixtures, specialty mortars, sealants and adhesives, damping and reinforcing materials, structural strengthening systems, industrial flooring as well as roofing and waterproofing systems.

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