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Fosroc® Flamex Fire Protection

FOSROC constructive solutions

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Flexible intumescent sealants

Uses

For fire protection in expansion and construction joints in walls, floors and ceilings, confining smoke and fire, giving extra time for people to escape from a fire situation.

Advantages

- Extensively fire tested in accordance with BS 476 Pt:20: 1987.
- Fire tested in overhead joints as well as in wall joints
- Over 4 and 5 hours insulation and longer integrity rating, depending on joint design
- Suitable for fire stopping of joints as defined by Approved Document B of the Building Regulations
- Prevents the passage of smoke through joints under fire conditions
- Effective as normal building sealants and allows structural movement
- Flamex Two is resistant to a range of chemicals

Standard complance

Tested in accordance with BS 476 Pt. 20: 1987.

Description

Under fire conditions Flamex One and Flamex Two intumesce, forming a foam-like structure which insulates and provides a barrier to hot gas and flame.

Flamex One emulsion based sealant sets quickly and gives excellent adhesion to most building materials. It has a 10% movement accommodation factor for low movement joint sealing and gap filling applications such as fire door frames. Flamex One is also suitable for sealing around fire protection boards. It can be used in joints from 5 to 20 mm. The minimum depth of seal should be 15 mm. Acts as an acoustic sealant.

Flamex Two high performance sealant forms a tough, flexible rubber-like seal with a movement accommodation factor of 25% for high movement situations. Flamex Two is suitable for expansion joints in building superstructures and may be used in both internal and external joints. Flamex Two can be used in joints from 5 mm up to 50 mm wide, with a minimum depth of 12mm in all circumstances.For non-trafficked movement joints the width of sealant should be twice the depth, subject to a minimum depth of 12 mm. For trafficked movement joints, sealant depth should be equal to the width subject to a minimum depth of 12mm. The use of a surface primer is always required.

Fire performance test data

Extensive fire testing has been carried out on the Flamex range in accordance with BS 476 Pt.20: 1987 at the Technical Centre of the Loss Prevention Council (LPC).

Sealant was assessed in terms of insulation and integrity. **Insulation** is defined as the ability to restrict excessive heat transfer through the joint, preventing ignition from conduction on the cold side.

Integrity is the ability to remain intact during the test, thereby withstanding the pressures and stresses developed during a fire situation.

Results summary

Flamex One — intumescent sealant

Joint size w x d (mm)	Backing material	Insulation	Integrity
Wall joints			
Single seal in lightweight blocks:			
10 x 15	Expandafoam	30 mins	3 hrs
20 x 15	Expandafoam	> 30 mins	> 2.5 hrs
20 x 20	Expandafoam	> 1 hr	> 2 hrs
20 x 15	Ceramic strip	2.5 hrs	> 4 hrs
Lightweight blocks sealed both sides:			
10 x 15	Expandafoam	> 4 hrs	> 4 hrs
20 x 15	Expandafoam	> 4 hrs	> 5 hrs
20 x 20	Expandafoam	> 5 hrs	> 5 hrs
Lightweight blocks to concrete lintel sealed both sides:			
15 x 15	Expandafoam	3.5 hrs	> 4 hrs
Lightweight blocks to hardwood frame sealed both sides:			
15 x 15	Expandafoam	2 hrs	2 hrs
Single seal: lightweight block to building board:			
10 x 15	Expandafoam	30 mins	70 mins
Conduit wall penetration			
20 mm conduit in nominal 50 mm hole:			
15 x 15	Expandafoam	> 2.5 hrs	> 4 hrs
25 mm conduit in nominal 50 mm hole:			
12 x 15	Expandafoam	3.5 hrs	> 4 hrs

Flamex Two — polysulphide intumescent sealant

Joint size w x d (mm)	Backing material	Insulation	Integrity
Wall joints			
Single seal in lightweight blocks:			
10 x 12	Expandafoam	> 15 mins	> 1.5 hrs
20 x 12	Ceramic strip	> 2 hrs	> 4 hrs
Lightweight blocks sealed both sides:			
10 x 12	Expandafoam	> 5 hrs	> 5 hrs
25 x 12	Expandafoam	> 3 hrs	3.5 hrs
Lightweight blocks to concrete lintel sealed both sides:			
20 x 12	Expandafoam	> 5 hrs	> 5 hrs
40 x 20	Expandafoam	> 4 hrs	> 4.5 hrs

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Flamex Two — polysulphide intumescent sealant contd.

Joint size w x d (mm)	Backing material	Insulation	Integrity
Soffit joints			
Joints in concrete sealed both sides:			
15 x 12	Expandafoam	4 hrs	4 hrs
20 x 12	Expandafoam	> 4 hrs	> 4 hrs
25 x 12	Expandafoam	> 4 hrs	> 4 hrs
30 x 15	Expandafoam	3.5 hrs	> 5 hrs
30 x 15	Ceramic strip	> 5 hrs	> 5 hrs
45 x 25	Ceramic strip	> 5 hrs	> 5 hrs
50 x 25	Expandafoam	2 hrs	2 hrs
50 x 25	Ceramic strip	> 5 hrs	> 5 hrs

Properties

Flamex One	
Form:	Paste
Colours:	White and grey as standard colours
MAF:	Butt joints 10%
Physical change:	Cures by loss of water
Skinning time:	20 to 40 minutes, but will depend on temperature and relative humidity
Cure time (typical rates):	As a guide a 20 x 15 mm joint is fully cured in 28 days at 25°C, 50% RH. Smaller joints will cure more quickly. A fairly advanced state of cure is reached at 7 days
Application temperature:	5°C to 40°C
Hardness Shore 'A' at 25°C:	30 to 50, typical 45 (28 days cure at 25°C, 50% RH)
Solids content:	85%
Density:	1.48 kg/litre

Flamex Two	
Form:	Multi-component paste in one tin; requires mixing
Colour:	Mid grey
MAF:	25% butt joints 50% lap joints
Physical or chemical change:	Chemical cure
Pot life:	2 hours at 25°C
Setting time (typical rates):	96 hours at 5°C 48 hours at 15°C 24 hours at 25°C
Full cure (typical rates):	4 weeks at 5°C 2 weeks at 15°C 1 week at 25°C
Application temperature:	5°C to 30°C
Hardness Shore 'A' at 25°C:	20 to 30 (7 days cure at 25°C, 50% RH)
Density:	1.61 kg/litre
Flash point:	Over 65°C
Chemical resistance:	Refer to Fosroc Technical Department for specific information

For supplies of ceramic strip please contact the Fosroc Customer Service Department.

Maintenance

No special requirements, but damage identified during normal building inspections should be repaired or replaced as appropriate.

Application instructions

Joint preparation

The joint surfaces must be thoroughly dry, clean and frost free. Remove all contamination by rigorous wire brushing, grinding or grit blasting. Remove all rust, scale and protective lacquers from metal surfaces. Remove any oil or grease with Fosroc Joint Cleaner.

The Flamex sealant shall be backed or supported with Expandafoam* cord, Hydrocell XL*, a ceramic strip or a bond breaker tape. The choice will be dependent upon the performance level required and the type of joint being sealed.

In open joints where Expandafoam is to be used ensure that an appropriate diameter cord is selected to give sufficient compression and support to the sealant.

In construction or contraction joints, a bond breaker tape should be applied to the base of the sealing slot to prevent adhesion of the Flamex sealant.

Where the ceramic strip is required it should be installed before priming, by folding and inserting into the joint using two thin metal plates to compress the strip and push it into the joint at the same time. Expandafoam is then placed over the ceramic strip before joint sealing takes place.

When gunning the sealant ensure good contact is made with the joint sides. For very wide joints it may be necessary to apply the sealant in two or more passes.

Where an especially neat finish is required, mask the face edges of the joint with masking tape before priming and remove after tooling is complete.

Priming

Flamex One

In many cases priming is not required. On very porous surfaces such as lightweight blocks, priming with a dilute solution of Flamex One 1:3 with water is recommended.

Flamex Two

Fosroc Primer 4 and Fosroc Primer 7 are required and should be used as follows:

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Fosroc Primer 4:

For all non-porous surfaces.

The sealant should be applied after the primer has dried, approximately 5 minutes and within 3 hours.

Iron and steel must be treated with an anti-corrosion primer prior to sealing.

Fosroc Primer 7:

For all porous surfaces such as concrete, stone, brickwork, blockwork and timber.

Apply by brush, working in well, ensuring complete coverage. Avoid over priming resulting in an excess of primer in the base of the joint or beyond the joint faces.

The mixed Flamex Two should be applied when Fosroc Primer 7 is tack free, normally within 20 minutes to 1 hour — that is after the evaporation of the solvent but before the primer film has completely reacted. After 3 hours the surfaces must be re-primed before applying the sealant.

Excessively porous surfaces may need a second coat, applied over the first coat which must be thoroughly dry.

Mixing

Flamex Two base component and curing agent are supplied ready for mixing in a single tin. Mix thoroughly using a slow speed drill (300 to 500 rpm) fitted with a Fosroc Sealant Mixing Paddle. Mix for 3 minutes then scrape down the sides and bottom of the tin using a spatula, mix for a further 2 minutes. Only thorough mixing, including material right at the bottom of the tin, will result in proper curing. In cold weather Thioflex 600 mixes more easily if stored overnight at room temperature. **Finishing**

Flamex One is applied using a Fosroc 'W' Gun and should be tooled off within 15 minutes of sealing using clean water. The use of dilute detergent solution is not recommended.

Flamex Two should be tooled to a smooth finish. A minimum of surface lubricant such as dilute detergent solution may be used to assist the process.

Any masking tape should be removed immediately after tooling. Normally joints in Flamex will be flush finished and left unpainted.

Cleaning equipment

Uncured Flamex One may be cleaned from tools and neighbouring surfaces using a damp cloth and water.

Uncured Flamex Two should be cleaned from equipment using Fosroc Equipment Cleaner.

Contract application

The designer or contractor may wish to use the services of a specialist sub-contractor for joint sealing work. Names of preferred sub-contractors are available from Fosroc.

Limitations

The fire rating of Flamex sealants is specific to the tests quoted on this data sheet. Users should satisfy themselves that the test results are applicable to their own installations.

Over-painting of Flamex sealants is not recommended.

The chemical resistance of Flamex One is limited. Refer to Fosroc Technical Department for chemical resistance of Flamex Two. Spillages must be cleaned from the sealants as soon as is practical.

Flamex sealants should not be used in direct contact with materials containing pitch or bitumen or in situations where water cannot freely drain away. Flamex One is not suitable for any joints subject to trafficking.

Estimating

Packaging

Flamex One is supplied in 380ml cartridges packed in cartons of 20.

Flamex Two is supplied in 2.5 litre tins in cartons of 4.

Guide to Flamex One quantities

Joint size in mm	Litres per metre run	Metre run per 380 ml cartridge
10 x 15	0.150	2.5
15 x 15	0.225	1.7
20 x 15	0.300	1.2

Guide to Flamex Two quantities

Joint size in mm	Litres per metre run	Metre run per 2.5 litre pack
10 x 12	0.12	20.80
15 x 12	0.18	13.80
20 x 12	0.24	10.40
25 x 12	0.30	8.3
30 x 15	0.45	5.5
40 x 20	0.80	3.10
50 x 25	1.25	2.00

These are theoretical yields. No allowance has been made for variation in joint dimensions or wastage.

Guide to primer quantities

1 litre of Fosroc Primer 4 to 300 litres of Flamex Two. 1 litre of Fosroc Primer 7 to 30 litres of Flamex Two.

Actual usage will depend on joint dimensions and other factors.

Storage

Flamex sealants have a storage life of 12 months in original containers when kept in dry conditions between 5°C and 25°C.

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Precautions

Health and safety

For further information refer to appropriate Product Safety Data Sheet.

* See separate data sheet.

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