









Method Statement 47 Mecklenburgh Square - BalconyBalcony August 2017

# **CBP Architects Ltd**

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Client Name: CBRE

Document Reference: 47 Mecklenburgh Square - Balcony

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# **Quality Assurance**

This document has been prepared and checked in accordance with CBP Architects IMS (ISO9001:2008)

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Revision	Comments
P01	First Issue
P02	Amended after comments received from Conservation Officer
P03	Products listed

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# 1. Introduction

- 47 Mecklenburgh Square is a Grade II listed building.
- The balcony is formed with stone slabs, supported on cast iron brackets, with a perimeter ornate cast iron handrail. The current surface of the balcony comprises mastic asphalt applied to the stone slabs.
- The handrail is grouted into the stone slabs and into the brickwork, as this returns on the balcony.
- The balcony is currently supported by temporary scaffolding and supports.
- There is evidence of plant and vegetation growth, stone spalling and paint deterioration to the structure.
- There is evidence of previous concrete repair to the surface of the stone slabs, particularly by the external vertical brickwork.

# 2. Strategy for Works

# 2.1 Strategy to be adopted for proposed remedial works to balcony

- Site investigations have been carried out to review the existing balcony, its structural stability and proposals to remedy.
- The information is contained in the following report and detail drawings which should be read in conjunction with this method statement.
- 17023-CBP-XX-XX-RP-A-0001- 47 Mecklenburgh Square Balcony Report
- 17023-A-0001-Existing Overall Elevations
- 17023-A-0002-Existing Balcony Details
- 17023-A-0003-Site Location Plan Existing Balcony
- 17023-A-4001-Proposed Overall Elevations
- 17023-A-4002-Proposed Sections
- 17023-A-7001-Balcony Details Findings and Proposals

# 2.2 Cast Iron Bracket Stabilisation

- The stone balcony is supported on six existing cast iron cantilever brackets built into the front wall. The brackets project approximately 780mm out from the wall and are built up to 50-60mm approx. back from the inner face of the brick wall.
- A flat steel tie will also be integrated to the soffit of the stone, tied back to the existing stone and flat steel to the top of the stone slab. This support steelwork will be painted white to match the soffit colour, and also to match the application material to the surface of the stone.

# 2.3 Proposed Remedial Works

- Carefully remove by hand the mastic asphalt covering, to expose the stone slab/ concrete repairs. The mastic asphalt will be removed from under the metal bottom rail to allow water runoff. When carrying out localised on site research, the mastic asphalt came away from the stone/ concrete substrate without leaving marks/ surface damage.
- At this remedial stage, it is proposed to leave the existing handrail in situ. The handrail is to be tested to ensure the loads encountered can be met for the balcony for the current Building Regulations, and the fixings/ bedding checked, once the existing mastic asphalt has been removed to expose the

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fixings into the existing stone. It will be important to ensure water is shed away from the vertical rails and not allow water to rest, which would promote future corrosion. A small fillet may require to be installed to allow water to shed away from the bottom of the vertical rail fixings.

- Carefully remove by hand all the vegetation from the stonework, and expose the existing substrate.
- Carry out repairs to the damaged stone, integrate stainless steel Heli-Bar system of reinforcement across stone joints, and within the repaired areas to tie existing stone/slabs together.
- Cracks adjacent to the window jambs should be remediated using a low viscosity or thixotropic epoxy resin injection grout (Fosroc Nitofil LV/HV), applied under pressure.
- To infill the voids behind the brackets/ stone embedded within the brickwork, carefully drill small diameter holes into the stone/ brickwork, approximately 30mm from the face of the bracket and at 75mm centres. These holes should extend to within 75mm of the inner face of the wall. They should then be filled with a low viscosity or thixotropic epoxy resin injection grout (Fosroc Nitofil LV/HV), applied under pressure to ensure any minor cracks and voids located within the wall depth are suitably filled and sealed ensure the rear of the void is shuttered and infill to the full thickness of the external wall.
- Apply a mid-grey non-slip breathable Fosroc Brushbond FLXIII treatment to the surface of the balcony stone/ concrete repaired areas to allow water run off to the perimeter, to match the adjacent property, check for cross falls.
- This method proposed minimal intervention: the alternative is to carefully dismantle the balcony and reinstate it ensuring it is structurally sound. However, this method would very likely result in the irretrievable loss and breakage of historic fabric. Therefore, it is deemed a proportionate intervention.

# 2.4 Stonework Repairs

Stonework repairs will be limited only to work that is necessary to replace existing stonework that is
sufficiently decayed to be no longer structurally sound (for example where more than 25-30% of the
face has been lost/ or where existing concrete repairs exist and have failed). Damaged stonework
will not be replaced for purely aesthetic reasons and there will be no restoration of lost features. The
cleaning of stonework for aesthetic reasons will generally not be permitted. Cleaning should only be
undertaken with an approved system (Doff or equal approved) to remove plant growth where this is
causing damage to the balcony.

# 2.5 Choice of Materials and Specification

- Any necessary stonework repairs will use new stone of a suitable provenance that matches as closely as possible the original, in terms of colour and appearance as well as physical and chemical characteristics. Artificial reclaimed stone will not be used.
- New stonework will be carefully matched and blended with the existing so as not to detract from the appearance of the building, but the repairs will be generally carried out without attempting to disguise or artificially age the new work. Consequently, replacement stone will not be distressed to match the finish of the existing.
- Where it is deemed necessary to repair any functional and/or decorative stonework, the replacement stone will be moulded to match the original form.
- Mortar (or 'plastic') repairs are usually not deemed acceptable for works to historic stone work. However, if this instance they are deemed appropriate. The existing asphalt was probably applied innocuously to even out spalled stonework. However, it is now potentially trapping moisture between it and the historic stonework. The asphalt will be carefully removed by hand and replaced with an epoxy breathable anti-slip surface, the product and specification to be agreed with the local planning authority.

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# 2.6 Repointing Stonework and Brickwork

• Repointing of stonework and brickwork will be limited only to work that is necessary to prevent damp and water ingress, usually where sacrificial mortar has been lost, or when inappropriate cement based mortar can be removed by hand, without damaging surrounding stonework and brickwork.

# 2.7 Choice of Materials and Specification

- Re-pointing of stonework and brickwork should be kept to the absolute minimum necessary and comprehensive re-pointing for cosmetic reasons is not acceptable. If inappropriate cement based mortar is identified, this should only be removed, by hand (i.e. no mechanical tools), if loose.
- Joints should be carefully raked out by hand to a depth of at least two times their width or a maximum of 18-25mm. No mechanical tools should be used for raking out: this must be undertaken with hand tools only.
- Joints should be flushed out and saturated with clean water, to limit suction.
- Stonework or brickwork should be re-pointed or bedded in an appropriate mortar mix (that is weaker and more porous than the adjacent masonry and usually a lime based mortar).
- Mortar mixes should be designed to suit each individual building, location and exposure. The material, texture and colour of the existing or original construction mortar should be determined and matched.
- New mortar should be well pressed into joints, and struck to match existing.
- Proprietary coloured mixes or colouring additives should not be used. Mortar for repointing should be coloured using an appropriate sand to match the original joints before weathering.
- A sample of the proposed mortar mix should be approved by the local planning authority prior to the commencement of re-pointing works.
- Joints should be finished to match any specific original feature (for example, lined out or tuck pointed mortar joints in brickwork).
- The use of putty lime, rather than hydrated lime, is preferred, as is the preparation of coarse joints. Samples of mortar mixes, finishing and surface texture should be agreed on site before undertaking the work. Where large areas of repointing are proposed, the local planning authority may require a sample panel or panels be undertaken using the proposed mortar prior to repointing. The agreed sample should be kept on site for reference until the works are complete and approved.
- The specification for repointing should take into consideration the time of year, provision of skilled crafts-persons, aftercare needed and be detailed enough on items such as placing, compaction and protection of mortars to ensure high quality work.
- Where stone is being pointed, joints should be filled with new mortar as far back as possible and finished flush, then brushed back with a bristle brush to expose both the aggregate and the edges of adjacent stone, compacting the joint and promoting carbonation.
- Joints should on no account be struck or finished proud of the masonry to form 'strap' or 'ribbon' pointing or feathered over the edge of eroded blocks. Care should be taken to finish the joints to match the surrounding work and the width of the original joints should not be increased.
- Where existing masonry is generally eroded, the face of the mortar should be kept back to the point at which the joint remains the original width. Repointing should not increase the width of the original joints.

# 2.8 Render Repairs

• Re-rendering or render repairs should be carried out in a mix that matches the original/existing historical render or a mix approved by local planning authority. The material, texture and colour of the existing or original render should be determined and matched.

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# 2.9 Choice of Materials and Specification

- The mix should match the strength of the original/existing render and new render should be generally applied in three coats.
- No metal beads or stops should be used externally: arises and angles should be formed in the traditional manner.
- Cracks in existing render or areas of loose render should be cut back to sound surrounding render and the masonry face. The surrounding render should then be undercut to provide a key except to the bottom of the area, where the sound render should be cut square.
- Sample panels of new render may be required for agreement by the local planning authority where extensive re-rendering is undertaken. The agreed sample should be kept on site for reference until the works are complete and approved.
- Redecoration of rendered areas must be appropriate to the render used. Therefore, lime wash and/or silicate paints will normally be appropriate. Smooth, water based masonry paint systems may be an alternative.
- Textured or impermeable spray coatings may not be acceptable.

# 2.10 Paintwork

• The careful specification of paint type and colour is essential to maintain the unity of the whole.

# 2.11 Choice of Materials and Specification

- Previously unpainted surfaces should not normally be painted over.
- Painted stucco walls should be repainted every three to five years to preserve their appearance and to stop water from entering the fabric via paint flakes.
- When repainting stucco, brilliant white should never be used as that is a twentieth century development.
- All paint colours and specifications should be agreed by the local planning authority.
- Advice should be sought from the paint manufacturer prior to commencement of work.
- The removal of existing paint, by hand & Stonehealth Doff system, should ensure the cast iron/ stonework is not damaged.
- A paint system for cast iron/ stonework must be compatible with the ironwork/ stone, and act as a protective barrier to the elements, including inhibiting corrosion.
- In general, it is advisable to use an oil-based paint system on cast iron, both for new castings and on existing ironwork. As oil-based primers are slowing-drying, the corrosion inhibitors are better able to penetrate the small particles of rust or scale which will inevitably exist on the surface of historic ironwork. COSHH guidance sheets are to be reviewed.
- Three coats for breathable mineral based Keim Soldalit paint system are required primer, undercoat and finish coat. All three coatings must be mutually compatible.
- The optimum technique for applying paint to ironwork in situ is using traditional bristle brushes. Narrow rollers may be suitable for long, flat sections, but other systems such as spray guns do not compare with the effectiveness of brush application on intricate decorative patterns.
- Colour the existing and adjoining cast iron is finished with black paint; therefore, this colour should be used.

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# 2.12 Sample of Materials, Applications:

# Paint systems to:

- Render
- Cast iron brackets/ new steelwork/ existing handrails
- Stonework

# Pointing to, including repairs:

- Stonework
- Brickwork

## Concrete repairs to:

- Stonework
- Render, bracket supports

# Reuse of existing Historic fabric/ materials:

• Where possible, any existing historic fabric if/ when removed is to be re-used within the overall refurbishment strategy.

# Use of the balcony by public: Access to be fully restricted.

The Client will restrict any access to the balcony by any persons, and monitor the use, nor used to store any type of materials, chairs, landscaping tubs, plant pots and the like. No access into/ out of the residence will be permitted via the balcony area for use as furniture removal/ placing, and the like that may impose any additional load on the existing structure in any way.

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Appendix A

Fosroc

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# Fosroc<sup>®</sup> Brushbond FLXIII



18 July 2017

### High-technology polymer modified elastomeric waterproofing membrane system for concrete and masonry surfaces

### Uses

Brushbond FLXIII when fully cured, provides a seamless elastic waterproof membrane for use in roof areas, wet areas and pre-cast joints where a tough elastomeric water tight membrane is required.

### Advantages

- Can be applied to damp substrates
- No primer required
- Elastomeric
- Able to take occasional foot traffic when cured
- Factory pre-blended two component system ensures quality control at site

### Standards compliance

Brushbond FLXIII complies with EN1504-2: Surface protection systems method 1.3, 2.2 and 8.2.

#### Description

Brushbond FLXIII is a two component polymer modified waterproof membrane which is supplied in readymix kits. When mixed, an easily brushable coating is produced. It can simply be applied by a stiff brush, roller, or trowel to obtain the desired thickness.

Brushbond FLXIII consists of specially selected cements, graded hard wearing aggregates and additives supplied in powder form together with a liquid component of polymers providing exceptional adhesion, resilience, flexibility, toughness and durability.





Drayton Manor Business Park, Coleshill Road, Tamworth, B78 3XN, UK

DoP:UK9-206

Certificate - No. 16/13274-2473-S

Fosroc<sup>®</sup>Brushbond FLXIII

	EN1504-2: Surface protection systems method 6.1		
	Tensile strength (N/mm <sup>2</sup> ) (ASTM D412-91)	2.63N/mm <sup>2</sup>	
	Elongation at break (ASTM D412-91)	43%	
	Water Permeability (DIN 1048:Pt 5: 1991)	Nil	
	Crack bridging (ASTM C836)	Passed	
	Low Temperature Flexibility (ASTM C 765:1993)	Passed	
	Water vapour transmission (Diffusion-Equivalent air layer thickness SdEN ISO 7783:2012)	3.7m	
	Carbon Dioxide Permeability (Diffusion-Equivalent air layer thickness Sd EN 1062-6:2003)	107m	
1	Setting time * - Foot traffic	4 hrs <u>+</u> 1 hr	
	Adhesion strength by pull-off test (EN 1542:1999)	1.6 MPa	
	Liquid Water Permeability (EN 1062-3:2008)	0.01kg/m <sup>2</sup> h <sup>0.5</sup>	

Clarification of property values: The typical properties given above are derived from laboratory testing. Results derived from field applied samples may vary.

Note\*: On clean dry concrete, with adequate airflow (ventilation) at 20°C to 25°C



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# Fosroc<sup>®</sup> Brushbond FLXIII

#### Instructions for use

#### Preparation

All surfaces which are to receive a Brushbond FLXIII coating, must be free from oil, grease, wax, dirt or any other form of foreign matter which might affect adhesion. Spalled and deeply disintegrated concrete should be removed to sound concrete and repaired using the Fosroc Renderoc System.

### Mixing

The Brushbond FLXIII Liquid component should be poured into a plastic or metal container and mixed mechanically with a slow speed drill (350-450 rpm) fitted with a Fosroc Mixing Paddle (MR3). The powder component should be added gradually to the liquid avoiding lump formation and mixed for 4-5 minutes until a smooth consistent mix is achieved. Use the material within the recommended pot life.

#### Application

Pre-wetting of substrate

Thoroughly dampen the substrate surface with water using a brush or spray. Allow the water to soak in until the substrate is just visibly damp before proceeding.

Any excess water should be removed using a sponge. Any running water should be stopped with a suitable plugging mortar eg Renderoc Plug 20. Use a short, stiff bristle brush, preferably 120 to 200 mm in width. Apply like a paint using one or two coats as required.

For trowel application, ensure that the substrate is levelled and repaired of any undulations or pot holes.

Brushbond FLXIII should be applied at the following thickness: It is recommended that general re-surfacing and areas subjected to light foot traffic should receive a Brushbond FLXIII in two coats of 500 microns each to give a 1mm thick coating.

#### Cleaning

Brushbond FLXIII should be removed from tools and equipment immediately after use with clean water. Hardened material can only be removed mechanically.

### Limitations

Brushbond FLXIII should not be applied if the air or substrate temperature is greater than 40°C. This may result in different colour shades. Minimum application, substrate and air temperature is 3°C and rising. Avoid freezing conditions for 24 hours after application.



#### Important note

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#### Estimating

Supply		
Powder	1	15 kg
Liquid	1	10 kg
Coverage and Yield		14.5 litres / pack
Brushbond FLXIII kit	1	14.5m <sup>2</sup> /pack applied at 1mm thick (2 coats of 500 microns thick)

Note: Coverage figures are theoretical and due to wastage factors and the variety nature of possible substrates, practical coverage will be reduced.

## Storage

Brushbond FLXIII has a shelf life of 12 months from the day of manufacture if kept in dry storage in the original, unopened containers. If stored at high temperature/humidity, the shelf life may be reduced to less than 6 months.

Liquid containers should be kept from freezing and stored in a frost free environment.

#### Precautions

#### Health and safety

Gloves and goggles should be worn. Any splashes to the skin or eyes should be washed off with clean water. In the event of prolonged irritation, seek medical advice.

Powder products should be handled to minimise dust formation; use a light mask if excessive dust unavoidable.

For further information refer to appropriate Product Safety Data Sheet.

#### Note

For porous substrate (Gypsum board) application, Nitobond AR should be applied to seal the surface followed by the application of Brushbond FLXIII.

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# Fosroc<sup>®</sup> Nitofill LV /TH



3 Cl/SfB: Yn6 February 2015

constructive solutions

### Low viscosity or thixotropic epoxy resin injection grout

### Uses

### Nitofill LV

A low viscosity system for the injection of cracks between 0.3mm and 9 mm wide in concrete and masonry, where both sides of the crack can be sealed to prevent resin drainage.

### Nitofill TH

Developed for the injection of cracks 0.5 to 9 mm wide in concrete and masonry, and has been specially formulated to minimise the drainage of resin from cracks which are incompletely sealed.

## Advantages

## Nitofill LV

Low viscosity: Permits maximum resin penetration

### Nitofill TH

Thixotropic: Permits injection of open-ended cracks

### Nitofill LV and Nitofill TH

- Adhesion: Achieves high strength bond to dry or wet concrete
- Minimum creep: Material designed for low creep
- Non-shrink: No loss of bond or surface contact
- High strength: High compressive, tensile and flexural strengths
- Chemical resistance: Withstands most chemicals, acids and alkalis, also water and frost

## Description

### Nitofill LV

A two pack low viscosity epoxy resin product for the repair of cracked concrete and masonry by the injection process.

### Nitofill TH

A two pack thixotropic epoxy resin product for the repair of cracked concrete and masonry by the injection process.

#### Nitokit Surface Sealant

This is a polyester resin compound which combines the dual function of sealing the surface of the crack and bonding on the injection points.

It is supplied as a liquid resin together with a powder hardener, which are mixed together to give a stiff paste.

Nitokit Surface Sealant has the added advantage that it can be rubbed down with suitable hand or power tools to give a smooth finish which readily blends with surrounding concrete, minimising the visual impact of the repaired crack.

The usable life of the product is 20 to 25 minutes at 20°C.

**CE** 0370

Fosroc Ltd Drayton Manor Business Park, Coleshill Road, Tamworth, B78 3XN, UK 09

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## DOP: 9-44 Nitofill LV DOP: 9-45 Nitofill TH 0370-CPR-0845

#### Nitofill LV and Nitofill TH

EN 1504-5: Concrete injection methods (F) 1.5, 4.5, 4.6		
Determination of adhesion of injection products	>2.0 Nmm <sup>-2</sup> with and without cycles	
Adhesion by slant shear	Monolithic failure	
Non-volatile content	>95%	
Determination of injectability Nitofill LV: Nitofill TH:	Moisture state wet or dry Crack width from 0.3mm Crack width from 0.5mm	
Glass transition temperature	NPD	
Corrosion behaviour	Deemed to have no corrosive effect	
Dangerous substances	Complies with section 5.4	

### Properties

The following properties were obtained for Nitofill LV and Nitofill TH at a temperature of 20°C:

	Nitofill	Nitofill	
	LV	TH	
Compressive strength			
EN ISO 12190:1999			
(adapted):	93MPa	88 MPa	@ 7 days
Tensile strength			
EN ISO 527:	47MPa	29MPa	@7days

### Pot life

The time for which bulk mixed material remains fluid will vary with temperature. Typical values in minutes are:

	10°C	20°C	30°C
Nitofill LV:	40 minutes	20 minutes	10 minutes
Nitofill TH:	40 minutes	20 minutes	10 minutes



# Fosroc<sup>®</sup> Nitofill LV /TH

#### Chemical resistance

Nitofill LV and Nitofill TH are resistant to oil, grease, fats, most chemicals, mild acids and alkalis, fresh and sea water. Where constant contact with specific concentrated chemicals or solvent is anticipated the Fosroc Customer Services Department should be consulted for advice.

#### Temperature limitations

During application: Injection can be carried out without special precautions at ambient temperatures from 5°C to 25°C. For application at higher or lower temperatures the Fosroc Customer Services Department can advise on recommended procedures.

In service: The cured grout is completely resistant to frost and extreme sub-zero temperatures, and is suitable for continuous use up to 35°C.

### Application instructions

#### Preparation

Ensure all contact surfaces are free from oil or grease contamination.

Bond injection ports over the crack with Nitokit Surface Sealant, at 150 - 400mm centres. (If crack is obstructed at the surface, access may first be gained by vacuum flush drilling.) The crack should then be sealed between ports with Nitokit Surface Sealant.

#### Mixing Nitokit Surface Sealant

Mix only the quantity of sealant that can be applied within the usable life, approximately 20 minutes @ 20°C.Pour a small quantity of the resin into a suitable bucket and slowly add the powder. Stir until a smooth thick cream consistency is obtained. Mix further quantities as required.

#### **Mixing Nitofill**

Pour all the contents of Hardener pack into Base container. Mix for 2 minutes or more until homogeneous. At extreme temperatures refer to gel time information to enable required handling procedures to be adopted.

NB: Mechanical mixing is preferable (i.e. Jiffy mixer in slow speed drill) ensuring that the sides and bottom of the container are repeatedly scraped.

#### Injection

The product may be pumped into place using a standard 'grease gun' technique. The size of the injection pump should be related to the job in hand. For small-scale jobs a Fosroc 'G' Gun may be used. Where greater rates of injection are required a hand pump may be used, or bulk supplies of Nitofill LV and Nitofill TH may be used with twin metering/mixing machines.



Connect the pump to the injection port using nylon reinforced PVC hose and Unex clips. Injection should commence at the widest part of the crack, or at the lower end if crack is uniform, closing that port and transferring injection to the next when the resin is seen to have reached it.

12 to 18 hours after injection, the injection tubes should be broken off and any damage made good using Nitokit Surface Sealant.

### Cleaning

Tools and application equipment should be cleaned using Fosroc Solvent 102 for Nitofill LV and Nitofill TH and Fosroc Solvent 105 for Nitokit Surface Sealant immediately after use. Cured material can only be removed mechanically. Spillages should be absorbed with sand or sawdust and disposed of in accordance with local regulations.

### Estimating

### Packaging

Nitofill LV:	3 litre pack
Nitofill TH:	1 litre pack
Nitokit Surface Sealant:	5.5 litre pack
Fosroc Solvent 102:	5 and 25 litre tins
Fosroc Solvent 105:	5 litre tin

### Storage

Nitofill LV and Nitofill TH have a shelf life of 18 months, if stored in dry conditions at 20°C.

Nitokit Surface Sealant has a shelf life of 12 months if stored in dry conditions at 20°C.

Nitokit Surface Sealant should be stored in accordance with the Highly Flammable Liquids and Liquefied Petroleum Gases Regulations 1972.

### Precautions

#### Health and safety

For further information refer to appropriate Product Safety Data Sheet.

#### Disposal

To eliminate risk of exotherm, this product should only be mixed when ready for use and then applied without delay. Any unused residue should be poured on to a disposable impervious surface to allow cure before disposal.

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# Fosroc<sup>®</sup> Nitofill LV /TH

## Fire

Nitofill LV and Nitofill TH are non-flammable.

Fosroc Solvent 102, Fosroc Solvent 105 and Nitokit Surface Sealant are flammable. Do Not use near naked flames. No Smoking during use.

In the event of fire, extinguish with CO2 or foam.

## Flash points

Nitokit Surface Sealant:	29°C	
Fosroc Solvent 102:	33°C	
Fosroc Solvent 105:	43°C	

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