

Fosroc Polyurea FLM

Fast setting, pure polyurea elastomeric waterproof coating.

General Information

Fosroc Polyurea FLM is a spray-applied, 100% solids, flexible, two-component, rapid curing pure Polyurea system, designed as a waterproofing and protective coating. It combines the advantages of seamless coating with very long life cycles and high durability.

Fosroc Polyurea FLM consists of the two components Fosroc Polyurea FLM Part A ISO and Fosroc Polyurea FLM Part B AMINE). The system offers excellent surface properties and overall physical properties.

Uses

Anti-corrosion, waterproof and protective coating for concrete and steel in a wide range of environmental conditions.

Typical applications include :

- Below grade waterproofing
- Pipe/Pipeline coating
- Bridge/Bridge deck waterproofing
- Tank coating
- Water & waste water tank lining
- Marine environment
- Roof waterproofing
- Truck bed liner
- Theme parks & decorative designs
- Aquarium lining
- Landscape & water containment
- Waterparks & playgrounds
- Rail car
- Line striping
- Secondary containment
- Airports
- Refineries

Advantages

- Environment friendly - zero VOC
- Excellent chemical resistance, thermal stability and UV resistance*
- Very fast turn-around time. The coated substrate can be put into service within an hour.
- Excellent impact, abrasion and puncture resistance
- Seamless and monolithic, including field joints
- Significantly enhances the durability of reinforced concrete
- Low permeability values
- Can be applied at ambient temperatures between -30° C** to 70°C

- Designed for service temperature from -30°C to 135°C

* see Chemical Resistance and Colour sections

** Note for applications below +5°C, consult Fosroc for specific advice.

Specification

Where mentioned in the contract drawings, the protective and waterproofing coating shall be Fosroc Polyurea FLM, a 100% solids, flexible, two component, rapid curing, pure Polyurea coating system providing high corrosion, abrasion and thermal shock resistance. It shall meet the values under the section "Properties"

Properties

Physical properties @ 24°C

Solids by Volume	:	100%
Volatile Organic Compounds	:	0 g/l
Viscosity	:	Comp A = 1000 mPa.s Comp B < 1200 mPa.s
Density at 25°C	:	1.01 g/ml
Tensile Strength		
ASTM D-412	:	> 16 MPa (N/mm ²)
Modulus 100 / 200 / 300 %	:	9 / 12 / 16 Mpa(N/mm ²)
ASTM D412		
Tear strength ASTM D624C	:	90 MPa(N/mm ²) ± 4
Elongation ASTM D-412	:	>300%
Shore -A ASTM D2240	:	46
Abrasion (1kg, H22 wheels)	:	36 mg/1000 cycles
ASTM D4060		
Abrasion (1kg, CS17 wheels)	:	≤0.02 mg/1000 cycles
DIN EN ISO 5470		
Service temperature	:	-30°C ± 135°C
ASTM D4060		

Clarification of property values

The typical physical properties given above are derived from independent testing of Fosroc Polyurea WPE spray applied in accordance with the Fosroc Polyurea Method Statement, in controlled laboratory environment. Results derived from testing field-applied samples may vary dependent on several factors, including the type and condition of equipment utilised (particularly the spray gun effecting air entrapment), static and dynamic working pressures, application temperatures and weather conditions, film thickness, age of sample tested.

Chemical Resistance

(ASTM D3912, 72 hours immersion)

Chemical	Result	Max service temp.
Anti-freeze (Texaco)	R	50°C
Brake fluid	R-C	50°C

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Hydraulic Oil	R	50°C
Motor oil	R-DIS	50°C
Kerosene	R	25°C
Diesel Fuel	R	25°C
Petrol	R-DIS	25°C
Skydrol	NR	
Sodium hydroxide (50%)	R	50°C
Potassium Hydroxide (50%)	R	50°C
Ammonia (0.880) 33%	R	25°C
Sea water	R	50°C
Urea (10%)	R	50°C
Urea solution conc.	R	50°C
Sugar solution conc.	R	50°C
Bleach (5%)	R-DIS	50°C
Butanol	R-C 25°C	
Industrial Methylated spirits	NR	
Acetic Acid (10%)	R	50°C
Lactic Acid (20%)	R	50°C
Citric Acid (50%)	R	50°C
Tartaric acid (50%)	R	50°C
Oleic Acid (100%)	R-DIS	50°C
Phosphoric Acid (10%)	R	50°C
Hydrochloric acid (20%)	R-C 50°C	
Hydrochloric acid Conc.	NR	50°C
Nitric acid (30%)	R-C 25°C	
Sulphuric Acid (10%)	R	50°C
Sulphuric Acid (70%)	R-C 25°C	

R	: Recommended
R-DIS	: Recommended - Discolouration only
R-C	: Recommended - Conditional; discolouration and/or slight softening or swelling - wash down within one hour to avoid effects.
NR	: Not Recommended

Note : The chemical resistance recommendations given above apply to spillage and secondary containment applications up to 72 hours contact duration; for any other requirements contact Fosroc for further advice.

Processing parameters

Block Temperature	: +70°C to +80°C
Hose Temperature	: +70°C to +80°C
Volume ratio	: 1:1
Pressure	: 120 - 150 bar
Gel Time	: 5 - 10 sec
Walkable	: 2 minutes
Trafficable (light duty)	: 15 - 20 minutes
Fully Serviceable	: 24 hours

Refer to Application section below and Fosroc Polyurea Method statement for further detail.

Instructions for Use

Surface preparation

All surfaces should be clean, dry and free from contamination. The surface should be assessed and treated in accordance with ISO 8504.

Concrete.

Dry abrasive blasting, wet abrasive blasting, vacuum-assisted abrasive blasting, and centrifugal shot blasting, as described in ASTM D 4259, may be used to remove contaminants, laitance, and weak concrete, to expose blow holes, and to produce a sound concrete, surface with adequate profile and surface porosity. All blow holes and minor surface imperfections shall be filled with recommended filler prior to application of Primer.

Bare Steel

All welding seams must have a surface finish which ensures that the quality of the paint system will be maintained in all respects. Holes in welding seams, undercuts, cracks, etc. should be avoided. If found, they must be remedied by welding and/or grinding. All weld spatters must be removed. All sharp edges must be removed or rounded off in such a way that the specified film thickness can be built-up on all surfaces. The radius of the rounding should be minimum 2 mm. The steel must be of first class quality and should not have been allowed to rust more than corresponding to grade B of ISO 8501-1:2007. Any laminations must be removed. Blast cleaning to Sa 2 1/2 (ISO 8501-1:2007). Roughness: using abrasives suitable to achieve a coarse surface of Grade Medium G (50-85 um, Ry5 (ISO 8503-2))

Priming

Following correct preparation, the substrate must be primed.

For sound, dry concrete and at ambient/substrate temperatures of >25°C, prime using Fosroc Nitoprime 31. For all other conditions. Fosroc Primer 195 must be used.

For concrete, suggested application rate is 250ml per m². For steel substrates, a suggested rate of 150ml per m². A broadcast of fire-dried sand is recommended for optimum adhesion properties.

The primer shall be allowed to become touch-dry prior to application of Fosroc Polyurea FLM.

Refer to Fosroc Polyurea Method Statement for further details.



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Spray Equipment:

A high pressure spray proportioning machine/spray gun for plural heated polyurea components such as those manufactured by GlasCraft or Graco should be used for this product.

A list of appropriate equipment is listed in the Fosroc Polyurea Method Statement.

Safety handling

Avoid contact with eyes and skin. Wear suitable protective clothing, gloves and eye/face protection at all times. Ensure adequate ventilation and avoid inhalation of vapour and aerosol. Use supplied air hood. Fosroc Polyurea FLM Part A ISO, Fosroc Nitoprime 31 (Parts A and B), Fosroc Primer 195 (Parts A and B) may cause sensitisation by inhalation and skin contact. In case of eye contact, first aid must be administered immediately. The eyes should be held open while flushing with a continuous low pressure stream of water for at least 15 minutes. Seek medical advice immediately. If swallowed, seek medical attention immediately - do not induce vomiting.

The use of barrier creams provides additional skin protection.

Refer to safety data sheets for detailed information

Estimating

Supply

Fosroc Polyurea FLM Part A ISO component

Drums	: 200 ltrs
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Fosroc Polyurea FLM Part B AMINE component

Drums	: 200 ltrs
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or

Drums	: 195 ltrs + separate colour pack
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Fosroc Nitoprime 31 Part A Base

Tin container

Fosroc Nitoprime 31 Part B Hardener

Tin container

Fosroc Primer 195 Part A Base

Pail	: 12.5kg in 25 litre pail
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Fosroc Primr 195 Part B Hardener

Pail	: 7.5kg in 10 litre pail
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Coverage

Fosroc Nitoprime 31/ Fosroc Primer 195	: see priming section and refer to Fosroc Polyurea Method Statement
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Fosroc Polyurea FLM	: 1.0-3.0 ltrs per m ² depending on specification
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Note :

Normal recommended coverage is 1.5 litres/m². 1.0 litres/m² coverage rate is the absolute minimum and requires a highly experienced operator for even and effective coverage, using a cross-hatch spray pattern. 3.0 litres/m² rate is the maximum coverage rate for a single coat application.

Application

The client/main contractor must be satisfied that the applicator has suitable equipment and expertise and will follow the procedures detailed in this datasheet and in the Fosroc Polyurea Method Statement.

Do not dilute Fosroc Polyurea FLM, Fosroc Nitoprime 31 or Fosroc Primer 195 under any circumstances. Normal recommended minimum applied thickness of Fosroc Polyurea FLM is 1.5mm, using cross-hatch spray pattern. Applied product can be walked on carefully after approx. 2 mins; is light duty trafficable (e.g light foot traffic) after approx. 15-20 minutes, and fully serviceable after 24 hours.

For temperatures below +5°C, longer cure times must be anticipated - contact Fosroc for further advice. Use appropriate non-solvent chemical for the flushing of equipment. In the case of prolonged storage prior to use, thoroughly mix the amine component with a drum mixer until a homogenous mixture and colour is obtained. Refer to Fosroc Polyurea Method Statement for further detail.

Use appropriate chemical for the flushing of equipment. If material has been stored for a period of time prior to use, thoroughly mix the amine component with a drum mixer until a homogeneous mixture and colour is obtained. Refer to Method Statement for further detail.



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Storage

Fosroc Polyurea FLM has a shelf life of 12 months if kept in a dry, air conditioned store between +5°C and +30°C in the original unopened containers. Any changes in colour have no negative effect on reactivity and physical properties of the coating.

Colour

It should be noted that Fosroc Polyurea FLM is an aromatic polyurea; therefore, as with all aromatics, over a period of time colour change will occur if exposed to UV rays. This will not cause any negative effect on the physical properties of the product.

If long-term aesthetics regarding colour stability is of critical importance, contact Fosroc for further advice.

Technical support

Fosroc offers a comprehensive technical support service to specifiers end users and contractors. Fosroc is also able to offer on-site technical assistance, an AutoCAD facility and dedicated specification assistance in locations all over the world.

Disposal Considerations

Cured Fosroc Polyurea FLM, cured Fosroc Primer 195 can be disposed of without restriction. The uncured A and B components should be disposed of according to local environmental laws and ordinance. Refer to safety data sheets for all relevant information on Fosroc Polyurea FLM, Nitoprime 31 and Fosroc Primer 195.

Boards

- cementitious & epoxy grouts
- specialised flooring materials

Fosroc additionally offers a comprehensive package of products specifically designed for the repair and refurbishment of damaged concrete. Fosroc's 'Systematic Approach' to concrete repair features the following :

- hand-placed repair mortars
- spray grade repair mortars
- fluid micro-concretes
- chemical resistant epoxy mortars
- anti-carbonation/anti-chloride protective coatings
- chemical and abrasion resistant coatings

For further information on any of the above, please consult your local Fosroc office - as below.



Fosroc Chemicals (India) Pvt. Ltd.

Head Office

"Sapthagiri Palace", No.38,
II & III Floor, 12th Cross,
CBI Road, Ganganagar North,
Bangalore 560 032

Important note :

Fosroc products are guaranteed against defective materials and manufacture and are sold subject to its standard terms and conditions of sale, copies of which may be obtained on request. Whilst Fosroc endeavours to ensure that any advice, recommendation specification or information it may give is accurate and correct, it cannot, because it has no direct or continuous control over where or how its products are applied, accept any liability either directly or indirectly arising from the use of its products whether or not in accordance with any advice, specification, recommendation or information given by it.

telephone

++91 80-23551500

fax

++91 80-23551510

e-mail

enquiryindia@fosroc.com

Regional Offices

Bangalore

"Sapthagiri Palace", No. 38
II & III Floor, 12th Cross,
CBI Road, Ganganagar North,
Bangalore 560 032.
Ph:080-23551500
Fax : 080-23551510

Mumbai

1401/1402, 14floor,
A-Wing 'The Great Eastern Summit'
Sector-15, CBD, Belapur
Navi Mumbai 400 614
Ph: 022 -43406800-04

Delhi

D-166 Sector 10
Noida,
UP 201 301
Ph:0120-4270620
Fax: 033-2499-0280

Kolkata

304, Jodhpur Park
Kolkata 700 068
Ph:033-65343188