



Fosroc® Polyurea WPE

Fast setting, pure polyurea elastomeric waterproof coating

Description

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

See Fosroc Polyurea Method Statement for application protocol and further details.

Uses

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

Typical applications include:

- Below and above ground waterproofing
- Pipe coatings
- Bridge piers/ deck waterproofing
- Water tanks
- Marine
- Theme parks/ Waterparks
- Aquarium lining
- Stadia
- Line striping
- Secondary containment
- Green roofs
- Tunnel lining
- Swimming pools

Specification

Where mentioned in the contract drawings, the protective and waterproofing coating shall be Fosroc Polyurea WPE, a 100% solids, flexible, two component, rapid curing pure Polyurea coating system providing high corrosion resistance, abrasion and thermal shock resistance.

Advantages

- Environment friendly – 100% solids
- 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
- Colour stable when coated with Nitoproof UVR Topcoat **
- Fire rated when coated with Nitoproof UVR Topcoat **
- Can be applied at ambient temperatures from -30°C to +70°C ***
- Designed for service temperatures from -30°C to +135°C ****

* see Chemical Resistance and Colour sections

** see Nitoproof UVR Topcoat Data Sheet

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

**** for high temperature applications, consult Fosroc for specific advice

Properties

Typical Physical properties at 23°C

Solids by Volume	: 100%
Viscosity	: A ISO =1000 mPas : B AMINE <1200 mPas
Density at 25°C, sprayed film	: 1.01 g/ml
Tensile strength ASTM D412	: >19 MPa
Modulus 100%/ 200%/ 300% ASTM D412	: > 9/ 13/ 16 MPa
Tear Resistance ASTM D624C	: 90 ± 4 N/mm
Elongation ASTM D412	: >300%
Shore D ASTM D2240	: 46
Abrasion (1kg,CS10 wheels) ASTM D4060	: 0.4 mg /1000 cycles
Abrasion (1kg,CS17 wheels) DIN EN ISO 5470	: 10 mg /1000 cycles
Abrasion (1kg,H22 wheels) ASTM D4060	: 36 mg /1000 cycles
Service temperature range	: -30°C to +100°C *

*excursions to 140°C acceptable, e.g steam cleaning operations, bridge deck asphaltting operations.



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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.

Certification

Root Resistant to CEN TS14416.

Fire Rated as roof waterproofing to BS476-3: EXT F.AA when coated with Fosroc Nitoproof UVR Topcoat.

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.

Project Log

A Project Log should be maintained for each polyurea site application. For details of Project Log requirements refer to the Fosroc Polyurea Method Statement.

Instructions for use

Surface preparation

All surfaces must be clean, dry and free from contamination. Metal surfaces must 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 D4259, 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. must 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 must be minimum 2 mm.

The steel must be of first class quality and must 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 2½. (ISO 8501-1:2007). Roughness: using abrasives suitable to achieve a coarse surface of Grade Medium G (50-85µm, Ry5) (ISO 8503-2).

Priming

Following correct preparation, the substrate must be primed. For sound, dry concrete and at ambient/substrate temperatures of $\geq 10^{\circ}\text{C}$, prime using Fosroc Nitoprime 31. If this condition or concrete substrate condition is not met (see Limitations), then Fosroc Primer 195 must be used. For steel surfaces use Primer 195, for other surfaces consult Fosroc for advice.

For concrete, suggested application rate is 0.25kg per m^2 ; For steel substrates, a suggested rate of 0.15kg per m^2 . A broadcast of fire-dried sand is recommended for optimum adhesion properties, to give additional mechanical key.

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

Refer to Fosroc Polyurea Method Statement for full details.

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 provided in the Fosroc Polyurea Method Statement.



Chemical Resistance Chart				
ASTM D3912 – primed concrete and primed steel				
Chemical	72 hours immersion		6 months immersion	
	Result	Max service temp.	Result	Max service temp.
Anti-freeze (Texaco)	R	50°C	R-DIS	50°C
Brake fluid	R-C	50°C	R-C	50°C
Hydraulic Oil	R	50°C	R-DIS	50°C
Motor Oil	R-DIS	50°C	R-DIS	50°C
Kerosene	R	25°C	R-C	25°C
Diesel Fuel	R	25°C	R-DIS	25°C
Petrol	R-DIS	25°C	R-C	25°C
Skydrol	NR		NR	
Sodium hydroxide (10%)	R	50°C	R	50°C
Sodium hydroxide (25%)	R	50°C	R	50°C
Sodium hydroxide (50%)	R	50°C	R-DIS	50°C
Potassium Hydroxide (50%)	R	50°C	R	50°C
Ammonia (0.880) 33%	R	25°C	R-DIS	25°C
Sea water	R	50°C	R-DIS	50°C
Urea (10%)	R	50°C	R	50°C
Urea solution conc.	R	50°C	R-DIS	50°C
Sugar solution conc.	R	50°C	R-DIS	50°C
Bleach (5%)	R-DIS	50°C	R-DIS	50°C
Butanol	R-C	25°C	NR	
Industrial Methylated spirits	NR		NR	
Acetic Acid (10%)	R	50°C	Concrete R-DIS Steel NR	50°C
Lactic Acid (10%)	R	50°C	R-DIS	50°C
Lactic Acid (20%)	R	50°C	R-C	50°C
Citric Acid (10%)	R	50°C	R-DIS	50°C
Citric Acid (50%)	R	50°C	R-C	50°C
Tartaric acid (50%)	R	50°C	Concrete R-DIS Steel R-C	50°C
Oleic Acid (100%)	R-DIS	50°C	NR	
Phosphoric Acid (10%)	R	50°C	R-C	50°C
Hydrochloric acid (20%)	R-C	50°C	R-C	50°C
Hydrochloric acid Conc.	NR		NR	
Nitric acid (30%)	R-C	25°C	NR	
Sulphuric Acid (10%)	R	50°C	R-DIS	50°C
Sulphuric Acid (70%)	R-C	25°C	NR	

- R : Resistant
- R-DIS : Resistant – Discolouration only
- R-C : Resistant – Conditional; discolouration and/or slight softening or swelling
- NR : Not Resistant

Note: The chemical resistance detail given above is a guideline based on laboratory testing in controlled conditions; results from the field may vary due to actual conditions on site; contact Fosroc for further advice.



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Colour Stable Topcoat

If colour stability is required, a minimum 0.2mm film of Fosroc Nitoproof UVR Topcoat of the appropriate colour should be applied. See product data sheet.

Nitoproof UVR Topcoat should be applied to clean, dry Polyurea WPE surface within 48 hours of polyurea application. If >48 hours has elapsed since polyurea application, polyurea surface should be reactivated using a Fosroc Nitoprime 150 wipe and allowed to dry prior to application of Nitoproof UVR Topcoat.

Refer to Fosroc Nitoproof UVR Topcoat product data sheet and Fosroc Polyurea Method Statement for further detail.

Estimating

Supply:

Fosroc Polyurea WPE Part A ISO component

Drums : 200 litres

Fosroc Polyurea WPE Part B AMINE component

Drums : 200 litres

or

Drums : 195 litres + colour pack

Fosroc Nitoprime 31

Metal containers : check with Fosroc office

Fosroc Primer 195

Metal containers : 20kg packs

Fosroc Nitoprime 150

Plastic containers : 1 litre packs

Fosroc Nitoproof UVR Topcoat

Plastic containers : 5 kg, 10 kg packs

Coverage:

Fosroc Nitoprime 31/ : 0.25kg per m² (concrete)

Fosroc Primer 195 : 0.15kg per m² (steel)

Fosroc Polyurea WPE : 1.0 – 3.0 litres per m² *
depending on specification

Fosroc Nitoproof UVR : 16 m² per 5kg pack for
Topcoat : 0.2mm film **

: 32m² per 10kg pack for
0.2mm film **

* Normal recommended coverage is 1.5 litres per m². 1.0 litre/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.

** Nitoproof UVR Topcoat should be applied as a minimum 0.2mm film, to achieve 100% opacity.

Storage

Fosroc Polyurea WPE 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.

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 WPE, Fosroc Nitoprime 31, Fosroc Primer 195 and Fosroc Nitoproof UVR Topcoat may cause sensitisation.

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 product safety data sheets for detailed information.

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 WPE, Fosroc Nitoprime 31 or Fosroc Primer 195 under any circumstances.

Normal recommended minimum applied thickness of Fosroc Polyurea WPE is 1.5mm, using cross-hatch spray pattern.

Applied product can be walked on carefully after approximately 2 mins; is light duty trafficable (e.g. light foot traffic) after approximately 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.

For field/day joints for applications >12 hours after the previous polyurea coating application, a Nitoprime 150 wipe is required, and allowed to dry prior to fresh polyurea application.

Use appropriate non-solvent chemical for the flushing of equipment.

In the case of prolonged product 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.



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Limitations

Do not proceed with application if atmospheric relative humidity is >90% or if the surface temperature is <3°C above the dew point.

For a bonded polyurea coating application, concrete substrate must have achieved at least 75% of its design strength. Concrete relative humidity must be ≤75%. Do not proceed with application if the substrate temperature or the ambient temperature is, or is anticipated to be, <+5°C during the application.

For work in exposed areas, do not proceed with application if precipitation is imminent.

If in doubt, contact Fosroc for advice.

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

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 WPE, cured Fosroc Nitoprime 31, cured Fosroc Primer 195 and cured Nitoproof UVR Topcoat can be disposed of without restriction. The uncured Part A and Part B components should be disposed of according to local environmental laws and ordinances.

“Drip free” containers should be disposed of according to local environmental laws and ordinances.

Refer to safety data sheets for all relevant information on Fosroc Polyurea WPE, Fosroc Nitoprime 31, Fosroc Primer 195, Fosroc Nitoprime 150 and Fosroc Nitoproof UVR Topcoat.

Information

Fosroc manufactures a wide range of complementary products which include :

- waterproofing membranes & waterstops
- joint sealants & filler boards
- cementitious & epoxy grouts
- specialised flooring products

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
- chemically 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.

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Important note

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