

SECTION A - Introduction

This document is offered by Parchem as a 'standard proposal' for the application of Nitoflor PU600 and Nitoflor PU200 polyurethane cement flooring to concrete floor substrates. It remains the responsibility of the contractor to determine the correct method for any given application.

This document should be read in conjunction with the product Technical Data Sheet (TDS) and the information considered carefully in the context of how the product will be used, including in conjunction with any other product and the type of surfaces to, and the manner in which, the product will be applied.

Quality Control Procedures

Product batch numbers must be recorded on delivery along with the compilation of certificates of conformity. A Project Log should be maintained throughout the course of the project, this should include batch numbers of product components.

Environmental Conditions

Ideal conditions below should be met, for application work to be carried out. Several readings per day of air and surface temperatures, humidity and dew point should be taken and recorded in the Project Log.

Air temperature +10°C to +30°C

Surface Temperature +5°C to +30°C

Materials temperature +15°C to +25°C;

Weather Conditions; the relative humidity must be $\leq 95\%$ and surface temperature must be at least 3°C above the dew point and rising.

High and Low temperature working

It is suggested that, for air temperatures above 30°C or below 10°C, the following guidelines are adopted as good working practice:

- (i) Store unmixed materials in a temperature controlled, 20 -25°C environment, avoiding exposure to direct sunlight.
- (ii) Keep equipment cool, arranging shade protection if necessary. It is especially important to keep cool those surfaces of the equipment which will come into direct contact with the material itself.
- (iii) Try to avoid application during the hottest times of the day, arrange temporary shading as necessary.
- (iv) At lower temperatures, Nitoflor PU200 and Nitoflor PU600 should be applied only when the substrate temperature and the ambient temperature is above 3°C and rising.
- (v) Make sufficient material, plant and labour available to ensure that application is a continuous process.

Concrete Substrate Conditions

Substrate condition, substrate preparation methodology and repair work, primer used and coverage rate should be recorded in the Project Log.

The substrate must be designed to withstand all structural, thermal and mechanical stresses and loads which will occur during service. It must remain stable whilst protected by the synthetic resin flooring and be provided with all necessary expansion, contraction and crack inducement joints to enable it to do so. Failure of substrate to remain stable will invariably affect stability of the finish. In particular, cracking of the substrate, however caused, is likely to reflect in the finish.

Please note: differential expansion and contraction between the substrate and any applied finish can occasionally highlight weaknesses in the substrate, causing cracking, debonding or a premature failure.

The surface strength when assessed using a rebound hammer should be above 25 MPa and the surface tensile strength should exceed 1.5 MPa.

Equipment

It is suggested that the following list of equipment is adopted as a minimum requirement for the correct application of this material (N.B. Product users must adhere to current OH&S requirements applicable to their site and all statutory legislation):

Protective clothing

- Protective overalls
- Good quality gloves, goggles and face mask

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Preparation equipment

- Suitable equipment / materials to ensure proper preparation of the substrate (see section 1.0) such as Captive shot blasting and Anchorage Groove cutting equipment.

Mixing equipment

- Mixing pails
- Flat bladed knife for scraping down
- Forced action drum mixer, or
- Slow speed heavy duty mixer such a 140mm Helical mixing paddle fitted to a heavy-duty 1600W mixer or equivalent.

Application equipment

- Spiked roller and spiked shoes;
- Notched Spreading trowel and flat trowel
- Pin rake or Spreading rake
- Coving trowel
- Short haired (6mm) microfiber roller for PU200 coating

Application - points of note

Parchem operates a policy to encourage the use, where possible, of pre-qualified applicators. This helps ensure that the application is completed satisfactorily so that the long term performance of the product is assured. For contractors who wish to apply the materials themselves Parchem is also able to offer technical assistance and on-site training.

The client/ main contractor must be satisfied that the applicator has suitable equipment and expertise, and will follow the procedures detailed in this Method Statement and the relevant product data sheets.

Only Fosroc products are to be used in the application, with such products being sourced from Parchem directly.

SECTION B - Substrate Preparation

1.0 Surface Preparation

1.1 General Requirement

Concrete should achieve a minimum compressive strength of 25Mpa or higher and should have minimum tensile strength of 1.5Mpa. Substrates must be adequately designed to accommodate the in service stresses which could be encountered due to impact loads and thermal movement.

The substrate should be dry to less than 95% relative humidity and is to be measured using in-situ probes in accordance to ASTM F2170-09 – Determining Relative Humidity in Concrete Floor Slabs.

1.2 Dampproofing membrane

Concrete Floors must have an effective damp-proof membrane installed and be free from rising damp and ground water pressure. Damp-proof membranes must be incorporated beneath the floor slab and not laid directly beneath the Nitoflor PU600 flooring

1.3 Concrete Floors

All floor surfaces receiving the new polyurethane resin topping system shall be clean, sound, and free from loose material and any contamination, to achieve maximum adhesion.

All cementitious laitance is to be removed, to expose sound concrete and provide a clean, dry, dust free, open textured.



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Blasting is highly recommended as an effective method of surface preparation (floors) and to provide a suitable key. Abrasive blast or shot blast per ICRI Technical Guideline No.03732 or SSPC SP13. Achieve a concrete surface profile of ICRI CSP-3 to CSP-5. The minimum blast profile must be 75-100 microns.

Dust and other debris should then be removed by vacuum brush.

1.4 Concrete Walls

Wall surface preparation is to be undertaken by means of high pressure water blasting (4-6 thousand psi), or grit blasting, in order to obtain the required finish (ICRI 03732 CSP 2-3).

1.5 Remedial treatment

All large substrate cracks, holes and surface imperfections are to be primed, filled, and dry, prior to polyurethane floor topping system application, using an approved repair mortar system (Nitomortar 903 with F4 Fillers).

All repairs to the substrate must be completed in good time prior to the application of the Nitoflor PU600 floor.

2.0 Priming/Scratch coating

Whilst priming of the prepared concrete substrate is not typically required, due to the variation in the concrete condition (porous, surface irregularities) the use of Nitoflor PU200 as a primer or a Scratch coat of Nitoflor PU600 will assist the flow characteristics of the Nitoflor PU600 topping and reduce air ingress from porous concrete .

Option 1:- Scratch coat of Nitoflor PU600

This could be used on concrete substrate to control the moisture on “green” concrete or general application due to irregularities in the substrate.

Nitoflor PU600 should be applied as a scratch coat at a coverage rate of up to a nominal 1.5mm thickness; actual coverage rate will depend on concrete surface texture and porosity. This scratch coat is designed to prime and seal the floor. Mix and spread evenly by trowel. The scratch coat should be allowed to cure for 12 to 48 hours at 20°C before the application of Nitoflor PU600. If the scratch coat has been allowed to cure for more than 48 hours, then the coat must be thoroughly abraded and a fresh layer of scratch coat applied.

If pin holing is evident in the cured scratch coat, indicating that air is rising from the substrate, then remedial action should be taken. Failure to do so may result in increased risk of pin holing of the structure. Advantages of using the scratch coat is that the substrate imperfections can be duly filled.

The Scratch coat thickness needs to be considered while using Nitoflor PU600 topping in-order to achieve the requisite thickness

Option 2 :-Primer coat of Nitoflor PU200

Priming the substrate using Nitoflor PU200 as a primer with broadcast of Quartz sand #16/30 (Nitoflor Anti-Slip Grains 01). The purpose of the broadcasting is to provide sufficient grip to the surface for the subsequent applications.

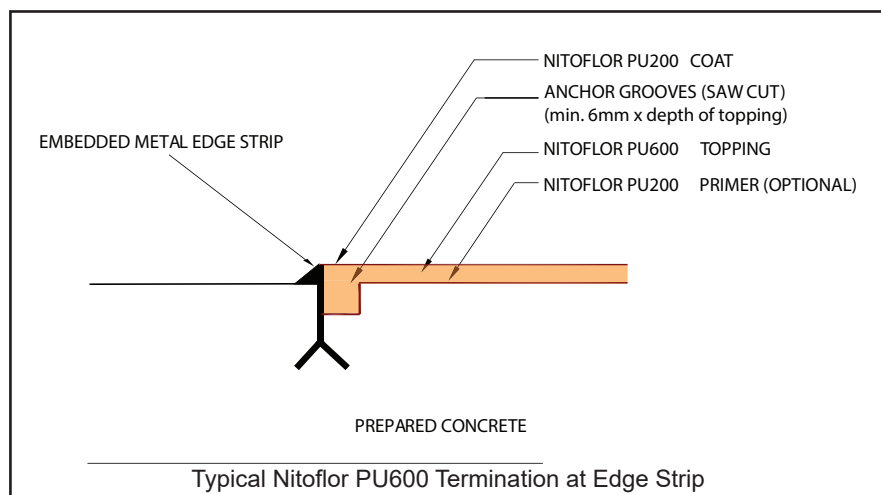
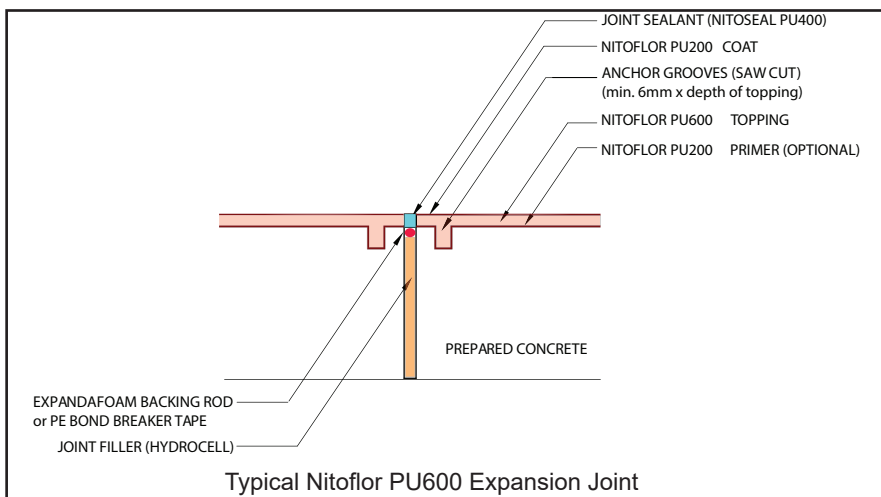
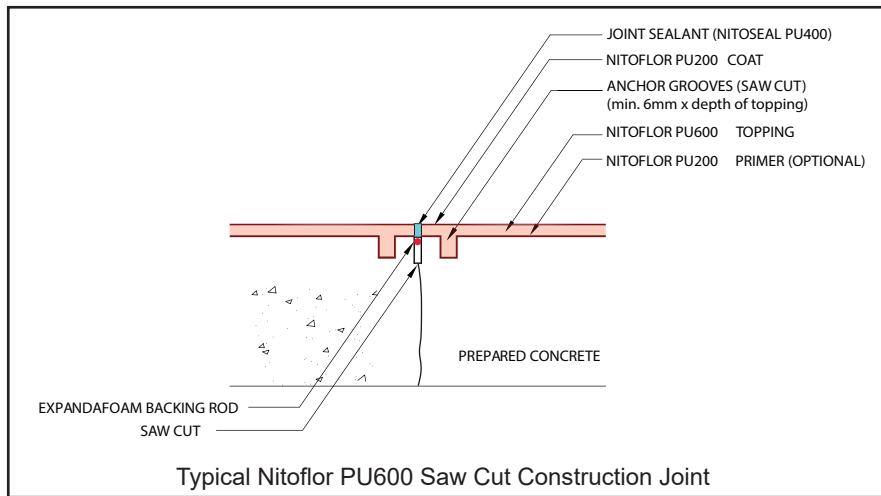
3.0 Anchorage Grooves

- 3.1 Anchorage points are necessary to aid in the distribution of mechanical stress from temperature changes and shrinkage in the floor finish.
- 3.2 Anchorage groove should be cut to a minimum depth and width of 2x the floor thickness to be laid, 100mm in from the floor topping perimeter around walls, columns etc.
- 3.3 Anchorage points are also to be provided to all penetrations, bay joints, drains, doorways, around columns and at regular centres (typically every 6 metres) across the floor.

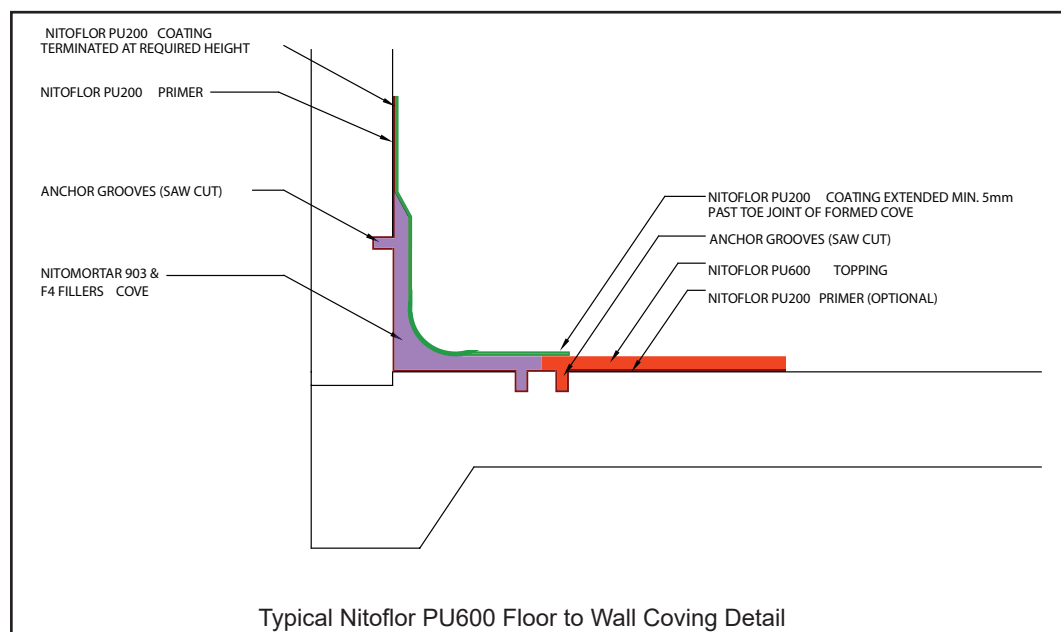
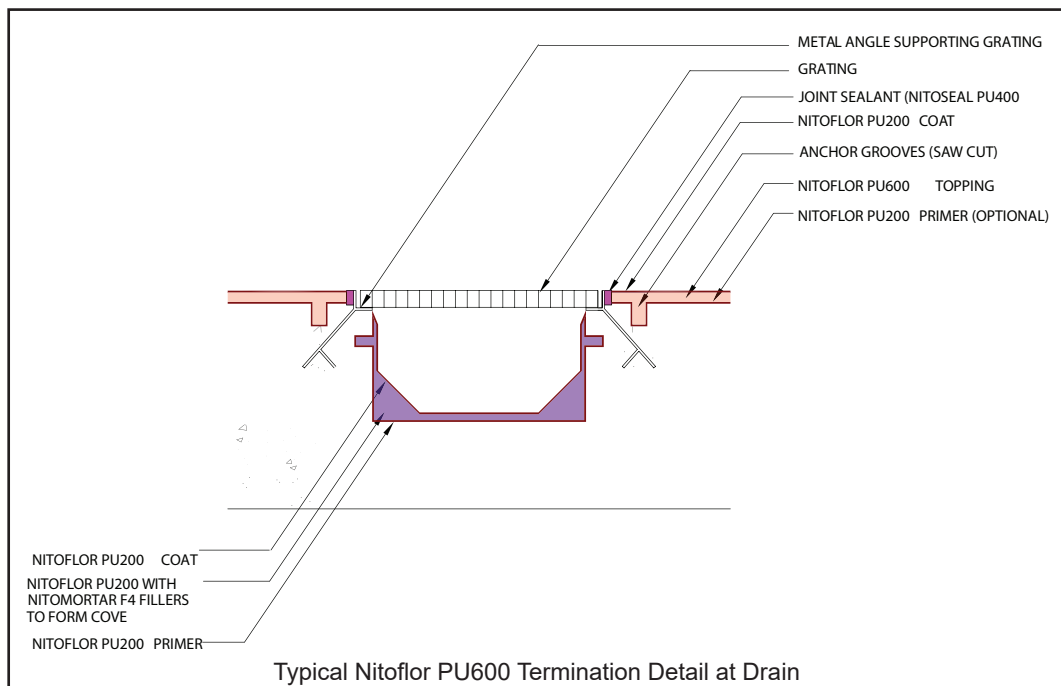
The following pages contain typical details of anchorage grooves at joints and walls. The positioning, spacing and number of anchoring grooves should be decided prior to the application beginning and re-assess each day to match the expected day's work.



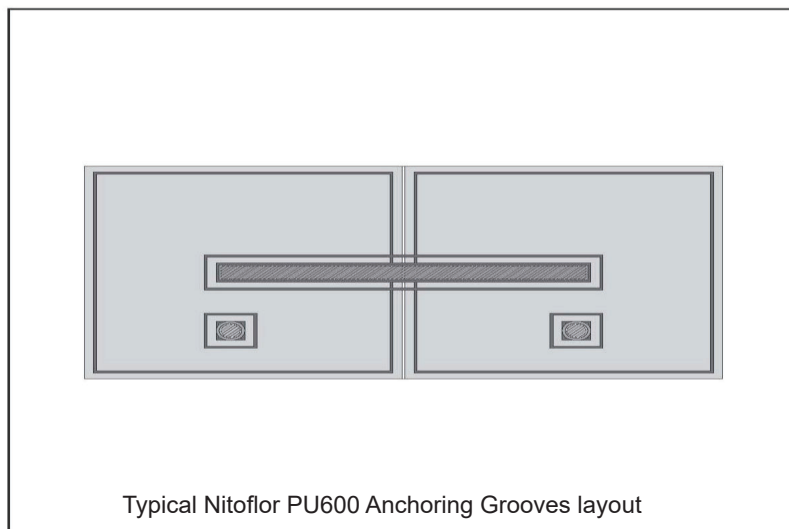
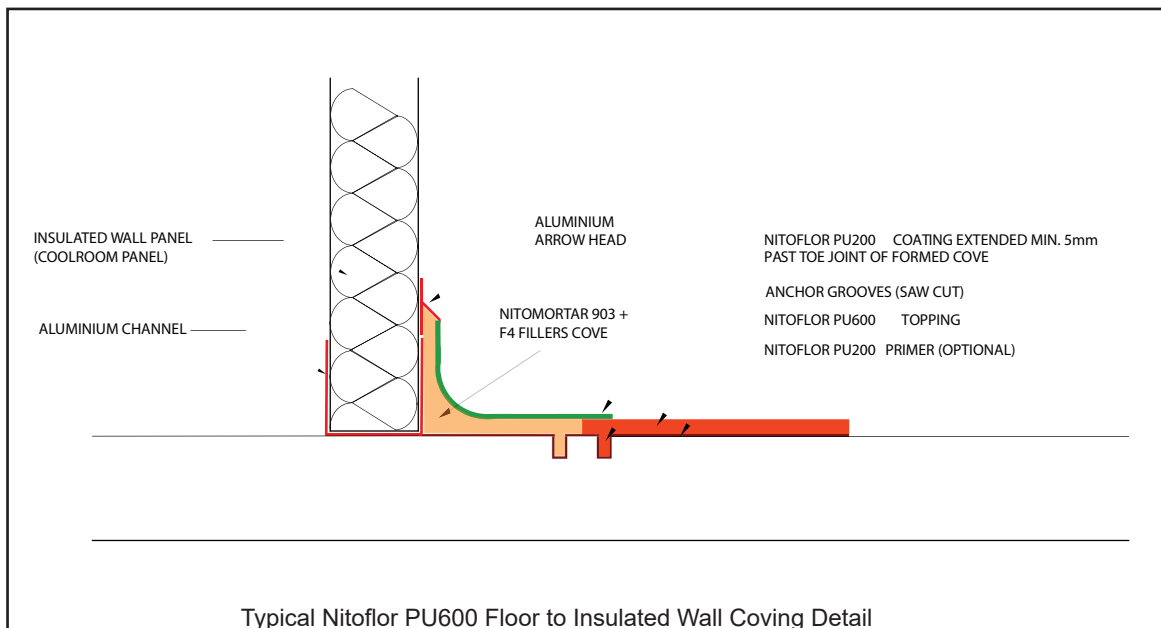
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4.0 Coving application – thermal resistance up to 55°C

- 4.1 **Coving Mortar.** Nitomortar 903 mixed with Nitomortar F4 Fillers can be used to for coving at floor to wall junctions and other upstands. Due to the Nitomortar 903 epoxy having a lower service temperature, these coving should only be used in areas where the maximum exposure temperature will be less than 55°C. Refer to the Nitomortar 903 TDS for mixing details for various mortar consistencies.
- 4.2 **Coving Top coat.** Nitoflor PU200 can be applied onto the coving in one or two coats for sealing.

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SECTION C - Application

5.0 Mixing Nitoflor PU600

- 5.1 **IMPORTANT:** When applying at ambient temperature 10°C or below, all components should be pre-conditioned to approximately 20°C to 25°C for 24 hours prior to application.
- 5.2 Pack components are pre-weighed for optimum performance. Never split or proportion packs.
- 5.3 Vigorously shake Nitoflor PU600/PU200 Part A to redisperse any settlement. Pour the Part A component into a suitable mixing container.
- 5.4 Then mix with Nitoflor PU Colour Pack until uniformly tinted, ensure the mixed product is of uniform consistency.
- 5.5 Add the Part B (Hardener) component and mix with a slow speed drill and large spiral mixer for 2 minutes, taking care not to entrain air.
- 5.5 Add Nitoflor PU600 Part C, and mix until uniform. Take care not to entrain air.

6.0 Application Nitoflor PU600

- 6.1 Material has a pot life of approximately 15 minutes at 25°C.
- 6.2 Immediately after mixing, spread the Nitoflor PU600 using a steel trowel or gauging rake onto the concrete floor (Primer or Scratch coat as optional), to the required thickness.
- 6.3 Immediately roll with a spiked roller to release any entrapped air. The rolling should be carried out using a 'back and forth' technique along the same path. An overlap of 50% with adjacent paths is recommended. Further light rolling may be required to remove surface imperfections, or for subsequent release of trapped air, but should be carried out promptly.
- 6.4 Do not roll the surface after 8 minutes following application, dependent on temperature. Late spike rolling will cause surface texture.
- 6.5 Immediately after applying and spike rolling the Nitoflor PU600, broadcast to full cover the slip resistant aggregate ensuring an even finish is achieved. Allow to cure. Typically a minimum of 5 hours @25°C.

7.0 Mixing Nitoflor PU200

- 7.1 Pack components are pre-weighed for optimum performance. Never split or proportion packs.
- 7.2 Vigorously shake Nitoflor PU600/PU200 Part A to redisperse any settlement. Pour into a suitable large container. Now add the Nitoflor PU200 Part C while mixing with a suitable mixer, then add Nitoflor PU Colour Pack and continue to mix until a uniform colour is achieved.
- 7.3 Nitoflor PU200 Part B should be added after mixing Part A, Part C and Pigment paste and mix for a further 2 minutes.

8.0 Application Nitoflor PU200

- 8.1 Please note this material has a pot life of approximately 10 minutes at 25°C.
- 8.2 Apply the Nitoflor PU200 by squeegee and roller to fully seal the surface. Ensure the coating is applied evenly taking care that the slip resistant aggregate is fully exposed, avoid overfilling the aggregate.
- 8.3 Nitoflor PU200 has a short pot life - do not apply the product out of a roller tray.

9.0 Expansion Joints

- 9.1 All expansion and crack propagation joints formed in the floor base must be carried through the Nitoflor PU flooring and it is advisable, when forming expansion joints around columns and equipment set in the floor, to include radial corners to avoid stress-creating angles. A minimum 50mm radius is advised.

Experience has shown that it is normally advantageous to form expansion joints in the base floor around areas which may be subjected to thermal or vibrational movement in service.

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Typical situations include:

- Boundaries between different floors or flooring materials
 - Load supporting columns set in the floor
 - Areas around ovens, freezers and other process equipment
- 9.2 All joints must be filled with a suitable joint sealant. The best joint sealant for any particular application will depend upon the width of the joint and the amount of anticipated movement as well as the chemical nature and temperature of any spillages likely to impact upon the floor.
- 9.3 In the food industry a deteriorating sealant may allow water ingress and a build-up of microbial contamination so it is critical that joints are properly designed, detailed and installed. They should also be visible / accessible for inspection and maintenance as required.
- 9.4 A compromise should be reached over the number of joints designed into the floor. It is good practice to minimise the number of joints to maintain as far as possible a seamless surface that will be easy to maintain. The spacing of movement joints must be determined by the design of the subfloor. All live movement joints in the subfloor must be carried through the resin flooring].

10.0 Cleaning

- 10.1 Nitoflor PU200 and Nitoflor PU600 should be removed from tools and equipment with Fosroc Solvent 10 immediately after use. Hardened material can only be removed mechanically.

Important notice

Safety Data Sheets (SDS) and Technical Data Sheets (TDS) are available from the Fosroc website. Read the SDS and TDS carefully prior to use as application or performance data may change from time to time. In emergency, contact any Poisons Information Centre (phone 13 11 26 within Australia) or a doctor for advice.

Product disclaimer

This Application Guide summarises our best knowledge of the product, including how to use and apply the product based on the information available at the time. You should read all literature carefully and consider the information in the context of how the product will be used, including in conjunction with any other product and the type of surfaces to, and the manner in which, the product will be applied. Our responsibility for products sold is subject to our standard terms and conditions of sale. Parchem does not accept any liability either directly or indirectly for any losses suffered in connection with the use or application of the product whether or not in accordance with any advice, specification, recommendation or information given by it.



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