



constructive solutions

Slip Resistant Flooring using broadcast aggregates

Slip resistant flooring is critical to meet safety requirements and create an accident-free environment. Slip hazards can be attributed to a number of causes including type of surface material, degree of wear, maintenance, presence of water or other liquids, type of footwear and slope of the surface. The floor finish is therefore a key factor in achieving the required slip resistance rating.

Most floor coatings develop an inherent degree of slip resistance depending on the coarseness of the finish. For example, Polyurethane cement products naturally develop higher degrees of slip resistance compared to Epoxy based coatings.

It is important to note however, that a coarse finish does not guarantee a high slip resistance rating. In addition, low to high slip resistance is independent of whether chemical resistance is required, so you must ensure the product and slip resistance solution you choose satisfies the required slip rating.

SLIP RATINGS

There are 4 types of slip resistance ratings that may be encountered for internal or external floors. You will find products that report results for some, or in many cases all, ratings.

Testing is performed in a laboratory according to test methods detailed in AS4586: 2013 Slip resistance classification of new pedestrian surface materials. The resultant slip ratings are indicative of the coating being applied in accordance with directions in the Technical Data Sheet. Tests are performed on newly coated surfaces and therefore do not take into account wear which can affect the long-term slip resistance of some surfaces.

Below is a summary of the tests and resultant ratings.

Test name	Used for	Rating
Dry floor friction test	Slip resistance of dry surfaces, the results are not applicable for the same surface in the wet condition.	D1/D0
Wet pendulum test	Slip resistance of surfaces when wet.	P0-P5
Wet-barefoot inclining platform test	Slip resistance of surfaces intended for applications which become wet during normal use and are subject to barefoot traffic.	A/B/C
Oil-wet inclining platform test	Slip resistance of surfaces intended for industrial applications where footwear is required.	R10-R13

The dry floor friction test and wet pendulum test can be performed on-site for verification of the slip rating achieved after application and drying, Fosroc does not perform this testing, it must be completed by a contracted professional.

WHAT LEVEL OF SLIP RESISTANCE DOES A FLOOR NEED TO MEET?

For guidance and recommendations on the minimum degree of slip resistance required for common applications refer to HB 198:2014 – Guide to the specification and testing of slip resistance of pedestrian surfaces, published by Standards Australia.

The National Construction Code (NCC) also specifies ratings, but for a limited number of applications.

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USE OF AGGREGATES

In many cases, the coating alone will not provide the required slip resistance. In this case, most commonly, broadcast aggregates are used to develop the necessary degree of slip resistance and meet the required slip resistance rating. In some cases, a coating may already have the slip resistance aggregate incorporated within the product, or the aggregate may be able to be stirred in to the product.

The most common types of broadcast aggregates used in the industry are Silicon dioxide/Silica sand, Aluminium oxide, Calcined bauxite and Silicon carbide. Selection of the appropriate aggregate will depend on the type of area and industry in which the floor is in service.



As a guide:

- Silicon dioxide/Silica sand is recommended for general purpose dry applications, medium duty storage areas and loading/unloading bays, it does not have the durability of Aluminium Oxide, Calcined Bauxite or Silicon Carbide.
- Aluminium Oxide and Calcined Bauxite are recommended for heavy duty areas, including wet processing areas and cold rooms where good durability is required.
- Silicon Carbide is the most durable option and is recommended for any area where durability can not be compromised.

Check the usage instructions of the chosen aggregate, all aggregates are not compatible with all coatings and may cause application issues if not used correctly.

DOSAGE RATE

Aggregates can be applied at a range of dosage rates, from lightly broadcast - sparse, to maximum, blinding coverage. The dosage rate affects not only the slip resistance achieved, but also the appearance and cleanability of the floor.

- The more aggregate that is applied, the more difficult the surface is to clean.
- A lighter broadcast of a larger aggregate makes the floor easier to clean, but can still achieve good slip resistance.

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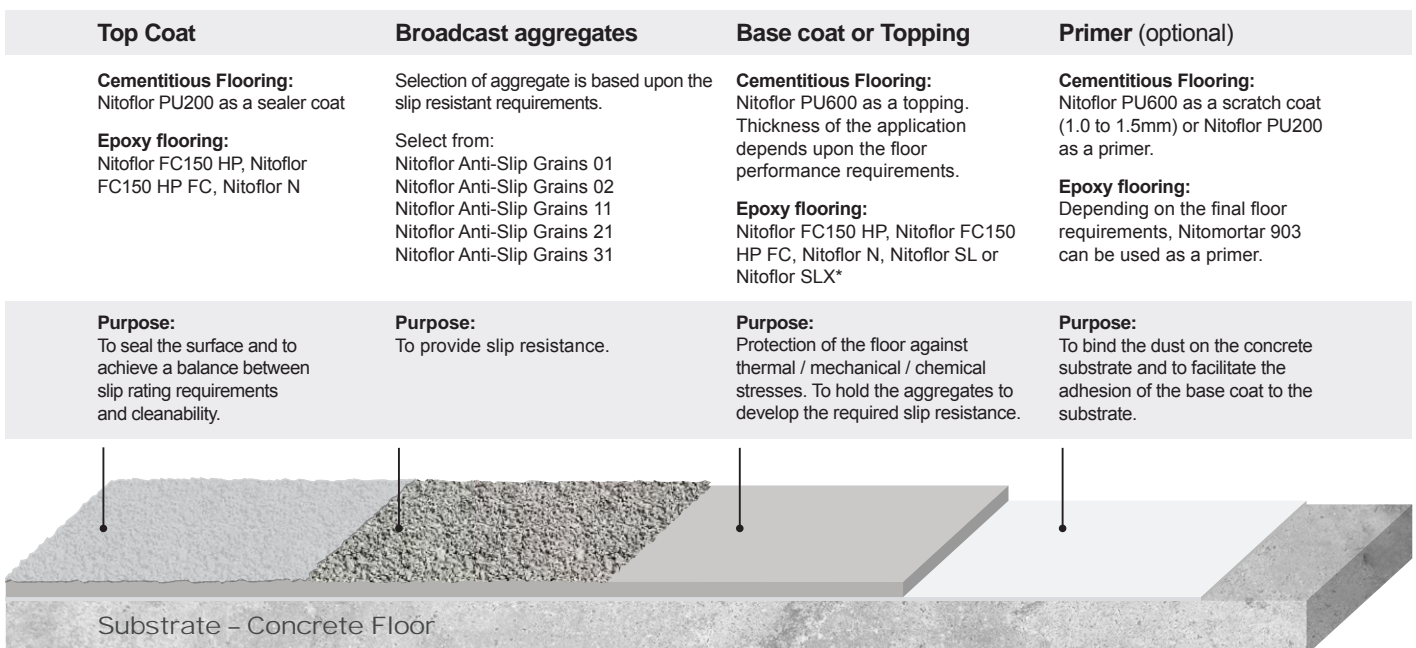
THE NITOFLO[®] ANTI-SLIP GRAINS RANGE

The Nitoflor Anti-Slip Grains range provides slip resistant options for epoxy roll-coats, polyurethane cement systems and tamping into wet concrete.

Name	Technology	Nominal size	Colour	Primary use	Recommended dosage (broadcast)
Nitoflor Anti-Slip Grains 01	Graded #16/30 silica sand	0.5 – 1.0mm	Natural sand	For use with Nitoflor epoxy roll-coats and polyurethane cement flooring systems.	Epoxy roll-coats: Light effect: 50 to 100g/m ² Fully blinding: up to 500g/m ² Polyurethane cement: 3 to 4kg/m ²
Nitoflor Anti-Slip Grains 02 (Previously known as Nitoflor Medium Grit)	Graded #30/60 silica sand	0.25 - 0.5mm	Natural sand	For use with Nitoflor epoxy roll-coats.	Light effect: 50 to 100g/m ² Fully blinding: up to 500g/m ²
Nitoflor Anti-Slip Grains 11	>99% graded #16 Aluminium Oxide	0.5 – 1.0mm	White	For use with Nitoflor polyurethane cement systems. Ideal for wet zones and floors that require hot water or steam cleaning.	2 to 3kg/m ²
Nitoflor Anti-Slip Grains 21	>70% graded #16/30 Calcined Bauxite	0.5 – 1.0mm	Buff	For use with Nitoflor polyurethane cement systems. Ideal for wet zones and floors that require hot water or steam cleaning.	2 to 3kg/m ²
Nitoflor Anti-Slip Grains 31 (Previously known as Nitoflor Anti-Slip Grains)	>92% Silicon Carbide	0.5 - 1.4mm	Silvery/Black	For tamping into wet concrete to provide slip resistance as the concrete wears.	0.5kg/m ²

APPLICATION - BROADCAST

Nitoflor Anti-Slip Grains are broadcast on to the almost wet surface of the base coat then sealed with a top coat. The grains should be allowed to fall vertically on to the floor coating rather than be thrown across the surface, as this may cause ridges or scour the coating, and damage the film.



Note - diagram is for illustrative purposes only, final texture and appearance of the floor may differ.

*Aggregates can not be applied directly on to Nitoflor SL or Nitoflor SLX. They must be cured first, then Nitoflor FC150 HP or Nitoflor FC150 HP FC applied on top followed by the broadcast grains.

Tamping into wet concrete – Nitoflor Anti Slip Grains 31 are specifically designed for sprinkle on applications to suitably prepared concrete floor surfaces, either monolithically (on a new concrete slab), or with a suitable floor screed. Tamp in the grains flush with the surface using a steel trowel.



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SLIP RATINGS TABLE

Use this table as a guide to find a product and aggregate that will meet your slip resistance requirements. Results are based on application of the maximum recommended level of aggregate. All testing was completed by an independent third party. Test certificates can be requested from your Fosroc Representative.

Technology	Basecoat	Aggregate – broadcast to excess	Topcoat	Slip rating			
				Dry Floor Friction	Wet Pendulum	Wet Barefoot Ramp	Oil Wet Ramp
Polyurethane Cement	Nitoflor PU200	Nil	Nil	D1	P4	N/A	N/A
		Anti-Slip Grains 01	Nitoflor PU200	D1	P5	B	R11
		Anti-Slip Grains 31	Nitoflor PU200	D1	P4	A	R10
	Nitoflor PU600	Nil	Nitoflor PU200	D1	P4	N/A	N/A
		Anti-Slip Grains 01	Nitoflor PU200	D1	P5	C	R11
		Anti-Slip Grains 11	Nitoflor PU200	D1	P5	C	R12
		Anti-Slip Grains 21	Nitoflor PU200	D1	P5	C	R13
Solvent Free Epoxy	Nitoflor FC 150 HP	Nil	Nitoflor FC 150 HP	D1	P1	N/A	
		Anti-Slip Grains 01	Nitoflor FC 150 HP	D1	P5		
		Anti-Slip Grains 02	Nitoflor FC 150 HP	D1	P5		
		Anti-Slip Grains 31	Nitoflor FC 150 HP	D1	P5		
	Nitoflor FC 150 HP FC	Nil	Nil	D1	P0	N/A	
		Anti-Slip Grains 01	Nitoflor FC 150 HP FC	D1	P5		
		Anti-Slip Grains 02	Nitoflor FC 150 HP FC	D1	P5		
		Anti-Slip Grains 31	Nitoflor FC 150 HP FC	D1	P5		
	Nitoflor SL	Nil	Nil	D1	P0		
	Nitoflor SLX	Nil	Nil	D1	P1		
Solvent Free Novolac Epoxy	Nitoflor N	Nil	Nil	D1	P1	N/A	
		Anti-Slip Grains 01	Nitoflor N	D1	P5		
		Anti-Slip Grains 02	Nitoflor N	D1	P5		
		Anti-Slip Grains 31	Nitoflor N	D1	P5		

Other slip ratings can be achieved by using different dosage rates of aggregate, contact your Fosroc Representative for more information.



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PRODUCT DETAILS

Description	Size	Product code
Nitoflor Anti Slip Grains 01	20kg	FC611080-20kg
Nitoflor Anti Slip Grains 02	20kg	FC605185-20kg
Nitoflor Anti Slip Grains 11	20kg	FC611081-20kg
Nitoflor Anti Slip Grains 21	20kg	FC611082-20kg
Nitoflor Anti Slip Grains 31	20kg	FC605180-20kg



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