InOrthane (4 component self-smoothing, resilient flooring based on INOR IPN technology)

Dr Cipy
SPECIALIZED FLOOR COATINGS

TYPE 3 EFNARC GUIDELINE

FLOOR COATING

Description

InOrthane is self-smoothening, fast setting floor topping based on inorganic-organic hybrid interpenetrating network (Inor-IPN). The integration of both organic and inorganic materials is typically performed to improve performance characteristics. It is a four-component, resilient self-smoothening flooring recommended for the most robus applications in the industry. InOrthane is designed to provide an extremely abrasion, impact, and chemical resistant floor topping, which can be installed on 10 days cured concrete substrates. InOrthane is available in limited colours, applied at a minimum thickness of 2mm.

Uses

- Automobile floors with heavy traffic movements
- Warehouses and loading docks
- Light & heavy engineering industries
- Hangars
- Pharmceuticals
- Defence
- Food & Beverages

Key features

- Extremely high wear resistant.
- Fast setting.
- High impact and chemical resistant
- More durable than most of the flooring systems
- Moisture tolerant
- Resilient
- Enviornment friendly, low VOC.

Properties

Type	:	INOR IPN technology
Finish	:	Silky matt
Drying time at RH 50% ASTM D 1640		
Surface dry	:	90 min
Tack free dry	:	3 - 4 hrs
Hard dry	:	24 hrs

Mixing ratio	:	Pre-weighed kit
Shades	:	8 shades
Volume Solids ASTM D 2697	:	100%
Recommended DFT ASTM D 7091	:	2 - 3 mm
Working time (including mixing period)	:	12-15 min (at 25ºC)
Shelf life in unopened container	:	12 months

Performance data

The mandatory performance parameters as per FeFRA and EFNARC guidelines for resin flooring system

Pull of adhesion test ASTM D 7234-2022	:	≥ 2 MPa for M20 grade concrete or Concrete failure
Abrasion resistance ASTM D 4060-2019 CS 17, 1 kg, 1000 cycles	:	Maximum 13 mg loss
Impact test ASTM D 2794 - 1993	:	≥ 9.81 N - m
Slip resistance, Dry condition EN 13036-4-2011	:	44 PTV

Other mechanical properties

Elongation ASTM D 638	:	≥ 3.5%
Flexural strength ASTM D 638	:	≥ 20 MPa
Hardness, Shore D ASTM D 2240-2015	:	≥ 75
Scratch hardness Moh's Scale	:	8

Note : The typical physical properties given above are derived from testing in a controlled laboratory environment. Results derived from testing field-applied samples may vary, dependent on actual site conditions

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Chemical resistance (ASTM D 1308) 24 hrs spot test

InOrthane flooring systems have excellent resistance to various chemicals. A full list is available with us. Some chemicals may cause stain, but it is universally accepted that staining is not considered as performance failure.

No	Name of the chemical		Result	No	General chemicals		Result
1	Hydrochloric Acid : 20%	:	White stain	1	Tea	:	No stain
2	Sulphuric Acid : 50%	:	White stain	2	Coffee	:	No stain
3	Acetic Acid : 36%	:	White stain	3	Cold drink	:	No stain
4	Phosphoric Acid : 30%	:	White stain	4	Vinegar	:	White Stain
5	Sodium Hydroxide : 50%	:	No stain	5	Tomato Ketch up	:	No stain
6	M E K	:	No stain	6	Red wine	:	No stain
7	Methanol	:	Slight stain	7	Sugar Solution	:	No stain
8	Xylene	:	No Stain	8	Soap Solutiom	:	No stain
				9	HNO3 - 10% Nitric acid	:	Yellow stain
				10	Motor oil	:	No stain
Note : ** Stain mark does not change the properties of material.				11	Water	:	No stain
				12	Turmeric solution	:	No stain
				13	Lizzol	:	No stain
				14	Dettol	:	No stain

Directions to use

The concrete substrate shall have a minimum compressive strength of 25 MPa with a minimum pull off strength of 1.5 MPa. Do not undertake execution of InOrthane on weak, porous substrates. Concrete surface must be clean, dry, and sound.

Surface preparation

Remove dust, laitance, grease, curing compounds or any other contaminants from concrete surface. All projections, rough spots, trowel marks (fins), etc. should be removed to achieve a level surface prior to flooring application. Concrete surface to be prepared by shot blasting or mechanical grinding to achieve CSP : 3-4. Scarification is not recommended

Anchor groove

Knowing the complex chemistry and curing mechanism, InOrthane in curing phase developes warping effect. Hence it's recommended to provide anchor grooves of double the thickness of Inorthane. All construction and control joints must be opened before scratch coat. Please refer method statement for further detail.

Scratch coat application

Once the surface is ready for application, scratch coat is applied on the substrate evenly @ 500 microns to ensure that all the porosities are properly sealed. Inspect the area after a few hours. If pinholes are still visible in the area, it indicates that the substrate is very porous in nature and need another scratch coat. If the scratch coat is left for more than 48 hours without topcoat, the surface needs to be abraded to create mechanical anchoring.

Top coat application

Topcoat is applied after 6 hours of curing of scratch coat. In a clean mixing bowl, add Resin, Hardener, EPI and Aggregate and agitate the mixture for 1 minute. The mixed material is taken to the application area and spread by a pin-rake roller at required thickness to produce a strip of material along the whole length of the application bay in order to facilitate allow for efficient trowelling and maintaining a wet joint for finishing. Use a spike roller to dislodge air.

Curing

Allow a minimum of 24 hours cure before light foot traffic at 30ºC. A minimum of 36 hours is required at low temperatures (5-10ºC). Heavy load traffic can be allowed after 48 hours.

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Packaging

InOrthane is available in pre-weighed kits containing resin, hardener, reactive aggregate and EPI. It has maximum shelf life of 12 months in the unopened containers. Resin (3.5 Kg), Hardener (5.25 kg), Aggregates (8Kg) and EPI (0.5 Kg).

Coverages

One kit will cover an area of 21.7 sqm of scratch coat @ 0.5 mm / 7.2 sqm of topcoat @1.5 mm thickness / 4.34 sqm @ 2.5mm.

Storage and handling

The product should be stored in accordance with national regulations. It should be kept in a cool, well-ventilated area, away from heat, direct sunlight, sparks, and children. Handle with care. Mix resin and hardener as per the ratio. Use the mix solution within the pot life

Precautions

The rising moisture : Moisture vapor transmission in the slab should be measured prior to application of polymeric systems to ensure a long lasting, durable installation. Please note, InOrthane floorings are not recommended for areas subject to hydrostatic pressure.

Pot lives : InOrthane systems have very short pot lives and hence mixing, laying and de-aeration should be done very swiftly. Application should be avoided when the temperature is very high. During hot weather, the pot life goes down further, while in cold weather, the pot life gets extended.

Health and safety precautions

Please refer to MSDS. Observe reasonable care and employ ordinary hygienic principles such as washing the hands with soap and water before eating or smoking. It is recommended to wear gloves, goggles, and nose masks while application. In case of splashes on the skin, dampen the cloth with water and wipe the hands with the cloth. Wash then with soap and water. Dried film is non-toxic. In case of contact with eyes, rinse with plenty of water and seek medical advice. In case of continuous exposure to vapour, the applicator should be immediately moved to get fresh air. The disposal of excess or waste material should be carried out in accordance with the local legislations

Limitations

Self-smoothening is a term used in the flooring industry to describe a composition which after being spread to a uniform layer of appropriate thickness, develops a smooth, resin-rich surface. This self-smoothing action is very localized and does not eradicate irregularities of level present in the original substrate.

It is not compatible for application over asphalt, unmodified sand-cement screeds or PVC tiles and sheets. InOrthane laid floor will be scratched due to nails or sharp objects protruding from machinery, packings, or trolleys moving on the floor. Presence of sand will also cause abrasion.

The product is not advised to be applied below 15°C as the flow reduces. While applying the product above 35°C, there can be a problem of low pot life etc., and it will be difficult to apply the material. Cured product is not suitable for exposure to sub-zero temperatures and above 65°C. When there is not enough material in a given area, roller marks caused due to spiked rolling may not close which will result in an undesirable finish. The product is not suitable for areas exposed to direct sunlight.

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Do's	Don't
Clean regularly	Drag any sharp and heavy object
Remove aggressive chemical spillage immediately	Expose to fire or welding spark
Maintain wheel for proper rolling, should not get dragged	Expose to very high temperature than recommended by Manufacturer
Handle heavy material gently and cautiously	Drop down and heavy material on the floor
Clean any oil or any liquid which may cause accident during people's movement	Expose to highly corrosive chemicals

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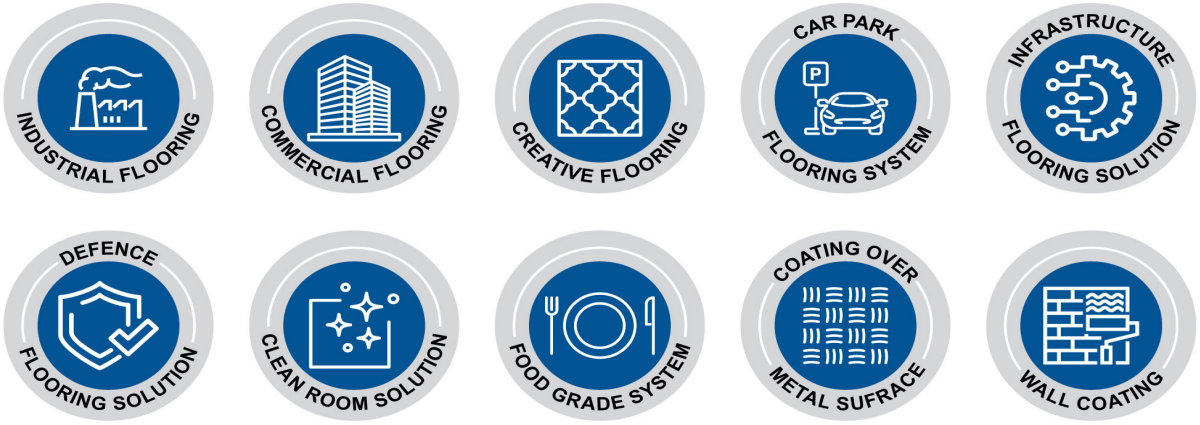

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