Duracrete MD

Flow applied, PU Concrete flooring (4-6 mm)

TYPE 7 EFNARC GUIDELINE

HEAVY DUTY FLOWABLE FLOORING

Description

Duracrete MD is a four-component PU concrete flooring recommended as robust floorings in food and beverage industries. Duracrete MD is a self smoothing polyurethane concrete flooring system designed to provide outstanding abrasion and chemical resistance and is generally applied at thicknesses 4-6 mm. Duracrete MD is available in a few limited colours. Duracrete MD does not support bacteria or fungal growth. It is inert, non-bio-degradable and is highly recommended for dry and semi-wet areas of F&B and pharma industries, where the highest standards of hygiene are required.

Uses

- Food processing industries
- Beverage plants
- Confectionaries
- Dairies
- Process industries
- Auto & engineering industries

Key features

- HACCP Certified
- Food Grade
- Chemical Resistant
- Slip resistance
- Resistant to extreme temperature and exhibits good thermal shock properties

Certified

Properties

Type	:	PU Concrete	Mixing ratio	: Pre-weighed packs
Finish	:	Matt	Colour	: Limited colours available
Pot life @ 27^{0}C ASTM D 2471	:	12 minutes	Volume Solids ASTM D 2697	: ≥ 98%
Drying time ASTM D 1640			Recommended DFT ASTM D 7091	: 4000-6000 microns
Surface dry Tack free dry Hard dry	: : :	60 - 90 min ≥ 3 hrs ≥ 24 hrs	Application by	: Trowel
Recommended thinner	:	PUT 502 (Clean up)	Shelf life	: 6 months in the unopened container

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 / Concrete failure
Impact resistance ASTM D 2794-1993	:	9.81 N.m (Falling weight : 1 kg)
Abrasion resistance ASTM D 4060-2019 CS 17, 1 kg 1000 cycles	:	Maximum 43 mg loss
Skid value : Pendulum test BS 8204	:	45 - 50 PTV - low slip potential

Other mechanical properties

Flexural strength ASTM D 790-2017	:	13.6 MPa
Tensile strength ASTM D 638	:	6.5 N/mm^2
Shore D ASTM D2240-2015	:	80
Resistance to spread of Flame EN ISO 11925-2	:	Class B_{fl} s1
Critical flux EN ISO 9239-1	:	12 kW/mm^2
Water absorption ASTM D 2247	:	0%

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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Speed of cure @ 30ºC

Light traffic : 12 hrs
Full traffic : 24 hrs
Full chemical cure : 6 days

Chemical resistance

Duracrete MD offers excellent chemical resistance to varied chemicals: from acids to solvents. Duracrete MD is resistant to many chemicals commonly encountered in food and beverage industries such as 50% acetic acid (vinegar), 30% lactic acid (acids present in milk and dairy products), citric acids (acid present in citrus fruits and limes), oleic acids (organic acid formed by oxidation of vegetable and animal fats). A full list of chemicals resistant to Duracrete MD is available on request. Strong solvents may soften Duracrete on continuous immersion, but the film will regain its strength once the solvent is evaporated. A few substances will make stains on Duracrete floors on continuous exposure. It should be noted that discolouration is not termed as film failure. Staining can be minimized by effective cleaning.

Design criteria

Duracrete MD is designed for application at a nominal thickness between 4 mm to 6 mm. thickness design criteria would depend on service temperature and chemical exposures.
Thickness selection
Service Temperature -15ºC to +80ºC : 4 mm
Service Temperature -25ºC to +90ºC : 6 mm

Important Notes

For application intended in areas continuously subjected to extreme service temperatures, please ensure strict adherence to the specified thickness of product is mandatory.

Instructions for preparation and use

Duracrete MD should be installed by specialist applicators, who must follow the procedures – Synthetic Resin Floorings, and the Duracrete Method Statement - PU Cementitious Flooring.

Application Conditions

Ideal ambient, material and substrate temperature range is 15 - 30ºC to achieve best results. The product components should be stored in a cool area (or warm area in the case of low ambient temperature), using localised forced cooling or heating equipment as appropriate, in order to bring product temperature within the ideal range The product can be applied outside this ideal temperature range (subject to a minimum of 10ºC and maximum of 34ºC). Surface finish may be subject to spike roller marks; however, in such cases physical properties and durability of the floor are not affected

Surface Preparation

Inadequate preparation will lead to loss of adhesion and failure. Shot blasting or scarification is therefore preferred for these systems. Acid etching is not recommended. Anchorage grooves should be cut to a minimum of twice the thickness to be laid, up to a maximum of 10 mm x 10 mm, which is higher, at the edges, day joints, up-stands, drains, doorways and at regular termination across the floor, and all debris removed. Concrete surface to be prepared with scarrifier to acheive CSP-4-5, depending on the thickness of Duracrete MD to be applied.

New concrete floors

The base should be a minimum of Grade M25 and should not contain a water repellent admixture. The surface strength when assessed using a rebound hammer should be above 25 or the surface tensile strength should exceed 1.5 MPa. The laitance and any surface sealer or curing membrane should be removed by mechanical means such as shot-blasting or grinding to expose the coarse aggregate. After surface preparation, all loose debris and dirt should be removed by vacuum equipment. For concrete bases in contact with the ground, a damp-proof membrane should have been incorporated into the slab design.

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Old concrete floors

All laitance and surface contamination should be removed by mechanical means such as shot-blasting or diamond grinding to expose the coarse aggregate. After surface preparation, all loose debris and dirt should be removed by vacuum. Heavy oil or grease deposits should be removed either mechanically, or by steam cleaning, or by biological treatment, then by high pressure water blasting followed by the application of a penetrating primer. Where oil or grease contamination has been severe or of long duration, these methods may prove unsatisfactory and in these cases removal of the affected base is necessary. In existing buildings without a functioning damp-proof membrane, the application of a surface-applied membrane should be considered. Hydrostatic pressure may, under certain circumstances, cause adhesive failure between the flooring and the substrate. Where this is likely to occur, such as in areas where the ground water table is higher than the substrate, and where external tanking has not been applied, pressure relief must be provided, e.g. by direct drainage.A close visual examination should be made to verify cleanliness and soundness. Any weak or suspect areas should be repaired.

Storage, Mixing & Application

Duracrete MD has a shelf life of 6 months if stored off the ground in unopened packs in a covered dry store at 10 -30ºC. Storage outside this temperature range or repeated fluctuations in storage temperature can reduce the storage life. Protect from frost.

Application Instructions

Priming/ Scratch coating : Duracrete MD should be applied as a primer/scratch coat at a coverage rate of up to a nominal 1 mm thickness; actual coverage rate will depend on concrete surface texture and porosity. This scratch coat is designed to prime and seal the floor. Mix (see Application below) and spread evenly by trowel. The scratch coat should be allowed to cure for 12 - 48 hours at 20ºC before applying the Duracrete MD top coat. If the scratch coat has been allowed to cure for >48 hours, then the coat must be thoroughly abraded and a fresh layer of scratch coat applied. If severe pin-holing is evident in the cured scratch coat, indicating that air is rising from the substrate, then remedial action should be taken. Contact your local Pidilite office for advice. Failure to do so may result in increased risk of pin-holing of the surface topping.

Application of Duracrete MD topping

Duracrete MD is a four component product.
A forced-action rotary paddle mixer is recommended for mixing the product. Drain the contents of the liquid base and DPI and to be mixed well for homogenous mixing, followed by liquid hardener components into a large plastic container and mix briefly. Add slowly the Part C and continue mixing for at least 1 minute, until a lump-free mix is obtained. Immediately discharge and spread the mix over the application area, using a notched trowel to achieve the required coverage rate, to built up minimum thickness of 3 to 5mm topcoat. De-aerate using a spiked roller. Spike rolling should be carried out within 10 minutes of application in order to avoid interfering with flow and surface finish. Ensure that anchorage grooves are fully wetted out with material. Do not return to spike roll older applied areas as the product is fast-setting and this action will leave spoiling marks on the applied floor. Polythene should not be used. Protect the installed floor from damp, condensation and water for at least 4 days.

Applications in Areas Intended for Hot or Cold Conditions

For these areas Dr.Cipy must be consulted before proceeding.

Cleaning : Regular cleaning is essential to maintain and enhance the life expectancy, slip resistance and appearance of the floor. Duracrete MD can be easily cleaned using industry standard cleaning chemicals and techniques. Consult your cleaning chemical and equipment supplier for more information.

Health and Safety

Duracrete MD should not come into contact with the skin and eyes, or be swallowed. Ensure adequate ventilation and avoid inhalation of vapours. Wear suitable protective clothing, gloves and eye protection. If working in confined areas, suitable respiratory protective equipment must be used. The use of barrier creams provides additional skin protection. In case of contact with skin, rinse with plenty of clean water, then cleanse with soap and water. Do not use solvent. In case of contact with eyes, rinse immediately with plenty of clean water and seek medical advice. If swallowed seek medical attention immediately - do not induce vomiting. Refer to Product Safety Data Sheet for further information.

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Fire

Duracrete MD is non-flammable.

Limitations

Do not proceed with application if atmospheric relative humidity is, or is anticipated to be within the tack-free period, >90% or if the surface temperature is <3ºC above the dew point. Application should not commence when the substrate temperature or the ambient temperature is, or is anticipated to be, <10ºC during the application or within the tack-free period. The manufacture of Duracrete MD is a batch process and despite close manufacturing tolerances, colour variation may occur between batches. Slip resistance can reduce over time due to poor maintenance, general wear or surface contaminants. Duracrete MD has a smooth finish so can be expected to become slippery when wet. Good housekeeping practices must be observed. Application can take place outside the ideal temperature range of 15 - 30ºC, subject to a minimum of 10ºC and a maximum of 34ºC, however the surface finish may be subject to e.g. trowel and/or spike roller marks. Duracrete MD is not colour fast and may yellow over time. The rate of change will depend on UV light and heat levels and cannot be predicted.

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 getdragged	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

Pack Size and theoretical coverage

Duracrete MD : 18.8 kg (Resin+ Hardener+ Filler+ DPI) : 1 set will cover 2.2 to 2.4 sqm @ 4mm and 1.45 to 1.6 sqm @ 6mm

Colours available

RAL 6010 • RAL 6029 • RAL 7012 • RAL 1006
RAL 7005 • RAL 6037 • RAL 7042 • RAL 5009

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Other Products Categories available
Dr.Cipy brings you the widest range of Flooring Systems

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