

Duracrete HD

Heavy duty PU concrete flooring (6-9mm)

Description

Duracrete HD is a four-component PU concrete flooring recommended for the most demanding applications in the food and beverage industries. Duracrete HD is an anti-skid polyurethane concrete flooring system designed to provide outstanding abrasion and chemical resistance and is generally applied at thicknesses 6-9 mm. Duracrete HD is available in a few limited colours. It has excellent thermal shock resistance and hence can be applied on those areas where steam cleaning occur intermittently. Duracrete HD does not support bacteria or fungal growth. It is inert, non-bio degradable and is highly recommended for food and pharma industries, where the highest standards of hygiene are required.

Uses

- Food processing industries
- Beverage plants
- Confectionaries
- Abbottairs.
- Cold storage rooms
- Dairies
- Commercial and industrial kitchens
- Steam Cleaning Areas.

Key features

- HACCP & Greenpro Certified
- Seamless and hygienic
- Solvent free
- Resistant to thermal cycling
- Anti slip
- Hygienic and no tainting
- Fast setting
- Excellent wear resistance
- High impact and chemical resistance

Appearance

Seamless, matt surface with a light, slip resistant texture. Duracrete HD contains a white aggregate which imparts a slip resistant profile to the finished floor. With general use, the white aggregate will begin to

show through giving a decorative, mottled appearance, without compromising the functionality of the floor.

Thickness : 6-9mm

Resistant to thermal shocks

Conventional epoxy floorings soften at temperatures 50 - 60°C, while Duracrete HD does not soften at elevated temperatures. The fusion of concrete and urethane chemistries enable Duracrete floors to have excellent resistance to thermal shocks: frequent heating and cooling. The temperature resistance of Duracrete HD floors varies from 60°C to 130°C, depending on the thickness, with occasional spillage temperature upto 150°C. The increased thickness protects the bond line from the extreme thermal stresses

Chemical resistance

Duracrete HD offers excellent chemical resistance to varied chemicals: from acids to solvents. Duracrete HD 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 HD 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

Properties

| | |
|--------------------|-----------------------------|
| Type | : PU Concrete |
| Mixing ratio (R:H) | : Pre-weighed kits |
| Finish | : Matt |
| Colour | : Limited colours available |
| Mixed Density | : 2120 kg/ m ³ |

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| Pot life | |
| ASTM D 2471 | : 8-12 min |
| Volume solids | |
| ASTM D 2697 | : ≥98% |
| Drying time at RH 50% | |
| ASTM D 1640 | |
| Surface dry | : ≥ 20 min |
| Tack free dry | : ≥ 1 hrs |
| Hard dry | : ≥ 24 hrs |
| Recommended thinner | : |
| Clean up | : PUT 502 |
| Shelf life | : 6 months in the unopened container |

Performance data

| | |
|-------------------------------|--------------------|
| Compressive strength | : ≥ 50 MPa |
| Tensile strength | |
| ASTM D 638 | : ≥ 5 MPa |
| Flexural strength | |
| ASTM D 790 | : ≥ 15 MPa |
| Bonding strength | |
| ASTM D 4541 | : Concrete failure |
| Abrasion resistance | |
| ASTM D 4060 | : ≤ 40 mg loss |
| Hardness, Shore D | |
| ASTM D 2240 | : ≥ 80 |
| Water absorption | |
| ASTM D 570 | : ≤ 1% |
| Skid value : Pendulum test | |
| BS 8204 | : 40 - 70 |
| Service temperature | |
| 6mm | : - 20°C to 90°C |
| 9mm | : - 40°C to 120°C |
| Resistance to spread of flame | : Class 3 |
| (As per BS476) | |

Application Conditions:

Ideal ambient, material and substrate temperature range is 15 - 30°C for best results. The product components should be stored in a cool area (or warm area in the case of low ambient temperature),

using localised artificial cooling or heating system as appropriate, in order to bring product temperature within the ideal range. The product is recommended to be applied within the ideal temperature range (subject to a minimum of 10°C and maximum of 34°C). The substrate and applied floor must be kept at least 3°C above the dew point to reduce the risk of condensation or blooming on the surface, from before priming to at least 48 hours after the application of Duracrete HD.

Duracrete HD should be installed by specialist applicators only, who must follow the standard application guideline derived by Dr.CIPY.

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 and at least equal in width to the thickness of material to be laid, at the edges, day joints, up-stands, drains, doorways and at regular points across the floor, and all debris removed.

In case of New concrete floors:

The base concrete should be a minimum of M25 Grade and should not contain a water repellent admixture. 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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In case of Old concrete floors:

All laitance and surface contamination, e.g. oil, paint and rubber, 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. Heavy oil or grease deposits should first be removed either mechanically, then by high pressure water blasting followed by the application of a penetrating primer like Aquoxy 50. Where oil or grease contamination has been severe or of long duration, none of these methods may prove satisfactory and in these cases removal of the affected base would be necessary. In existing buildings without a functioning damp-proof membrane, 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 by suitable epoxy repair mortar for quick execution of Duracrete system.

Application Instructions:

Priming:

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.

Duracrete MD is a Four-component product.

A slow-speed forced action helical or twin-paddle mixer is recommended for mixing the product. Drain the Pigments to the liquid base and mix the same, followed by liquid hardener components into a large plastic container and mix briefly. Load the aggregate component whilst mixing, 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 evenly by trowel, ensuring that anchorage grooves are fully wetted out. The scratch coat should be allowed to cure for 12 - 48 hours at 20°C before applying the Duracrete HD. 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 to be applied. If severe pin-holing is evident in the scratch coat, indicating that air is rising from the substrate, then remedial action should be taken and consult Dr. Cipy office. Failure to do so may result in increased risk of pin-holing of the surface topping.

Application of Duracrete HD

A rotary drum mixer is required. Drain the contents of pigment to the liquid base and mix the same, followed by liquid hardener components into the mixer container and mix briefly. Load the aggregate components whilst mixing, and continue mixing for at least 1 minute, until a lump-free mix is obtained,

Apply to primed areas to the required thickness using a steel float or screed box. Ensure that anchorage grooves are fully wetted out with material. The cured product should be protected from other trades using breathable material. Polythene should not be used. Protect the installed floor from damp, condensation and water for at least 4 days.

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Colours

Duracrete HD is available in a range of standard RAL shades as :

Colours available

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

Duracrete HD 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. This will be more pronounced with lighter colours and blue shades and does not compromise the product's performance or chemical resistance characteristics.

Cleaning :

Regular cleaning is essential to enhance and maintain the life expectancy, slip resistance and appearance of the floor. Duracrete HD can be easily cleaned using industry standard cleaning chemicals and techniques. Consult your cleaning chemical and equipment supplier for more information. When applied at 9mm thickness, Duracrete HD is steam cleanable.

Important Note :

Duracrete HD has a very short pot life and hence mixing, laying and de-aeration should be done very swiftly. Application should be avoided when the temperature is

very high ie above 35 degree C. Do not store materials under direct sunlight or in open areas. Duracrete HD is a highly cross linked aromatic PU system and hence tends to yellow very fast. Avoid light colours

Packaging

Duracrete HD is available in pre-weighed kits containing resin, hardener, reactive aggregate and DPI. It has maximum shelf life of 6 months in the unopened containers.

Resin : 2.30 kgs / Hardener : 2.62 kgs / Aggregates : 20.5 kgs / DPI (colour) : 0.40 kgs.

Coverage :

Duracrete MD : 9 sq.m / Pack (for scratch Coat)

Duracrete HD : 2 sq.m / Pack for 6mm

1.3 sq.m / Pack for 9mm

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. It contains inflammable solvents. Mix resin and hardener as per the recommended ratio. Use the mix solution within the pot life time.

Health & Safety

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

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on the skin, dampen the cloth with thinner PUT 503 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

Disclaimer

All information contained in this data sheet is given to the best of our knowledge but no warranty is made with respect thereto. This data sheet becomes invalid as soon as a new edition has been published. Please contact us for latest edition. Description and advice regarding Cipy's products are based on long term field and laboratory tests carried out by us. No condition of warranty is given covering the results from the use of materials in the circumstances of any particular application, because the storage, handling and application of the materials are beyond our control.

Application should not commence when the substrate temperature or the ambient temperature is, or is anticipated to be, $<5^{\circ}\text{C}$ during the application or within the tack-free period. Application can take place in temperature range of minimum 10°C and a maximum of 34°C , however the surface finish may be subject to trowel marks. The design strength of concrete surfaces must be a minimum of 25 MPa compressive strength at 28 days. The manufacture of Duracrete MD and Duracrete HD is manufactured in batches and despite close manufacturing tolerances, colour variation may occur between batches. Duracrete HD 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. This will be more pronounced with lighter colours and blue shades and does not compromise the product's performance or chemical resistance characteristics.

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