

Dalcoub®

Surface Hardening Powder for Fresh Concrete Floors

Uses

Dalcoub provides a highly abrasion resistant surface to fresh concrete floors by the dry shake method which ensures that the hard wearing surface bonds monolithically to the base concrete. It is ideally suited for all industrial areas subjected to heavy traffic such as: power stations, heavy industry, agricultural building, distillation plants, laboratories, car parks, abattoirs, warehouse floors and loading bays & work shops.

Advantages

- Supplied ready to use - no additives required
- Provides a hard, abrasion resistant surface
- Forms monolithic bond with fresh concrete base
- Hard, dense surface resistant to oils and grease
- Range of colours - improve working environment
- Non-metallic aggregate - will not rust when wet

Specification

Floors shall be surfaced where shown with Dalcoub, a monolithic surface hardening compound containing nonmetallic, rust-free aggregates. The aggregate shall have a value more than 8 on Mohs original scale & the compound shall have the ability to improve the abrasion resistance of concrete by 200%. Dalcoub powder shall be applied to the freshly-laid concrete floor by the dry-shake method. It shall be applied at the point where light foot traffic leaves an imprint of about 3 - 6 mm. Powder shall be applied in 2 stages, in full accordance with the manufacturer's instructions, to achieve an overall application rate not less than 5 kg/m². Special attention shall be paid to bay edges in accordance with the manufacturer's written requirements.

Design Criteria

Base concrete: The base concrete should have a minimum cement content of 300 kg/m³. The concrete mix should be designed to minimize segregation and control bleeding, although some limited bleed is desirable to ensure sufficient moisture is available to wet out Dalcoub when it is first applied. The use of

water reducing admixtures is strongly recommended in order to achieve a water:cement ratio below 0.55. The base concrete should have an on-site slump of between 75 and 100 mm. The base concrete should be laid and compacted in accordance with good concrete practice, taking care to ensure accurate finished profile and minimum laitance build up. Particular attention should be paid to bay edges and corners to ensure full compaction of the base concrete – see Instructions for use, Bay edges. Vacuum dewatering is not recommended.

Description

Dalcoub surface hardening compound is a quality controlled, factory blended powder which is ready to use on site. It consists of special hard wearing emery aggregates selected for their physical properties of abrasion and wear resistance, Portland cement and special additives to improve workability. This combination produces a material which is easy to trowel in the surface of fresh, wet concrete. Dalcoub cures monolithically to provide a dense, non porous surface which is extremely hard wearing and abrasion resistant. Monolithic cure ensures that problems normally associated with thin ('granolithic') screeds, e.g. curling, shrinkage, cracking, etc. are completely overcome.

Properties

Abrasion resistance: The abrasion resistance of Dalcoub has been tested using a taber abrasion machine (fitted with 1 Kg, H-22 wheels) showing that Dalcoub improves the abrasion resistance of concrete by minimum 200%.

Compressive strength (BS 1881, Part 116 1983): At water contents equivalent to those obtained in practical applications, the typical 28 day compressive strength of Dalcoub cubes is 70 N/mm².

Hardness (Mohs' scale): The selected aggregates contained within Dalcoub have a hardness value of 8 on the Mohs original scale.

Instructions for use

Dalcoub should be applied at an even application rate of 5 kg/m². It is recommended that the floor should be marked off into bays of known area. Sufficient materials should then be laid out to meet the recommended spread rate. Application of Dalcoub should begin without delay

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when the base concrete has stiffened to the point when light foot traffic leaves an imprint of about 3 - 6 mm. Any bleed water should now have evaporated, but the concrete should have a wet sheen. On large floors it will be necessary to work progressively behind the laying team to ensure application at the correct time. Dalcoub is applied in two stages:

a) The first application is broadcast at an even rate of 3 kg/m² onto the concrete surface. When the material becomes uniformly dark by the absorption of moisture from the base concrete, this first application can be floated. Wooden floats or, on large areas, a power float, may be used. It is important, however, that the surface is not overworked.

b) Immediately after floating, the remaining 2 kg/m² of Dalcoub is applied evenly over the surface at right angles to the first. Again, when moisture has been absorbed the surface can be floated in the same way as before.

Final finishing of the floor using the blades of a power float can be carried out when the floor has stiffened sufficiently so that damage will not be caused.

Bay edges: Where bay edges are likely to suffer particularly heavy wear or impact and where saw-cut transverse control joints are to be located, it is desirable to give these areas additional protection, by one of the below methods prior to full treatment of the entire surface:

a) Immediately after leveling the freshly placed concrete, Dalcoub should be sprinkled by hand at a rate of 0.5 kg/lin.m. (5 kg/m²) in a strip 100 mm wide along the bay edge and hand-trowelled into the surface.

b) Immediately after leveling the freshly placed concrete, remove a wedge of the concrete 10 mm deep at the slab edge and tapered up to slab level. Replace this with a very stiff paste of Dalcoub, mixed thoroughly with a small amount of water. Ensure it is fully compacted on to the base concrete.

These reinforced areas will be further strengthened when the subsequent full treatment is applied. Timing of the application of Dalcoub is important and care should be taken to ensure adequate labour, machinery and material is available to complete the whole area

while sufficient moisture is available to fully react with the powder to provide a good dense finish. Conversely, the full benefit will not be achieved if the material is applied too early when bleed water is still present. Any addition of water to wet out the surface on either the first or second application of Dalcoub will be detrimental to the overall quality of the floor. Pigmented floors require extra care and need to be protected from damage and staining after completion. It is essential that the correct recommended rate of application is achieved over the entire floor area in order to avoid possible localized variations in shading.

Curing & surface treatments & cleaning

Proper curing of concrete floors treated with Dalcoub is essential to physical properties of the finished floor. For indoor applications where curing conditions are less arduous and breakdown of curing membrane is slower alternative approved methods of curing such as polythene sheets taped at the edges is acceptable. Subsequent surface treatments are not normally necessary with Dalcoub because of the high density, low porosity finish. All equipment should be washed with clean water immediately after use and before material has hardened.

Packaging

Dalcoub is available in 30 kg bags.

Storage

Dalcoub has a minimum shelf life of 12 months at 20°C if kept in a dry store in the original, unopened packs. The shelf life will be reduced at higher ambient temperatures.

Precautions

Health and safety:

Dalcoub is alkaline and should not come into contact with skin and eyes. Avoid inhalation of dust during mixing. Gloves, goggles and dust mask should be worn. If contact with skin occurs, wash with water. Splashes to eyes should be washed immediately with plenty of clean water and medical advice sought.

Fire:

Dalcoub is non-flammable.