

## NORTEC® DENSE CS TECHNICAL DATA SHEET

### Product Description

*NORTEC® DENSE CS* is a proprietary modified colloidal silica that is used to permanently solidify and harden surfaces of cement-based building materials such as concrete, floor screeds, and dry shake floors (hereafter referred to as building materials). *NORTEC® DENSE CS* is not a coating, sealing, or silification agent!

It is a transparent, solvent-free, non-flammable liquid. The natural appearance of the floor is preserved.

The hardening process is more controlled and more consistent compared to conventional concrete hardeners such as e.g. water glass. *NORTEC® DENSE CS* offers an appealing lasting and environmentally friendly alternative to commonly known densifiers and concrete polishing systems on the market.

### Areas of Application

This product is primarily used on horizontal surfaces that are subject to mechanical stress from vehicle and people traffic and can be cleaned by machine.

Typical applications are industrial floors, production, logistics, retail spaces, as well as sports and exhibition facilities, decorative floors (e.g. terrazzo floors), and many more.

The product can be used on interior and exterior, new and old surfaces.

*NORTEC® DENSE CS* can also be applied retroactively to refurbish existing surfaces.

Due to the denser microstructure of the hardened surface material, the penetration of water into the concrete is reduced. It is therefore suitable for reducing harmful chemical influences on the surface.

### Restrictions and Limitations

*NORTEC® DENSE CS* is not suited for the improvement of light weight construction panels or boards with large-pored surfaces that have significant cavities or voids. Even though it can result in an improvement to dust binding, it will not improve practical and useful construction characteristics.

In order for *NORTEC® DENSE CS* to be effective it must be able to penetrate into the concrete pores and react with the hydration products of the concrete.

If this is prevented due to existing (old) coatings, hydrophobing, or after treatment agents (spray film), the positive effects of *NORTEC® DENSE CS* will not occur.

If necessary, the old coatings on existing surfaces blocking these effects should be removed via a mechanical or chemical treatment prior to the application.

### Effect and Function

Concrete gets its strength from the formation of calcium silicate hydrate phases (CSH phases). *NORTEC® DENSE CS* triggers a unique, irreversible catalytic reaction which targets the micro and gel pores in the building material. As a result, additional CSH phases are formed in the pore space, which reduces the porosity, strengthens the structure and increases the durability.

Also, any existing cement that has not reacted is stimulated to further reaction, and the newly formed CSH phases become silicate-rich which further strengthens their resistance. This effectively minimizes the penetration of hazardous substances into the concrete.

Due to its nano structure and neutral pH value, *NORTEC® DENSE CS* is more reactive than traditional concrete hardeners. It not only reacts with the remaining calcium hydroxide, but also with other aggregates and with itself.

A one-time application of *NORTEC® DENSE CS* is sufficient for the entire lifetime of the concrete; repeated application is not necessary.

With *NORTEC® DENSE CS*, the densification process begins immediately after the surface treatment and can continue for hours, days, weeks, or months, depending on the concrete composition, air humidity, and temperature. There is generally no wait time, as the treated surfaces can be subjected to mechanical stress just a few hours after applying *NORTEC® DENSE CS*.

Unless mechanically polished, the effect on a surface finished with *NORTEC® DENSE CS* will not be visible to the user after treatment. Test surfaces treated with *NORTEC® DENSE CS* are unsuitable for a visual comparison with film-forming products.

## Technical Properties

**Form of Delivery:** 5 l, 10 l, 20 l, 208 l, 1040 l, liquid

**Colour:** transparent

**VOC:** 0 g/l

**Density:** 1.1 - 1.2 g/cm<sup>3</sup> at 20 °C

**pH-Value:** 5 - 8

**Application Temperature:** 5 °C to 40 °C surface temperature

**Material Usage:** 0.07 – 0.10 l/m<sup>2</sup> for horizontal smooth power troweled surfaces, more than 0.15 l/m<sup>2</sup> for structured and/or slightly porous surfaces. The amount depends significantly on the temperature of the environment and the quality of the building material. Experience has shown that in the case of screed surfaces, higher quantities are required.

**Distribution and Application:** The material is sold project based and can only be applied by authorized applicators.

**Storage/Durability:** Frost-resistant, can be stored for 18 months in original container.

**Flammability:** Non-flammable when applied as a building material; it does not create vapours or gas in the event of fire.

**UV Resistance:** No negative effects from exposure to UV light.

**Notes:** Material residue outside of the surfaces to be treated should be removed with plenty of water while still wet.

The improvement of the building material depends on age, cement content, moisture, porosity of the concrete, as well as the penetration of the product.

## Disclaimer

All technical data as well as the physical and mechanical properties in this product data sheet are based on laboratory tests. The values given can vary from those listed in the technical data sheet due to conditions outside of our influence.

## Legal Notice

The above information, particularly the suggestions for application and use of *NORTEC® DENSE CS*, are based on our knowledge and experience in normal situations, provided that the product has been stored and used properly. Because of the different materials, substrates, and varied working conditions, a guaranteed work result or a liability, from whatever legal relationship, cannot be claimed from this information nor from verbal consultation, unless we are guilty of intent or gross negligence in this regard. The user must prove that he has provided *NORSA GmbH* in writing with all findings required for the proper and effective evaluation on the part of *NORSA GmbH*, in good time and in full. The user must check the products for their suitability for the intended purpose. Changes to the product specifications are reserved. Third party property rights must be observed. Our respective sales and delivery conditions apply as well as the most current product data sheet.

The rights of the purchaser regarding the quality of our materials are governed by our terms of sale and delivery. All information originates from our manufacturing department according to the latest state of research, development, and application technology. For use and application outside of our area of responsibility and influence, no manufacturer's liability can be derived from the contents of the technical data sheet. Our technical service is available for any needs that go beyond the scope of the information, data, and instructions for the use described above. The information and statements in each case require a legally binding confirmation in writing from the manufacturer. The instructions and recommendations in this technical data sheet do not release the user from the obligation of due diligence with respect to verifying the suitability of the intended application. When in doubt, test the product on a small surface area.



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