

MekDenso-A50LS

Product Technical Data Sheet

Formulated Nano-Technology Based Concrete Densifier

MekDenso-A50LS is a formulated concrete densifier based on innovative and nano technology. It is a non-film forming penetrating sealer that penetrates, blocks concrete capillaries and reacts with concrete to form a hard, dust-proof and color enhanced concrete finish. A smooth or gloss finish can be easily achieved by concrete polishing. Due to the nano molecule and high activity of Colloidal Silica technology, **MekDenso-A50LS** can deeply penetrate and quickly react with concrete resulting in fast concrete polishing process.

Uses

MekDenso-A50LS is used as a concrete densification sealer for treating concrete including polished concrete such as residential concrete floors, commercial car parks, and factory or warehouse flooring. Applications include treating new and old concrete floors for strengthening, dust-proofing, and creating a hard, smooth/glossy and color enhanced polished concrete finish. The densifier may be used for sealing other masonry substrates including natural stone, clay bricks and ceramic tiles.

Features

- ❖ Deeply penetrating into concrete ensuring durable protection.
- ❖ Fast reaction with concrete for efficient concrete polishing process.
- ❖ No visible residues or efflorescence after application.
- ❖ Enhances surface color without changing the surface characteristics of concrete.
- ❖ Reduces water absorption and surface staining.
- ❖ Environmentally friendly water-based technology.
- ❖ Ready-to-use low viscosity formula enables easy application.

Use Instructions:

Surface Preparation

- ❖ Prior to application, the concrete surface should be completely cleaned of any surface contaminants that may impede the penetration of **MekDenso-A50LS**. The surface should be allowed to dry before application.

- ❖ New concrete should be properly cured. Curing compounds, release agents, and coatings/membranes should be completely removed and cleaned from the surface and allowed to dry before applying **MekDenso-A50LS**. In the case of acid treated concrete, the concrete surface should be completely neutralized and rinsed with water and allowed to dry before the application.
- ❖ For polished concrete, the surface is firstly removed by grinding up to 200 grit or any desired finish to expose the capillaries or aggregates before applying **MekDenso-A50LS**. This will ensure maximum absorption of the sealer to achieve optimum concrete densification and desired surface finish by the application of **MekDenso-A50LS**.

Technical Data

S. No.	Properties	Requirements
1.	Appearance	Clear Liquid
2.	Specific Gravity	1.10 -1.30
3.	Salt Content (%)	1.5%
4.	Active Content	28%
5.	VOC	Nil
6.	pH	10- 11
7.	Solubility in water	Soluble in water

Application

MekDenso-A50LS is a ready-to-use sealer. The densifier sealer may be applied with a low-pressure hand sprayer, brush or broom. The product should be evenly flooded onto the surface. Pooling should be avoided. In order to achieve maximum absorption, ensure the sealer is present on the surface as a mirror-like wet film for up to 30-45 minutes. If the first coat is quickly absorbed by the surface, the second coat is applied immediately while the surface is still wet (wet-on-wet method). For porous and permeable concrete, this wet-on-wet application may be repeated until the surface is saturated with no further absorption of the sealer being achieved. Remove excess sealer from the

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surface if it hasn't been absorbed by the surface within 30 minutes. Any excess sealer on the surface may dry to unwanted residues that may become difficult to remove after the product is cured.

Polishing

If a desired polished finish is required, the concrete is further polished or buffed after the previous applied **MekDenso-A50LS** has been cured and dried. A further application of **MekDenso-A50LS** may be applied after each polishing. This polishing process may be repeated until desired surface finish is achieved.

What is MekDenso-A50LS?

- ❖ Very small particles of amorphous silicon dioxide (SiO₂), dispersed in water Safe for both humans and the environment.
- ❖ Large surface area, due to the numerous small particles. The particles are usually electrically charged, why they can easily interact with one another or to other substances. The properties of colloidal silica dispersions can be varied in many ways:
 - ❖ Concentration : 7-50% silicon dioxide
 - ❖ Particle size distribution
 - ❖ Structure : Discrete particles (high S-value) or chains (low S-value)
 - ❖ Particle diameter : 2- 100 nm
 - ❖ Surface area : 30-1100 m²/g
 - ❖ pH : 2 -12
 - ❖ Modifications: ammonium, aluminate, chloride, silane, deionized

Why densification?

- ❖ If left untreated, concrete surfaces are soft and dusty, susceptible to liquid, Absorption, easy to scratch and difficult to keep clean and tidy.
- ❖ By adding a densifier, you can: Reduce dust formation. Enhance surface hardness
- ❖ Increase abrasion and scratch resistance
- ❖ Reduce water absorption, in general terms

Film-forming (or topical) sealers

Film-forming sealers do not react and bond chemically with mineral substrates as reactive sealers do.

Therefore, floors with film-forming sealers must normally be resealed every 2-3 years.

Reactive (or penetrating) densifiers/sealers

Reactive sealers penetrate into the treated surface, fill the pores and react chemically with the mineral substrate. Normally no re-sealing is needed as the reaction is permanent. In general, reactive sealers contain different mixtures.

The formulations based on **MekDenso-A050LS** Colloidal Silica are all reactive densifiers/sealers.

How it works

- ❖ Penetration of the surface
- ❖ Formulations based on **MekDenso-A050LS** Colloidal Silica will not leave a film on the surface. Instead, they penetrate down through the surface and undergo a chemical reaction with the mineral substrate.
- ❖ The reaction is permanent and therefore there is normally no need for resealing.
- ❖ Chemical reaction with the mineral substrate
- ❖ Cement hydration in the presence of colloidal silica



Densification of the Substrate

The reaction between lime and colloidal silica creates a network of calcium silicate hydrates in the concrete pores. This results in a denser substrate with a high hardness and also the reduction of concrete dust.

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Fill the pores in concrete

The water dispersion of colloidal silica consists of nanoparticles. The particles are extremely small (~10 nm) and can therefore penetrate into the porous concrete. The nanoparticles are non-soluble and will be fixed in the pores.

Increased resistance to abrasion

All untreated concrete floors are dusting when exposed to abrasion. Densification increase the resistance to abrasion and reduce concrete dust.

Reduced water absorption

Densification reduces the capillary pores and water absorption is reduced. The surface repels liquids and the chemical resistance of the surface is improved.

Benefits of formulations based on MekDenso-A050LS Colloidal Silica

Performance

1. Harder surface
2. Nice appearance
3. No dusting
4. Increased resistance to scratch and to liquid absorption
5. Easy to maintain and to keep clean

Fast drying and safe handling

1. Dries within 2-24 hours (dependent on silicate additive)
2. pH = 11 (lower alkali than traditional silicates)
3. White deposits can be avoided

Highly concentrated products

1. Sustainable
2. Cost efficient

Different options provided with MekDenso-A050LS Colloidal Silica formulations

The performance requirements and cost sensitivity differ between projects and therefore the formulations provide different options:

Appearance : Wet or Dry Look
Shine : Low or High Gloss

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Handling : Ready-to use or high concentrated formulations
Additives : Cost efficient and high end

User guidelines

Limitations

- ❖ **MekDenso-A050LS** Colloidal Silica formulations must be applied on bare mineral substrates only, so there are no surface coatings that prevent the penetration and the chemical reaction.
- ❖ Reactions can differ from slab to slab and therefore an even sheen cannot always be achieved.
- ❖ The products will not hide cracks, blemishes and other construction errors.
- ❖ Be aware that during application treated surfaces may become temporary slippery.
- ❖ When dried, the surface will have the same coefficient of friction as an untreated surface.
- ❖ Spraying of product should be avoided as spray can cause bronchial irritation if inhaled.
- ❖ Protect skin and eyes, use PE gloves and goggles.
- ❖ Should skin contact occur, wash with soap and water. Should eye contact occur, flush with water for at least 15 minutes. Seek medical advice.
- ❖ If swallowed, do not induce vomiting as products are alkaline. Seek medical advice.

What is MekDenso-A50LS?

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- ❖ The particles are usually electrically charged, why they can easily interact with one another or to other substances
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Why densification?

- ❖ Densifiers for concrete surfaces
- ❖ History
- ❖ How it works
- ❖ Benefits
- ❖ Formulation guidelines
- ❖ User guidelines
- ❖ Surface study
- ❖ Summary

Why densification?

If left untreated, concrete surfaces are soft and dusty, susceptible to liquid Absorption, easy to scratch and difficult to keep clean and tidy.

By adding a densifier, you can:

- ❖ Reduce dust formation
- ❖ Enhance surface hardness
- ❖ Increase abrasion and scratch resistance
- ❖ Reduce water absorption
- ❖ Achieve a nice appearance and a surface with long lifetime

Film-forming (or topical) sealers

Film-forming sealers do not react and bond chemically with mineral substrates as reactive sealers do. Therefore, floors with film-forming sealers must normally be resealed every 2-3 years.

Reactive (or penetrating) densifiers/sealers

Reactive sealers penetrate into the treated surface, fill the pores and react chemically with the mineral substrate. Normally no re-sealing is needed as the reaction is permanent. In general, reactive sealers contain different mixtures of silicates.

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History

In the thirties - Sodium silicates and potassium silicates

White deposits on floor due to reaction with soluble salts in the concrete

Adhesion problems in case a paint should be applied later

Low-cost raw materials

In the late nineties - Lithium silicates

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No white deposits

Better water repellent properties

Shorter drying time, meaning less waiting time before next treatment step

Possible to use as a primer

Recently - Colloidal silica formulations

Combining the above advantages seen for Li-silicates with the advantages originating from the reactive and very hard nanoparticles in colloidal silica.

How it works

Chemical reaction with the mineral substrate
Cement hydration in the presence of colloidal silica



Densification of the substrate

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Penetration of the surface

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Reduced water absorption

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Nice appearance

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Easy to maintain and to keep clean

Fast drying and safe handling

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White deposits can be avoided

Highly concentrated products

Sustainable

Cost efficient

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The performance requirements and cost sensitivity differ between projects and therefore the formulations provide different options:

- ❖ Appearance: wet or dry look
- ❖ Shine: low or high gloss
- ❖ Handling: ready-to use or high concentrated formulations
- ❖ Additives: cost efficient and high end

User guidelines

Limitations

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- ❖ Protect skin and eyes, use PE gloves and goggles.
- ❖ Should skin contact occur, wash with soap and water. Should eye contact occur, flush with water for at least 15 minutes. Seek medical advice.
- ❖ If swallowed, do not induce vomiting as products are alkaline. Seek medical advice.
- ❖ For further advice on handling, please review the Safety Data Sheet document for each product.

Dilution guidance

- ❖ Highly concentrated formulations (>12 % solids) should be diluted before application in order to facilitate penetration into the substrate. Shake or stir the formulation well before and after dilution. Recommended dilution is 1:1 upto 1:3, depending on the condition of the substrate. Always test the product on a small area prior to application.
- ❖ Be aware that the hardness of the dilution water will affect the possible storage time of the diluted product. We recommend to always use de-ionized water if the diluted product will be stored. If product is diluted with water having a hardness of > 5 dH , storage time is reduced to 1-2 days

Surface Study - Polished Concrete

- ❖ Floors treated with densifiers based on colloidal silica can be polished to give a glossier surface.
- ❖ Formulations with colloidal silica can be chosen to also provide a darker "wet look".
- ❖ If a coloured floor is desired, special pigments can be mixed into the formulation.
- ❖ The surface to the right is treated with a formulation based on **MekDenso-A50LS** and shows higher hydrophobicity and surface tension compared to the surface treated with only lithium silicate.
- ❖ The water absorption is lower on the surface treated with a formulation based on **MekDenso-A50LS** compared to the surface treated with only lithium silicate.
- ❖ **MekDenso-A50LS** Colloidal Silica for concrete densification and polishing

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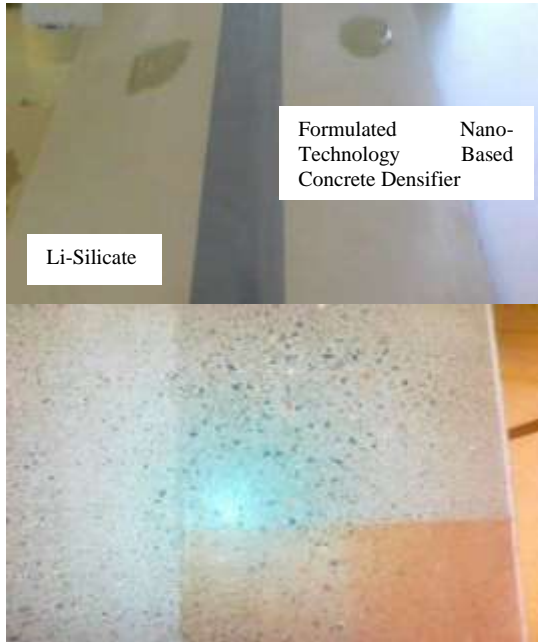
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Technology based on colloidal silica nanoparticles

- ❖ Treated substrates achieve increased hardness and abrasion resistance
- ❖ Provide surfaces with higher water repellence Suitable for both old and fresh concrete treatment
- ❖ High solids formulations possible due to excellent stability cleaning solution formulation available Lithium-versions (fast drying time, no risk for white deposits)



Formulation Based **MekDenso-A050LS** + Pigment

Coverage

The application rate of **MekDenso-A50LS** varies depending upon the porosity of concrete. Dense or new concrete will have a low absorption rate, whereas porous and permeable or old concrete will absorb more sealer. The consumption rate varies from 5 - 20/m² per liter per coat or could be out of this range significantly.

Important

MekDenso-A50LS penetrates and blocks the concrete pores or capillaries, and hardens the surface. However, the degree of pore blocking, surface hardening and water resistance depends on many factors which are

out of the manufacturer's control. It is highly recommended that a pilot test on site should be conducted by the applicator prior to application to determine the suitability of this product for the purpose.

Handling & Storage

MekDenso-A50LS is an alkaline solution. Skin or eye contact should be avoided by wearing proper protection. The risk of vapor inhalation of this product is low; however, an air-purifying respirator should be worn if there is a risk of exposure to high vapor concentrations. Wash hands after handling.

Packaging

MekDenso-A50LS is available in 20-liter packages.

Storage

The product should be kept in the sealed original container under 25°C Keep this product away from aluminum surfaces. Keep out of reach of children.

Product Information

Although the basic formulation of our products generally remains unchanged, production refinements arising from continuing research and evolution program may occasionally result in marginal changes in properties.

FIRST AID!

- ❖ Eyes and skin: Flush eyes with water for 15 minutes. Contact a physician if irritation persists.
- ❖ Wash skin thoroughly with soap and water. Remove and wash contaminated clothing before reuse. Inhalation: Remove subject to fresh air. Swallowing: Dilute by giving water to drink and contact a physician promptly.
- ❖ Never give anything to drink to an unconscious person.

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Note: - Keep out of reach of children for professional and industrial use only.

Products Range of CEMEK

- ❖ Alkali Free Accelerator for Wet Shotcrete in Liquid Form
- ❖ Alkali Free Accelerator for Dry Shotcrete in Powder Form.
- ❖ Modified Sodium Silicate Based Accelerator for Shotcrete.
- ❖ Integral Water Proofing Compound.
- ❖ Crystalline Water Proofing Compound.
- ❖ Heat Resistance Coatings/Paints with Application
- ❖ Cement, Micro Fine Cement, Epoxy, Pu And Colloidal Silica Based Grouts with Application.
- ❖ Wax Based, Resin Based and Resin Based Aluminized Concrete Curing Compound.
- ❖ Ready to Use High Strength, Rapid Set, Non-Shrink, Self-Levelling, Crack Repair, Heavy Duty Machine Installation Product.



Services

- ❖ Water Proofing (Epoxy, Pu, Acrylic, SBR Etc.)
- ❖ Dry & Wet Shotcrete
- ❖ Crack Repairing
- ❖ Pu, Epoxy, Polyester Grouting (Tunneling & Mining & Structures)

House, Industrial & Institutional Cleaners

- ❖ Steelness Steel Cleaner
- ❖ Degrease & Oil Removers
- ❖ Paint & Coating Striping Agents
- ❖ Concrete Removing Agents
- ❖ Glass Cleaners
- ❖ Tar Removing Form Car Body
- ❖ Rust Removing Agent
- ❖ Rust Converter

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