

Sanosil S010

Fungicide

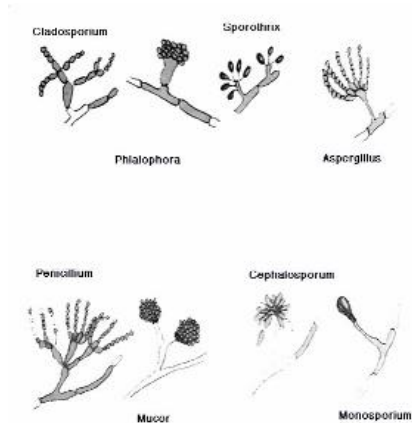


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1. What is Mould ?

Mould is a fungus. Fungi usually are filamentous, with the single filament being termed hyphae. Fungal hyphae grow and branch to make a filament network called mycelium. Mould produces tiny spores to reproduce. Mycelium and spores are often coloured which makes them visible to the naked eye (for example as black or grey stains).



2. Mould Growth Factors

Moulds and their spores can be found almost everywhere; they are part of our natural environment. Mould growth indoors is usually determined by three factors: moisture, nutrients supply and temperature.

Moulds can feed on a variety of materials, such as:

- wood, plywood
- paper, cardboard
- wallpaper, adhesives
- synthetic materials, plastics, silicon
- carpets and other flooring materials and adhesives
- paint and varnishes
- leather



Even in and on cement or concrete floors can mould develop. Given a minimum moisture (approx. 80% relative humidity), moulds will even grow on materials not considered to be a source of food (such as glass), provided organic material and dust in the air have settled on the surface of such materials. Ideal growing conditions are also found on surfaces where moisture condenses.

Rule of thumb for apartments and flats:

Risk of mould development due to moisture condensation exists when during Autumn/Winter, at a room temperature of 20°

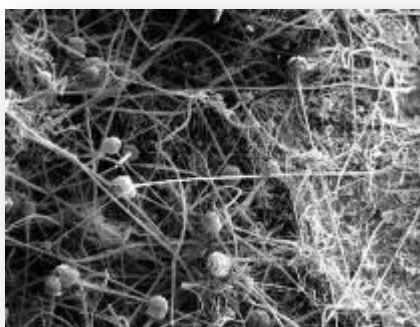
Celsius, a relative humidity of 65% is measured during more than

3 hours per day. The measurement is done in the centre of the room, approx. 1 meter above the floor.



3. Is Mould Dangerous or just Troublesome ?

Moulds reproduce by way of tiny spores. Mould spores waft continually through the indoor and outdoor air. Depending on their size and shape, they can remain for hours and even days suspended in the indoor air. In small quantities, mould spores are generally harmless. Continued exposure though may cause allergic reactions and other health problems, especially in sensitive individuals. (Some types of moulds, so-called toxic mould, emit mycotoxin poisons.) Known allergic reactions include: nasal congestion, sneezing, rhinitis, conjunctival inflammation, urticaria and asthma, headaches, fever and diarrhoea. Individuals with a deficient immune system (babies, sick persons, elderly people, etc.) may additionally be affected by spores in the respiratory system which can cause serious lung infections (Mycosis).



Mould/Mycellium (enlarged)



Spores



Spores, close-up



4. Remediation: First Steps

The first step to mould control is to locate the mould contamination. A characteristic mouldy odour or stains on walls, ceilings or furniture are indicators. It may be necessary to access crawlspaces, ceilings, attics, etc. to find the source of the contamination.

Remedial action that does not address the cause for mould growth cannot be successful in the long run. A renewed contamination will occur sooner or later (even the best fungicide cannot guarantee success if the cause for the mould contamination is not removed).

To control mould is to control moisture. Addressing and eliminating the moisture problem is the most important step to mould control. Monitoring temperature and humidity with a thermometer and a hygrometer is useful.

Rule of thumb for apartments and flats: Risk of mould development due to moisture condensation exists when during Autumn/Winter, at a room temperature of 20° Celsius, a relative humidity of 65% is measured during more than 3 hours per day. The measurement is done in the centre of the room, approx. 1 meter above the floor.

There are many sources of moisture. For example, the most common sources in buildings are:

a) outdoor moisture:

- roof and plumbing leaks (especially from platform roofs); cracks in the brickwork;
- insufficient drying after construction work;
- water intrusion due to leaks in pipes, broken water and sewer lines, flooding, etc.

b) indoor moisture:

- inadequate heating and ventilation, especially in tightly sealed buildings;
- poor or inadequate ventilation in bathrooms without a window;
- condensation of moisture on cold surfaces such as exterior walls. Example: Moisture will condense when cooling a surface down from 20° Celsius to 13° Celsius, at a relative humidity of 60%.

Eliminate the source of the damage through adequate repair work and eradicate the visible consequences by intensifying ventilation and/or de-humidifying the affected area, thereby removing the ideal growing conditions and inhibiting further fungal growth.

5. Remediation: Mould Cleanup

The application of vinegar is often recommended as an old household remedy. The problem with vinegar is that many construction materials, especially lime, have a tendency to neutralise the acetic acid. Additionally, with the vinegar new nutrients are supplied to the fungus. Bor and baking soda give equally unsatisfactory results.

Fungicides are the most effective solution. However, great care is required when choosing the appropriate solution since many fungicides contain highly toxic substances (e.g. mercury, arsenic, aldehydes, ...) which may have an ill effect on health when applied indoors over long periods of time. Surfactants/Quaternary Amine Compounds are selective in their effectiveness and do not eliminate all types of mould. Products containing active chlorine create strong odours and, in contact with acids, highly toxic chloric gas can develop.

A harmless and successful fungicide is Sanosil S010 with hydrogen peroxide and silver as main active components. While treating the affected area, no other substance but oxygen (O_2) is released to the environment. Therefore, the negative side-effects caused by fungicidal substances being dissipated in the ambient air do not have to be feared with Sanosil S010. The very small amounts of silver remaining on the disinfected surface are invisible and non-toxic, and they effectively hinder a new contamination.

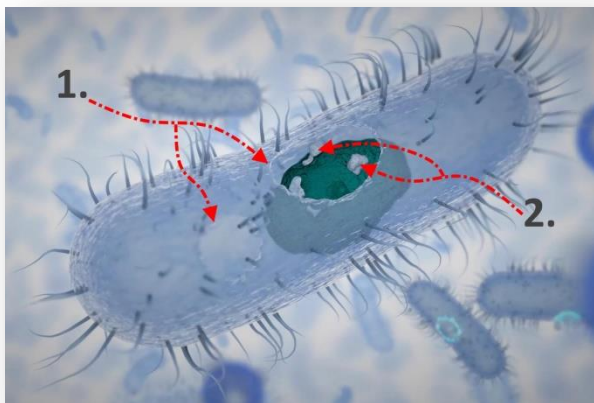
6. Sanosil S010 Fungicide: Product Description

Contents of Sanosil S010:

Hydrogen peroxide (H_2O_2): approx. 5 %; Silver: approx. 0,01%

Sanosil S010 is a ready-to-use fungicide. In addition, Sanosil S010 has also been proven effective against gram positive and gram negative bacteria, spore-forming organisms, viruses (with and without protective coat), yeast, as well as a wide spectrum of protozoa. The effectiveness of Sanosil® Disinfectants has been tested and confirmed against numerous pathogens in more than 220 assays carried out by well-known international institutions (laboratories/universities). Sanosil® Disinfectants are DGHM-listed.

The active substance used is hydrogen peroxide, an environment friendly substance. In a complex manufacturing procedure, the active substance is stabilized and boosted with silver, thus achieving a greatly improved effectiveness against micro-organisms.



The oxygen (O_2) set free by the hydrogen peroxide attacks the cell walls (1) of the mould in a direct contact. This allows the silver ions to enter the cell unhindered. The monovalent silver ions form strong covalent links with cellular protein (2.) These are thereby inactivated, leading to immediate cell death and killing the treated mycellium.

7. Application

7.1 General:

If possible, isolate the affected area from the rest of the apartment. Use plastic sheets to separate the working area from the unaffected area, keep doors closed, and change clothes and shoes before entering the unaffected area.

- Do not touch mould with your fingers – wear protective gloves.
- Do not breathe in mould spores – wear a face mask (covering mouth and nose) protecting from fine dust.
- Do not let mould spores come in contact with your eyes – wear protective goggles.
- Use shoe covers or clean them with a wet cloth after having finished the cleanup work.
- Shower and change clothes after the cleanup work. Wash the working clothes at 60° Celsius min.

7.2 Pre-disinfection:

Prior to the actual cleaning work, treat the mould stains with 0.5 - 1dl Sanosil S010 (see point 7.5 "Application"). This already destroys a large part of the mould. If possible, leave the substance to soak for 2 - 4 h, although 99% of the wetted mould is already killed off after approx. 60 min.

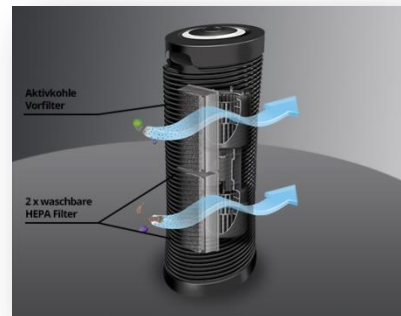


7.3 Removing the dead biomass

Due to the fact that dead mould parts still have an allergenic potential, they are thoroughly washed off, brushed or scraped off after initial treatment with Sanosil S010 with a plastic brush (e.g. dishwashing brush) and hot water with a dash of dishwashing liquid if necessary. Then leave to dry thoroughly. In case of heavy infestation, it may even be necessary to remove the top wall layer (e.g. wallpaper, plaster, wall covering) with a wire brush/putty knife or knock it off with a hammer instead of merely cleaning the surface*. (Here it might be expedient to spray on some hairspray beforehand to fix the spores in place.) Wear protective equipment. Removed wall parts must be disposed of immediately.

7.4 Post-disinfection

A second disinfection is performed after cleaning to securely kill off any mould components still present. After the second application (see point 7.5) DO NOT wash off the surface again. The wall can be rebuilt after drying (see point 9). Thoroughly clean the room after treatment with a vacuum cleaner equipped with a HEPA filter* to remove airborne (dead) mould particles. A suitable air cleaning device may be used during treatment. This device effectively reduces airborne spores.



* Prerequisite is that the applied vacuum cleaner can also retain particles in a range from 1 to 5 micrometres (1 micrometre = 1/1000 millimetres).



7.5 Practical tips: Working with Sanosil S010

Wet mould stains with Sanosil S010 approx. 5 -10 cm beyond the edges. The disinfectant is either sprayed on or applied with a swab or a broad brush. The disinfectant is applied undiluted. Only apply as much disinfectant as will stick to the wall without running down in drops. Treatment may have to be repeated depending on the intensity of the infestation.

Caution: White wall paint (titanium oxide pigments) as well as plastic surfaces (plastic window frames) and lacquered surfaces may become discoloured after treatment. If you are not sure, test the disinfectant on a suitable spot prior to use. The manufacturer will not be liable for damage arising from improper handling.

7.6 Dosage:

Approx. 50 – 100 ml per m² can be applied per treatment (depending on the absorbency of the surface). Depending on the extent of the contamination, repeated treatments are required.

Approximate consumption(total):

- Light contamination(spot-wise mould growth): approx. 50 – 100 ml/m²
- Heavier contamination: approx. 100-200 ml/m²

8. Additional application possibilities (fogging)

In hard-to-access spots (e.g. angled roof constructions, air conditioners) or in case of very large surfaces



infested with mould, Sanosil S010 can also be applied with a cold fogger (aerosol disinfection). With this type of application, the finely atomised Sanosil S010 also penetrates small cracks/angles and therefore reaches places that cannot be accessed with normal application types. Mould, its spores, bacteria as well as possible mycotoxins (e.g. aflatoxin) are killed off or deactivated with this method.

However, there are certain restrictions to aerosol disinfection: While mould spores, infestation at an early stage as well as bacteria and viruses are killed off effortlessly, the aerosol quantity is often not sufficient to

completely penetrate thick mould layers. Such surfaces then require additional treatment.

Besides this, dead mould parts are still present even after disinfection. It is therefore of advantage to consider the technical and practical possibilities of thorough removal of the dead biomass beforehand.

Procedure:

- Close windows and doors, wear protective equipment (overall, P3 aerosol filter with protective goggles and/or full facial mask) as Sanosil S010 irritates the respiratory passages in aerosol form.
- Fill Sanosil S010 undiluted into a suitable cold fogger (Sanosil EasyFog/Powerfog) and set the smallest droplet size. Fix the fogging head in maximum elevation position and atomise the product without additives. Dosage: against spores and bacteria: approx. 3- 4 ml Sanosil S010 per m³ room volume.
- For surfaces with visible infestation, set the droplet size to medium and spray the fog directly onto the affected surfaces. The surfaces should be moistened but not soaked. (rule of thumb concrete/brick walls: 50-100 ml/m²)
- In larger rooms, the position of the cold fogger must be varied from time to time or the device carried around to ensure an as even as possible distribution of the aerosol. Leave the product to soak for 2 to 3 hours. Then air the room thoroughly.
- Now you may enter the room without wearing protective equipment.





9. Special application fields

Mould-infested corners, small wall surfaces:

After identifying and remedying the source as much as possible, clean the infested surface and treat it repeatedly with Sanosil S010.

Mould-infested shower or bath joints:

Joints with superficial mould infestation can be wiped off repeatedly with a cloth soaked with Sanosil S010. You can also apply the product with a brush. Wipe off any drops in the bathtub or the shower basin with a cloth before they dry (danger of spots). Silicone joints with deep mould infestation cannot be treated completely with any fungicide. The affected silicone seal must therefore be cut out, the joint disinfected with Sanosil S010, and new sealing compound applied.

Mould stains on putty:

Just as with silicone joints: exchange the infested material. Follow the same recommendations as those for silicone joints.

Wooden parts, furniture and window corners:

Clean the infested wooden parts with hot soapy water, then grind if appropriate, spray with Sanosil S010 and re-lacquer after drying. In case of minor infestation, you may not have to grind and re-lacquer the surfaces. Washing and disinfection are sufficient.

Mould on window and refrigerator seals:

Thoroughly clean the seals with hot soapy water, then wipe them off with a **cloth** wetted with Sanosil S010.

Mouldy textiles:

"Foxing spots" are mould. They smell mouldy and destroy the fabric over time. If possible, wash such fabrics twice at at least 60°C with a standard laundry detergent. You may use a bit of Sanosil S010 in the second wash instead of laundry detergent. Dosage: 1.5 -2 dl /5 litres of water.

Leather:

Mouldy leather is among the hardest-to-treat materials. If you still want to attempt this, first degrease the leather with hot soapy water, then leave it to thoroughly dry in the sun. Afterwards spray it first with 70% alcohol (ethanol). After drying, slightly wet it with Sanosil S010. Once it has dried in the sun again, re-grease the leather.

10. Post-treatment/mould prophylaxis

The walls must be completely dry before repapering or plastering and painting. In our experience, this can take a few weeks. Drying up can be accelerated by installing special ventilators or driers. Applying a coat of silicate colour has given very good results. The low pH value of these paints hinder a renewed fungal growth, at the same time preventing the condensation of water.

For the post-treatment of spots tending towards mould infestation, we recommend Sanosil Paint n' dry, a permeable, highly breathable special paint on calcium silicate basis with climate control and mould-inhibiting properties. It is preferably used for prophylaxis and post-treatment on surfaces tending towards mould infestation due to condensation. The product is solvent-free and practically odourless (VOC content less than 2 g/l). As a high-quality paint, Sanosil Paint n' dry corresponds to wet abrasion class 2 DIN EN 13300. It does not contain any fungicides or other substances hazardous to health and is therefore very well suited as a final coating even in rooms with sensitive inhabitants (small children, allergic persons, patients, etc.).



The climate-controlling effect is achieved by microscopic hollow silicate glass spheres that substantially enlarge the surface of areas coated with Sanosil Paint n' dry. As a result, moisture in the shape of steam is absorbed very well, stored and then quickly dispersed again. Drop formation through condensation is substantially delayed. Because of the absence of droplets, the mould no longer receives the water it requires for growth. In addition, the pH-value is raised to approx. 9.5, which also inhibits mould growth.

Attention: Sanosil Paint n' dry delays the formation of condensation and therefore effectively counteracts mould formation. However, it is not a "cure-all". In case of pressing slope water, defect roofs/facades, rising groundwater and massive insulation problems and/or heat bridges, other construction measures must be implemented.

11. Safety Measures

Observe all Safety Measures strictly:

Protective measures while applying Sanosil S010:

The Disinfectant Sanosil S010 has no toxic effect. In its ready-to-use concentration it can cause light skin burns. Always wear rubber gloves and safety goggles/face mask.

Contact with eyes and skin:

In case of splashing in the eyes, wash out immediately with plenty of water and seek medical attention. In case of contact with the skin, wash the contaminated skin with plenty of water. The affected skin can turn white and itchy. These symptoms will disappear within a few minutes.

Spilled Sanosil S010:

Wash away any spillage immediately by diluting with water. Absorb with a cloth and rinse the cloth thoroughly with plenty of water.

Materials:

Discolouration of (white) titaniferous layers of paint and synthetic coatings may occur, in particular when freshly applied. Special care should be taken with titaniferous paint and/or white-coloured lining material. In case of coats of varnish or lining material, we generally recommend to make prior discolouration tests at selected appropriate spots. The manufacturer cannot be held liable for any damage resulting from inadequate application.

Use biocides safely. Always read the label and product information before use.

Our operating instructions, both oral and written, are based on extensive tests. Our advice is given to the best of our existing knowledge but is not binding insofar as the application and the storage conditions lie beyond our direct control. The description of the products and details of the properties of the compounds do not subsume any liability for damage.



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