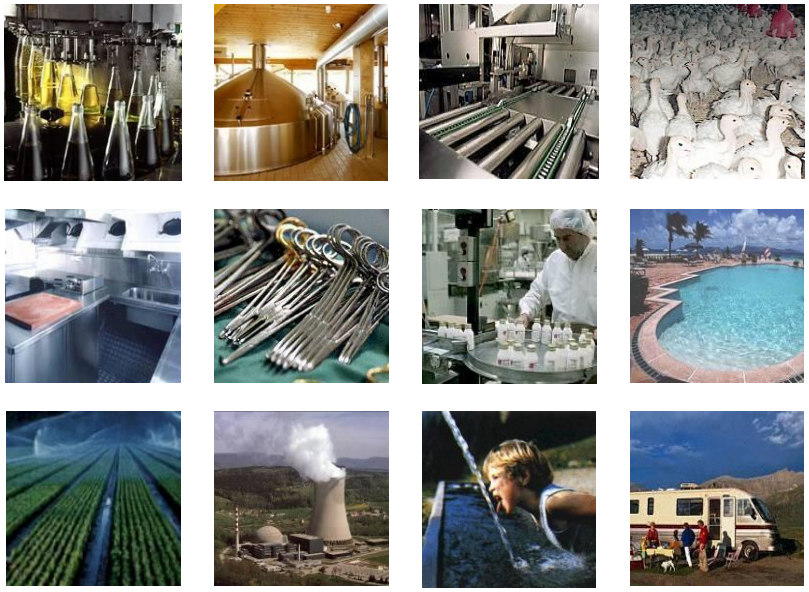
Sanosil Super 25

Disinfectant



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Swiss Quality Since 1982

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Product Description

Sanosil Super 25 is a multicomponent disinfectant. The oxidizing agent used is hydrogen peroxide, which is bonded with stabilising agents to form a complex solution. A long-lasting effect is ensured by the addition of silver which acts as a catalyst in trace amounts. The bactericidal effect of silver is based on the fact that the monovalent silver ion binds very firmly to bacterial proteins by a covalent or coordinate bond, and thus inactivates or precipitates these.

- Its effectiveness against **bacteria, viruses, amoebae, fungi and algae**, i.e. its extremely wide range of application makes it easy to handle for the end user. Only **one** product is needed, where so far 2, 3 or various products were necessary.

- Owing to the **good stability** of the product, a long storage time can be guaranteed. The product remains stable at high water/air temperatures; its effectiveness is even increased at high temperatures.

- Due to its **long-term effectiveness** and excellent characteristics to prevent recontamination, this product is perfectly suitable for the disinfection of drinking water and wells.

- Sanosil Super 25 is especially effective to **prevent a recontamination** of the water with bacteria and viruses.[5]

- Sanosil Super 25 is **ecologically harmless**. Its principal constituent - hydrogen peroxide - does not pollute waste water, because it breaks down into water and oxygen (H_2O and O_2), i.e. it produces no noxious by-products.

- The two basic substances (H_2O_2 and Ag) enhance their advantages (*synergism). The bactericidal effect comes into action quicker and more intensively than if either substance was used on its own.
  * Synergism: Two or more components enhance and intensify their effect

- The combined effects of oxidisation and oligodynamy have created a two-phased product which - in opposition to other disinfectants - is capable of **destroying biofilms**. A process which is important in destroying viruses and bacteria that creates so-called biofilms as a natural protection. The oxygen separated from hydrogen peroxide destroys the biofilm, thus enabling the silver to destroy the bacteria or virus.

Advantages and Properties of Sanosil Super 25

- ✓ universal range of application
- ✓ no gaps
- ✓ long-term effect
- ✓ prevents recontamination
- ✓ no danger of bacterial resistance
- ✓ effective at water temperatures of 0°C – 95°C
- ✓ effectiveness and long-term effect are guaranteed even at high water temperatures
- ✓ no danger in case of overdosing
- ✓ does not create any odour
- ✓ has no toxic effect in its diluted state
- ✓ no carcinogenic or mutagenic effect
- ✓ in its diluted state it does not cause irritation to skin, eyes and mucous membranes
- ✓ does not alter the taste of foodstuffs treated
- ✓ no need to rinse after application
- ✓ neutralization after use not necessary
- ✓ practically not detrimental to waste water and environment
- ✓ does not enter into chemical combination with any other chemical element
- ✓ the pH value is not altered by the application in the recommended concentration
- ✓ storage of up to 5 years possible
- ✓ own measuring and regulating equipment
- ✓ patented
- ✓ all raw material and equipment suppliers as well as the Sanosil® manufacturing plants satisfy the norms ISO 9001 resp. ISO 9002.
- ✓ DGHM Certificate

Areas of Application

1. Beverage Industry

Breweries, producers and bottlers of mineral water, soft drinks, fruit juices, must/cider, wine industry, etc.

Breweries:

Water Treatment
- service and brewing water treatment

Production
- floors, walls, ceilings, drains
- mould control
- fermentation tanks, storage tanks, fittings
- pressure tanks, pipelines, pumps, filters
- equipment, machines, tools
- tanks, containers, dosing installations
- filling plants
- refuse glass showers, hot-water rinsing zones
- CIP installations (collected rinsing water)
- working clothes

Delivery / Storage
- surfaces, containers, pipelines
- transport containers and vehicles
- conveying installations, filters

Cooling Plants / Air-Conditioning Systems
- cooling systems, air washing devices
- air humidifiers, ventilating shafts

Producers of Mineral Water, Soft Drinks, Fruit Juices and Wine:

Water Treatment
- service and well water treatment

Raw Material Storerooms
- floors, walls, ceilings, drains
- transport containers, stacking containers
- filling plants

Production
- floors, walls, ceilings, drains; mould control
- mixing devices, bottle washing installations
- sugar and raw material supplement
- filling plants
- CIP installations (collected rinsing water)
- equipment, machines, tools
- containers, pipelines
- working clothes

Distribution / Storage
- surfaces, containers, pipelines
- transport containers and vehicles
- conveying installations, filters

Cooling Plants / Air-Conditioning Systems
- cooling systems, air washing devices
- air humidifiers, ventilating shafts

2. Dairy Industry

Milk-processing industry, dairies, cheese-making, yoghurt producers, etc.

Delivery
- floors, walls, ceilings, drains
- transport containers, cans
- stacking containers
- filling equipment

Production
- floors, walls, ceilings, drains
- mould control
- conveying and filling equipment
- equipment, machines, containers
- small instruments and tools
- working clothes

Distribution
- transport containers and vehicles
- conveying equipment, filters

Cooling Plants / Air-Conditioning Systems
- cooling systems, air washing devices
- air humidifiers, ventilating shafts

3. Food Processing Industry

Canning factories, butchers, abattoirs, fish processing, bakeries, mills, pasta and farinaceous producers, prepared food producers, chocolate factories, edible oil/margarine/shortening factories, etc.

Water Treatment
- service and well water treatment

Delivery / Raw Material Storerooms
- floors, walls, ceilings, drains
- transport containers
- stacking containers
- filling plants

Production
- floors, walls, ceilings, drains
- mould control
- sorting plants, mixing devices
- conveying and filling equipment
- equipment, machines, tools
- containers, pipelines
- working clothes

Distribution
- transport containers and vehicles
- conveying equipment, filters

Cooling Plants / Air-Conditioning Systems
- cooling systems, air washing devices
- air humidifiers, ventilating shafts

4. Animal Farms / Meat Processing

Disinfection in breeding establishments, such as poultry/cattle/pigs/sheep/rabbits, and in meat processing

Water Treatment
- drinking water treatment

Breeding establishments
- floors, walls, ceilings, drains
- equipment, machines, tools
- egg disinfection (poultry), incubators
- milking installations, cow udder disinfection
- food and drinking water containers
- working clothes

Abattoirs / Storage
- floors, walls, ceilings, drains
- ramps, waiting areas
- plucking and skinning installations
- conveying equipment, sorting plants
- equipment, machines, tools
- storage rooms, cold-storage depots
- working clothes

Transport
- transport vehicles, trucks, ramps

Cooling Plants / Air-Conditioning Systems
- cooling systems, air washing devices
- air humidifiers, ventilating shafts

5. Fish and Shrimp Farms / Processing

Fish farms, ponds with shrimps, mussels and oysters, terrariums, aquariums.

Water Treatment
- water treatment

Breeding
- ponds, channels, containers
- equipment, machines, tools
- conveyor belts (feed)

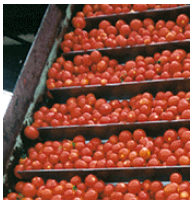
Processing / Storage
- catching devices
- floors, walls, ceilings, transport basins
- conveying equipment, sorting plants
- processing machines, packing material
- equipment, machines, tools
- storage devices, cold-storage depots and trucks
- working clothes

Transport
- transport vehicles, trucks, containers

Cooling Plants / Air-Conditioning Systems
- cooling systems, air washing devices
- air humidifiers, ventilating shafts

6. Agriculture

Hydroponic production (hors-sol), plantations, preservation, pre- and postharvest disinfection



Water Treatment
- irrigation, washing, cooling

Plants
- hydroponic nutrient solutions
- spraying water / cooling water
- ambient air disinfection
- equipment, machines, tools
- conveyor belts, transport devices

Preservation / Conservation
- postharvest disease control
- flowers, fruits, vegetables, etc.

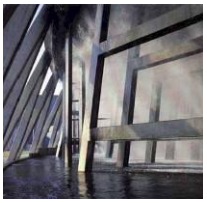
Processing / Storage
- floors, walls, ceilings, drains
- conveying equipment, sorting plants
- washing plants
- processing machines, packing material
- equipment, machines, tools
- storage installations, cold-storage depots and trucks
- working clothes

Transport
- transport vehicles, trucks, containers

Cooling Plants / Air-Conditioning Systems
- cooling systems, air washing devices
- air humidifiers, ventilating shafts

7. Air Conditioning Systems and Cooling Towers

Disinfection of air humidifiers, cooling towers, air-conditioning systems; elimination of algae.



Cooling Towers:

Water Treatment
- cooling water
- emergency cooling water

Air-Conditioning Systems:

Water Treatment
- humidifiers, vaporisers, evaporators
- air washing devices

Air-Conditioning and Ventilation Systems
- filter plants, rotary air filters, disposable filters
- ventilating shafts
- air disinfection (filters)

8. Hotels / Restaurants / Old People's Homes / Schools / Hospitals

Disinfection of surfaces, instruments, laundry, etc.

Water Treatment
- hot and cold water (Legionella)
- drinking water

Kitchen
- floors, walls, ceilings
- working areas, equipment, shelves, tools
- laundry

Sanitary Installations
- floors, walls and ceilings in wet cells
- bathrooms, wash-basins, toilets
- laundry

Rooms
- floors, walls, ceilings
- beds, blankets, carpets
- ambient air disinfection
- instruments, working clothes, transport vehicles
- laundry

Air-Conditioning Systems / Ventilation
- air washing devices, humidifiers, ventilating shafts

9. Medical

Medical, dental and veterinary surgeries

Water Treatment
- hot and cold water (legionella)
- drinking water

Operating Rooms / Treatment Rooms
- floors, walls, ceilings
- working areas, equipment, tools
- ambient air disinfection
- hands disinfection
- laundry

Transport
- ambulances, transport vehicles, wheelchairs
- laundry

Rooms
- floors, walls, ceilings
- beds, blankets, carpets
- instruments, working clothes
- laundry

Air-Conditioning Systems / Ventilation
- air washing devices, humidifiers, ventilating shafts

10. Cosmetics and Pharmaceutical Industry (production, laboratories, etc.)

Surface and content disinfection, preservation

Water Treatment
- service water treatment

Delivery / Raw Material Storerooms
- floors, walls, ceilings, drains
- transport containers

Production
- floors, walls, ceilings, drains
- conveying and filling installations, pipelines
- equipment, machines, tools
- working clothes

Product
- preservation (Sano Belle)

Laboratory
- floors, walls, ceilings
- equipment, machines, tools
- pipelines
- working clothes

Distribution
- transport containers and vehicles
- conveying installations, filters

Cooling Plants / Air-Conditioning Systems
- cooling installations, air washing devices
- humidifiers, ventilating shafts

11. Swimming Pools

Private and public swimming pools, hotel, children and thermal pools, spa baths, whirlpools, saunas, fitness centres, solariums

Swimming Pools
- water disinfection

Water Treatment
- hot and cold water (legionella)

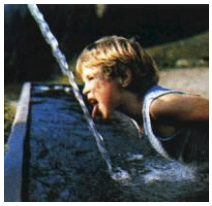
Rooms / halls
- floors, walls, ceilings
- changing rooms
- solariums, saunas, deck chairs

Sanitary Installations
- floors, walls and ceilings in wet cells
- bathrooms, wash-basins, toilets

Air-Conditioning Systems / Ventilation
- air washing devices, humidifiers, ventilating shafts

12. Water Supply

Disinfection of drinking water, pipelines, drinking fountains, etc.; long-term conservation of emergency water supplies (military, civil defence).



Drinking Water Treatment
- raw water disinfection
- protection of pipeline network
- long-term disinfection (e.g. emergency water)

Surface Disinfection
- drinking water pipelines (standing & flow method)
- cisterns, reservoirs
- wells
- equipment, machines, tools

13. Air and Water Filters

Disinfection of filter installations

Filter Installations
- standard filtering systems
- micro-, ultra-, nano filtering systems
- reverse osmosis systems

14. Waste Water Treatment

Sewage treatment plants (public or industrial)

Sewage Treatment Plants:

Activation Plants
- biocatalytical effect
  (process acceleration by inserting oxygen)
- control of filament-forming bacteria
- suppression of the formation of sulphurous water

Clarifiers
- control of filament-forming bacteria
- reduction of the formation of bulking sludge

Industry:

Tanneries, Paper Industry, Refineries, etc.
- oxidation of sulphur components
- oxidation of phenolic components

Chemical Industry, Precious Metal Extraction, etc.
- oxidation of cyanide

15. Tourism
(disinfectant sprays, drinking water treatment)
Travel, camping, caravans, boats. Disinfection of beaches.

Water Treatment
- drinking water
- hot and cold water (Legionella)
- camping, caravans
- boats, ships

Sanitary Installations
- floors, walls and ceilings in wet cells
- bathrooms, wash-basins, toilets

Rooms
- floors, walls, ceilings
- beds, blankets, carpets

Beach
- surface disinfection

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16. Household
Disinfection of kitchen, bathroom, shower, toilet, etc.

Water Treatment
- hot and cold water (legionella)
- drinking water

Kitchen
- floors, walls, ceilings
- working boards, equipment, tools
- laundry

Sanitary Installations
- floors, walls and ceilings in wet cells
- bathrooms, wash-basins, toilets
- laundry

Rooms
- floors, walls, ceilings
- beds, blankets, carpets
- laundry

Air-Conditioning Systems / Ventilation
- air washing devices, humidifiers, ventilating shafts

Recommended Dosage for Sanosil® Disinfectants

Target Group	Field of Application	Product	Surface Disinfection Substance Disinfection	Concentration %
Food and beverage industry	equipment CIP walls/floors bottle washing crowners filling plants	Sanosil Super 25 Sanosil Super 25 Sanosil Super 25 Sanosil Super 25 Sanosil Super 25 Sanosil Super 25	surface disinfection surface disinfection surface disinfection surface disinfection surface disinfection surface disinfection	2% 2% 2% 10 ppm 2% 2%
Dairy industry	equipment CIP walls/floors transport equipment	Sanosil Super 25 Sanosil Super 25 Sanosil Super 25 Sanosil Super 25	surface disinfection surface disinfection surface disinfection surface disinfection	2% 2% 2% 2%
Animal husbandry	floors/walls equipment drinking water	Sanosil HWP Sanosil HWP Sanosil Super 25	surface disinfection surface disinfection substance disinfection	5% 2% 20 ppm
Fruit and vegetables	hors sol pre harvesting post harvesting	Sanosil Super 25 Sanosil Super 25 Sanosil Super 25	substance disinfection surface disinfection surface disinfection	20 ppm 1-3% 1-5%
Vineyards	equipment	Sanosil Super 25	surface disinfection	2%
Air-conditioning	filters tubes	Sanosil Super 25 Sanosil Super 25	substance disinfection surface disinfection	30 ppm 1%
Cooling towers	coolers	Sanosil C	substance disinfection	0.5-30 ppm
Hospitals	walls/floors laundry disinf. by immersion hand disinfection air-conditioning air-cond. ducts	Sanosil Super 25 Sanosil Super 25 Sanosil Super 25 Sanosil HWP Sanosil Super 25 Sanosil Super 25	surface disinfection surface disinfection surface disinfection surface disinfection substance disinfection surface disinfection	2% 2% 5% 3% 30ppm 1%
Swimming pools	public pools private pools HWP's sauna floors anti fungi	Sanosil Super 25 Sanosil Super 25 Sanosil HWP Sanosil Super 25 Sanosil Super 25 Sanosil Super 25	substance disinfection substance disinfection substance disinfection substance disinfection surface disinfection surface disinfection	60-80 ppm 30-50 ppm 80-100 ppm 40-60 ppm 2% 2%
Drinking water	stand disinf. of tubes drinking water emergency water wells	Sanosil Super 25 Sanosil Super 25 Sanosil Super 25 Sanosil Super 25	surface disinfection substance disinfection substance disinfection substance disinfection	80-120 ppm 3-30 ppm 30 ppm 5-30 ppm
Waste water	biological oxidation	Sanosil C	--	0.5-5%
Pharmaceutical and chemical industry	equipment walls/floors conservation	Sanosil HWP Sanosil HWP Sanosil HWP	surface disinfection surface disinfection substance disinfection	2% 2% 20-50 ppm
Travel, camping, household	tourism toilets, etc.	DDW * SDS **	substance disinfection surface disinfection	-- --

* SANOSIL® DISINFECTANT FOR DRINKING WATER

** SANOSIL® DISINFECTANT SPRAY

Technical Data

State of aggregation: Liquid and clear as water. In concentrated form gives off a scarcely perceptible smell. In doses Sanosil Super 25 is odourless and tasteless.

Weight: 1.196 kg/dm³

Boiling point: 114.0° C at 1013 millibars

Freezing point: -51° C

pH value: Sanosil Super 25: approx. pH 1.2

Foaming characteristics: Sanosil Super 25 does not foam.

Biodegradability: Sanosil Super 25 is non-polluting.
Its main constituent, hydrogen peroxide, does not pollute the sewage water, as only water and oxygen ($2\ H_2O_2 = 2\ H_2O + O_2$) - in other words non-polluting by-products - result when it breaks down.

Combustibility: Sanosil Super 25 is non-inflammable. Contact with oxidizable organic substances can, however, lead to spontaneous combustion. For this reason wool, wood, straw, paper, petroleum, coal and textiles, etc. should not be brought into contact with Sanosil Super 25.

Corrosive property: Corrosion-proof are 99.5% aluminium (non-ferrous), nickel chromium steel e.g. 1.4301, 1.4401, 1.4571 and PP, PVC, PE.
In the case of varnishing and other forms of coating commonly used in swimming-pools or storage tanks, preliminary tests should preferably be carried out at appropriate spots.

Corrosive effect:

Concentration: 1%
Reaction time: 24 hrs
Temperature: 50° C

Material:	Actual loss of weight $g/m^2/24$ hrs	Permissible loss of weight $g/m^2/24$ hrs
Aluminium 99.5	0.37	10
Anticorodal	0.53	10
Galvanised iron	0.04	30
Cr-Ni steel (18/8)	0.06	0.5

Water solubility: Sanosil Super 25 is completely soluble in water and can be mixed with water in any ratio.

Moistening power: Moistening power and adhesion of water mixed with Sanosil Super 25 (in any ratio) are similar to those of water.

Coat formation: Sanosil Super 25 does not form any coat on the disinfected surfaces.

Bleaching: With the prescribed concentrations of Sanosil Super 25, Sanosil HWP and Sanosil C and at temperatures below 50°C no bleaching should occur.

Discoloration: Discoloration of titaniferous layers of paint and coatings and/or new lining may occur, in particular when freshly applied. Special care should be taken with titaniferous paint and/or white-coloured lining material. Basically, all we can advise in the case of coats of varnish or lining material is to make prior discoloration tests at selected points.

Neutralisation: Sanosil Super 25 can be neutralised by the addition of sodium bisulphite ($NaHSO_3$).

The reaction is spontaneous and simply leads to a little more sulphate. A 10% overdosage is certain:

$$H_2O_2 + NaHSO_3 = H_2O + NaHSO_4$$

Sodium bisulphite solutions (38 - 40%) are simple to dose or to use when drawing samples.

Toxicity

Swiss toxin class 2, BAG T No. 31080 DS.
Strictly observe warnings on containers.

Classified as "relatively harmless" according to Hodge and Sterner (1949).
Ind Hyg. Quar. 10.93-96 CIVO-TNO 03.11.1980 JvH. $LD_{50} > 2000$ mg/kg.

Suitability and Harmlessness in Drinking Water

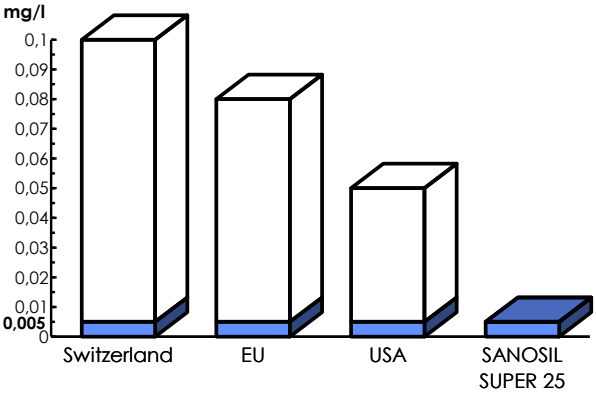
The average dosage of Sanosil Super 25 in drinking water amounts to 10 mg/l (ppm); at this rate the silver content is 0.005 mg/l.

Following are some examples of officially authorised silver levels in drinking water:

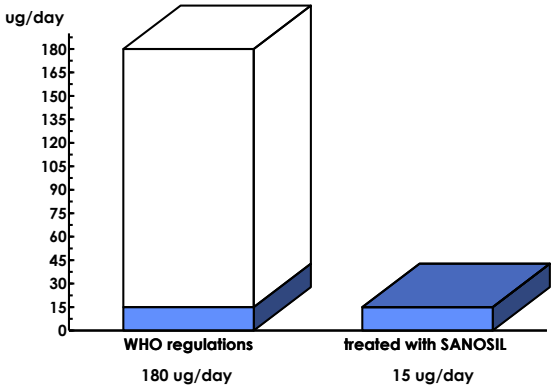
- USA, Canada, Russia, Japan **0.05 mg/l (ppm)**
- European Union **0.08 mg/l (ppm)**
- Switzerland **0.10 mg/l (ppm)**

i.e. water treated with Sanosil Super 25 has a silver content of **10 - 20 times less** than officially authorised.

Maximal officially authorised silver levels in drinking water



WHO recommendation for harmless silver ingestion through treated drinking water



The World Health Organisation WHO recommends a max. harmless silver ingestion through treated drinking water of 180 µg/day.
(3 l of drinking water/person/day)

When consuming drinking water previously treated with Sanosil Super 25, the ingestion of silver (3 l water/person/day) amounts to 15 µg,

i.e. 12 times LESS than by WHO recommendation.

Impurities

Other impurities (As, Pb, Hg, Sn, Ni) in Sanosil Super 25 are far below the measurable level.

Comparison Table between Hydrogen Peroxide – Silver – Sanosil Super 25

	H_2O_2	Ag^+	Sanosil Super 25
universal use	no	No	yes
gaps in effectiveness	yes	Yes	no
long-term effectiveness	no	Yes	yes
bacteria killing effect	slow	very slow	good
algicidal effect	little	Good	good
fungicidal effect	little	Good	good
prevents recontamination	no	Yes	yes
measurable instantly	yes	No	yes
neutral pH	yes	Yes	yes
sensitivity to light	yes	Yes	negligible
sensitivity to temperature	yes	Yes	negligible
sensitivity to UV-rays	yes	Yes	negligible
long-term storage	no	Yes	yes
effective in organically strained water	yes	No	yes
effective against biofilms	no	no	yes
required dosing quantity	high	very high	economical
Reusability	no	- - -	good

Comparison Table
Disinfection with Sanosil Super 25 and Disinfection with Chlorine

	Sanosil Super 25	**Chlorine**
long-term effectiveness	Very long	brief to medium, depending on temperature
sensitivity to light	almost nil	medium
sensitivity to temperature	almost nil	rapid decomposition sets in at rising temperatures
neutral pH	neutral	change in pH of treated water
contact time required to kill off bacteria	medium	short
effect inhibited in the presence of organic matter	yes	yes
influence of ammonia/urea	up to 5 mg/l nil	formation of chloramine
algicidal effect	yes	restricted
fungicidal effect	yes	restricted
odour formation	no	yes
change in taste	no	yes
risk involved with an overdose	practically nil	yes
carcinogenic/mutagenic	no	metabolons: yes

Comparison Table
Disinfection with Sanosil Super 25 and Disinfection with "Quats"

	Sanosil Super 25	**"Quats"**
odour formation	no	yes
change of taste	no	yes
chemical combination with other substances	no	yes
contact time necessary to kill bacteria	medium	at high temperatures: short at low temperatures: long
sensitivity to temperature	very little	little
decomposition without residues	practically yes	no
foaming	no	yes
rinsability	very good	poor
formation of film at high water temperatures	no	yes
albumin turbidity and deterioration of frothing on contact with beer	no	yes
toxicity depending on dosage	no	yes
danger in case of over-dosage	practically none	yes
measurement of concentration	good	poor

Comparison Table
Disinfection with Sanosil Super 25 and Disinfection with Products on the basis of Peracetic Acid

	Sanosil	**Product on the basis of Peracetic Acid**
universal application	yes	no
gaps in effectiveness	no	yes
odour	practically none	caustic
influence on taste, smell and consistency of food & beverages	no	yes
rinsing necessary	no	yes
corrosion	no	yes
several times reusable	yes	limited
fully automatic regulation	yes	no
pH application range	1 – 8	2,5 – 4
temperature application range	5°C - 95°C	5°C - 40°C danger of explosion at more than 65°C
neutralisation of waste water	no	yes
germicidal killing speed	medium	quick

Comparison of various Disinfectants

Assessment Criteria	Quats	Phenols	Aldehydes	Halogens	Sanosil Super 25
Spectrum of activity	gram pos. bacteria, fungi, yeasts, algae, lichen, sheated viruses	gram pos. bacteria gram neg. bacteria fungi, yeasts sheated viruses	gram pos. bacteria gram neg. bacteria fungi, yeasts, spores, sheated and unsheated viruses	gram pos. bacteria gram neg. bacteria fungi, yeasts, spores, sheated viruses	gram pos. bacteria gram neg. bacteria fungi, yeasts, spores, sheated and unsheated viruses, amoebae Protozoa, Biofilms
Gaps in spectrum of activity	gram neg. bacteria, mycobacteria, spores, unsheated viruses, amoebae, protozoa, biofilms	spores, unsheated viruses amoebae, biofilms	amoebae, protozoa, biofilms	amoebae, protozoa, biofilms	----------
Optimal pH	5 - 9	2 – 8	4 – 9	5 - 9	2 - 8
pH stability	1 - 12	1 – 14	3 – 12	1 - 9	2 - 8
Albumin turbidity and deterioration of frothing in contact with beer	strong	not used because of risk of alteration of colour and taste	not used because of risk of alteration of colour and taste	strong	no
Reaction to water hardness	poor	very good	good	good	very good
Albumin loading capacity	poor	very good	poor	poor	good
Dirt loading capacity	poor	very good	unsatisfactory	good	moderate
Surface behaviour	surface residue	adsorbed on rubber and plastics	high vapour pressure, loading of ambient air	surface residue	very good
Odour	odourless	Strong	pungent	strong	odourless
Foam behaviour	strong foaming	see albumin turbidity	see albumin turbidity	good	very good
Tolerance to skin	good	good in recommended concentration	irritant to skin and eyes, risk of sensitisationr	irritant to skin and eyes, toxic in gaseous form	very good in recommended concentration
Carcinogenity (ADI) Acc. Daily Intake	none 0.2 mg/kg	yes, proven	yes, proven	yes, in the form of chloroform	none 0.18 mg/kg (WHO)
Mutagenity	none	none up to 800 mg/kg	yes	yes, in the form of chloroform	none
LD_{50} oral, rats	350 - 900 mg/l	1830 - 3000 mg/l	800 - 1700 mg/l		greater than 2000 mg/l
LD_{50} by inhalation			0,59 mg/l air		greater than 59.9 mg/l
German water pollution class	3	1 – 2	1 - 2	2 - 3	0
General stability after dilution	only short-term, not re-usable	only short-term, not re-usable	only short-term, not re-usable	only short-term, re-usable under certain conditions	very good, re-usable
Stability to temperature	moderate	Poor	poor	very poor	very good
Corrosion in function of temperature of use				high risk of corrosion with increasing temperature	no change
Biodegradability in water treatment plants	90% after 5 days	100% after 3 - 7 days neutralisation necessary	good, but neutralisation necessary	very poor, neutralisation necessary	100% after 2 - 4 hours
Biodegradability "Closed Bottle Test" OECD 301 D	65-70% degraded in 20 days	80-90% degraded in 20 days	75-90% degraded in 5 - 10 days		100% degraded in 24 hours
Universal use	limited	Limited	limited	moderate	very good
Determination of concentration in situ	not possible	not possible	not possible	very good	very good
Fully automatic dosing	not possible	not possible	not possible	very good	very good

Effectiveness / Antimicrobial Effect

The antimicrobial effect of Sanosil Super 25 includes the complete range of micro-organisms.

Sanosil Super 25 is effective against:
Gram positive and gram negative bacteria, bacterophagus, viruses, spore-forming organisms, yeasts, mould, amoebae.

Sanosil Super 25 is proven to be effective against:
Anthracis, amoebae, cholera, ECBO, herpes, hepatitis, HIV, influenza, avian flu (H5N1, H5, H7 and H9), Legionnaires' disease, listeria, meningitis, MRSA, mycoderins, Newcastle polio, pseudorabies, tuberculosis, vaccina, VRE.

Sanosil Super 25 is effective against biofilm:
In opposition to other disinfectants, Sanosil Super 25 is capable of destroying biofilms. A process which is important in destroying viruses and bacteria that create so-called biofilms as a natural protection. The oxygen separated from hydrogen peroxide destroys the biofilm, thus enabling the silver to destroy the bacteria or virus.

Excerpt from some tests:
On the following pages we show you some excerpts of the tests that we carried out.

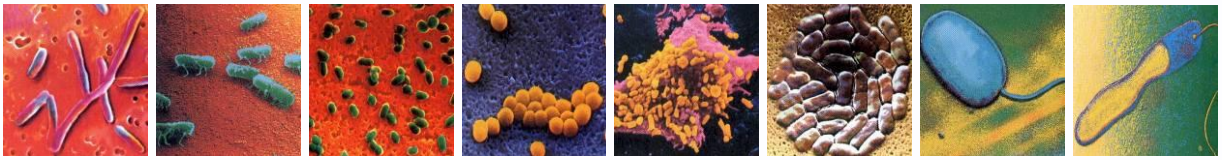
You will find the complete test results in the annex (Literature).
On demand, we can supply you with the complete results of the tests or abstracts thereof.

At the time of printing of this detailed documentation, further comprehensive tests are in preparation:

- drinking water
- hospitals
- tropical diseases
- post-harvesting fruit treatment
- beverage industry
- foot-and-mouth disease

The annex (Literature) attached to this edition will be updated continuously.

List of Tested Pathogens up to date:



Absidia corymbiféra
Acinetobacter Iwoffii
Aeromonas salmonicida
Agrobacterium radiobacter
Alternaria alternata
Anthrax (Bacillus anthracis)
Aspergillus niger
Aspergillus niger-spores
Astenionella formosa

Bacillus cereus
Bacillus licheniformis
Bacillus mesenterious
Bacillus subtilis
Bacillus subtilis spores
(S.B.Aspergillus fumigatus Adenovirus)
Bacillus circulants vegetative and spores
Bacillus sp. marine
Bacteria cinerea
Bacteria erwinia
Botrytis cinerea
Burkholderia cepacia

Campylobacter jejuni
Candida albicans
CDC gr. IV c-2
Chlamidomonas sp.
Colera (V. cholerae)
Chryseomonas luteola
Chroomonas norstedtii
Ciliata g. sp.
Citro. fre.
Cladosporium cladosporoides
Clostidrium novyi
Clostidrium perfringens
Clostridium sporogenes
Coagulase +ve staphylococci
Comomonas acidovorans
Corynebact.
Criptomonas sp.
Cryptosporidium parvum

Dermatophagoides pteronyssinus

ECBO virus
Enterobacter aerogenes
Enterococcus faecium
Enterococcus faecalis
Enterococcus hirae
Erwinia carotovora
Eschericia coli

Flagellata apochromatica
Flavobacter/Cytophaga
Flavobacterium indologenes
Fragilaria sp.

Fusarium
Fusarium spp.

Galionella sp.
G. candidum

Hepatitis B
Hepatitis C surrogate (BVDV)
Herpes simplex type 1
HIV-1

Influenza A virus
Influenza A, H5N1
Influenza A, H5, H7 and H9

Klebsiella oxytoca
Klebsiella pneumoniae

Lactobacillus brevis
Lactobacillus lindneri
Lactobacillus plantarum
Lactobacillus sp
Lactobacillus wild type
Legionella pneumophila
Leuconostoc mesenteroides
Listeria innocua
Listeria monocytogenes

Melosira var.
MRSA
Microsporum gypseum
Micrococcus luteus
Micrococci marine
Micrococcus pyogenes aureus
Micrococcus roseus
Micrococcus candidus
Mucor
Mycobacterium phlei
Mycobacterium smegmatis
Mycobacterium spez.

Nagleria fowleri
Naumaniella sp.
Neisseria meningitidis
Newcastle Disease virus
Nitzschia sp.

Ochrobactrum anthorpi
Orthopoxvirus vaccinia

Papovavirus SV-40
Paramyxo virus
Pasteurella
Pedicoccus damnosus
Pedicoccus sp
Penicillium
Penicillium digitatum
Penicillium roqueforti

Penicillium verrucosum
Pestis (Y. Pestis)
Pichia membranaefaciens
Poliovirus 1
Proteus mirabilis
Proteus vulgaris
Pseudomonas aeruginosa
Pseudomonas alcaligenes
Pseudomonas chlororaphis
Pseudomonas fluorescens
Pseudomonas spec.
Pseudomonas syringae pv. Tomato

Ralstonia picketti
Rhizopus
Rotatoria g. sp.

Saccaromyces cerevisiae
Saccharomyces uvarum
Sacch.cereivisia var. uvarum
ssp.carlsbergensis
Salmonella enteritidis
Salmonella paratyphi
Salmonella sp.
Salmonella typhimurium
Salmonella typhi
Salmonella typhosa
Sarcina lutea
Staphylococcus agalactiae
Staphylococcus albus
Staphylococcus aureus
Staphylococcus faecium
Staphylococcus marcescens
Stephanodiscus hantzschii
Streptococcus faecalis
Streptococcus lactis
Streptococcus pyogenes

Trichophyton mentagrophytes
Pseudorabies virus
Trophozoite protozoa inl. Amoebae
Tuberculosis (Mycobacterium
Tuberculosis, resistant strain H_{37} R_v)
Tuberculosis (Mycobacterium
Tuberculosis, wild-type strain)

Vaccina virus
VRE
V. parahaemolyticus

Xanthomonas campestris

Zoogloea sp.

Excerpt from:
"Sanosil test of disinfection activity"
Institut Fresenius, Taunusstein, Germany, January 1983. **(DES T 1/e)**

Test organisms	
Escherichia coli	ATCC 11229
Staphylococcus aureus	ATCC 6538
Proteus mirabilis	ATCC 14153
Pseudomonas aeruginosa	ATCC 27853
Candida albicans	ATCC 10231

Time of action	**5 minutes**	**15 minutes**	**30 minutes**	**60 minutes**	**120 minutes**	**blank**
Escherichia coli (35'000'000/ml)						
20 ppm **Sanosil®**	++	++	++	++	++	++
40 ppm **Sanosil®**	++	++	++	++	+	
75 ppm **Sanosil®**	++	++	+	(+)	-	
Staphylococcus aureus (35'000'000/ml)						
20 ppm **Sanosil®**	++	++	++	+	+	
40 ppm **Sanosil®**	++	++	++	(+)	-	
75 ppm **Sanosil®**	++	+	(+)	-	-	
Proteus mirabilis (28'000'000/ml)						
20 ppm **Sanosil®**	++	++	++	++	+	++
40 ppm **Sanosil®**	++	++	+	+	-	
75 ppm **Sanosil®**	++	+	(+)	-	-	
Pseudomonas aeruginosa (65'000'000/ml)						
20 ppm **Sanosil®**	++	++	++	++	++	++
40 ppm **Sanosil®**	++	++	++	+	(+)	
75 pmm **Sanosil®**	++	++	+	-	-	
Candida albicans (240'000/ml)						
20 ppm **Sanosil®**	++	++	++	+	+	++
40 ppm **Sanosil®**	++	++	+	+	(+)	
75 pmm **Sanosil®**	++	++	+	(+)	-	

- = no growth
(+) = weak growth
+ = clear growth
++ = strong growth

Sanosil Super 25 – antiviral universal disinfectant

Excerpt from:
"Test of the disinfection action of Sanosil Super 25"
Institut Bachema, Zurich, Switzerland, August 1983. **(DES T 5/e)**

Test organisms	
Staphylococcus aureus	ATCC 25923
Streptocuccus faecalis	LA 231
Escherichia coli	ATCC 25922
Salmonella typhimurium	ATCC 14028
Pseudomonas aeruginosa	ATCC 27853
Klebsiella pneumoniae	ATCC 13883
Candida albicans	LA 2784

Test organisms	**Sanosil® concentration**	**Exposure time**				
		30 min.	45 min.	60 min.	90 min.	4 hrs
Staphylococcus aureus	1 %	99.8 %	100 %	100 %	100 %	100 %
Staphylococcus aureus	2 %	100 %	100 %	100 %	100 %	100 %
Streptococcus faecalis	1 %	85.8%	92 %	90.8%	98.4%	100 %
Streptococcus faecalis	2 %	92.2%	99.5%	100 %	100 %	100 %
Escherichia coli	1 %	75.5%	95.4%	100 %	100 %	100 %
Escherichia coli	2 %	100 %	100 %	100 %	100 %	100 %
Salmonella typhimurium	1 %	100 %	100 %	100 %	100 %	100 %
Salmonella typhimurium	2 %	100 %	100 %	100 %	100 %	100 %
Pseudomonas aeruginosa	1 %	100 %	100 %	100 %	100 %	100 %
Pseudomonas aeruginosa	2 %	100 %	100 %	100 %	100 %	100 %
Klebsiella pneumoniae	1 %	98.8%	96.5%	96.6%	94.1%	100 %
Klebsiella pneumoniae	2 %	99.6%	97.1%	98.4%	98.4%	100 %
Candida albicans	1 %	91.8%	88.6%	93.4%	92.9%	100 %
Candida albicans	2 %	92.4%	93.8%	96.4%	100 %	100 %

Excerpt from:
"Disinfective efficacy of Sanosil Super 25"
Public Health Institute of the Hungarian Army, Department of Epidemiology and Microbiology, Budapest, Hungary, June 1992. **(DES T 85/e)**

Test organisms	
Streptococcus pyogenes	HNCMB 80153
Clostridium novyi	HNCMB 105007
Campylobacter jejuni	HNCMB 200001
Salmonella typhi	HNCMB 10086

Test organisms	Time	5%	4%	3%	2%	1%	0.5%	Control
Streptococcus Pyogenes group 2×10^8 TE/ml	5 min.	4+	4+	4+	4+	4+	4+	4+
	15 min.	0	0	0	1+	2+	3+	
	30 min.	0	0	0	0	0	0	
	60 min	0	0	0	0	0	0	
Clostridium novyi 2×10^8 TE/ml 105007	5 min.	0	0	0	0	0	0	2+
	15 min.	0	0	0	0	0	0	
	30 min.	0	0	0	0	0	0	
	60 min.	0	0	0	0	0	0	
Campylobacter jejuni 2×10^8 TE/ml 200001	5 min.	0	0	2+	3+	4+	4+	4+
	15 min.	0	0	0	0	0	0	
	30 min.	0	0	0	0	0	0	
	60 min.	0	0	0	0	0	0	
Salmonella thyphi 2×10^8 TE/ml 10086	5 min.	4+	4+	4+	4+	4+	4+	4+
	15 min.	1+	2+	3+	4+	4+	4+	
	30 min.	0	0	3+	4+	4+	4+	
	60 min.	0	0	0	0	4+	4+	

4+ strong growth
3+ substantial growth
2+ clear growth
1+ weak growth
0 no growth

Sanosil Super 25 – antiviral universal disinfectant

Excerpt from:
"Expertise on the suitability of Sanosil Super 25 disinfectant for use as a chemical laundry disinfecting agent"
Institut Fresenius, Taunusstein, Germany, April 1983. **(DES T 3/e)**

Test organisms		Germ content
Staphylococcus aureus	ATCC 6538	8.3×10^7 CFU/ml
Proteus mirabilis	ATCC 14153	8.7×10^7 CFU/ml
Klebsiella pneumoniae	ATCC 4352	11.0×10^7 CFU/ml
Pseudomonas aeruginosa	ATCC 15442	8.7×10^7 CFU/ml
Candida albicans	ATCC 10231	2.6×10^7 CFU/ml

Result of investigation	1 % **Sanosil®**			2 % **Sanosil®**			Reference 1% phenol			Blank value (sterile water)		
Exposure time	2 h	4h	10h	2h	4h	10h	2h	4h	10h	2h	4h	10h
Staphylococcus aureus	+	-	-	-	-	-	-	-	-	++	++	++
Proteus mirabilis	++	(+)	-	-	-	-	-	-	-	++	++	++
Klebsiella pneumoniae	++	+	-	+	-	-	+	-	-	++	++	++
Pseudomonas aeruginosa	++	+	-	+	(+)	-	+	+	-	++	++	++
Candida albicans	+	(+)	-	(+)	-	-	(+)	-	-	++	++	++

- = no growth of test germs
(+) = weak growth of test germs
\+ = clear growth of test germs
++ = substantial growth of test germs

Excerpt from:
"The effect of Sanosil Super 25 on Trophozoite protozoa incl. amoebae"
Analabs, Perth, Australia, September 1987. **(DES T 37/e)**

Tube No.	**Sanosil®** initial test concent.	**Sanosil®** ppm	**Sanosil®** conc. aft. 14 days	Amoebae	Cilates	Flagellates	Bacteria
1	2 %	20'000	100	-	-	-	-
2	1 %	10'000	10	-	-	-	-
3	0.5 %	5'000	0	-	-	-	+
4	0.1 %	1'000	0	+	+	+	+
5	0.08 %	800	0	+	+	+	+
6	0.04 %	400	0	+	+	+	+
7	0.008 %	80	0	+	+	+	+
8	0.004 %	40	0	+	+	+	+
9	0.000 %	0	0	+	+	+	+

- = not detected microscopically / **+** = motile active forms detected microscopically

Excerpt from:
"Report on testing of Sanosil Super 25 (E. coli and cholerae)"
Haffkine Institute for Training, Research & Testing, Bombay, India, December 1990.

(DES T 63/e)

Concent. of **Sanosil®** ppm	Exposure time in minutes	**E. coli**		**V. Cholerae**	
		Count/ml	% kill	Count/ml	% kill
0	0	1'200	0	2'100	0
25	30	46	96.17	NIL	100.00
	60	29	97.58	NIL	100.00
	120	NIL	100.00	NIL	100.00
50	30	46	96.17	NIL	100.00
	60	26	97.83	NIL	100.00
	120	NIL	100.00	NIL	100.00
75	30	32	97.33	NIL	100.00
	60	12	99.00	NIL	100.00
	120	NIL	100.00	NIL	100.00

Excerpt from:
"The effect of Sanosil Super 25 on Legionella pneumophila"
National Institute of Hygiene, Budapest, Hungary, December 1987. **(DES T 42/e)**

Temperature	Concentration of **Sanosil Super 25** in ppm							
	25°C 0 ppm	25°C 10 ppm	25°C 20 ppm	25°C 40 ppm	40°C 0 ppm	40°C 10 ppm	40°C 20 ppm	40°C 40 ppm
Expos. time in min.								
0	0	0	0	0	0	0	0	0
1								99.40
2							99.40	99.98
2.5				99.70				
3								99.98
4							99.98	
5			98.10	99.98		99.40		
10		88.80	99.91			99.99		
15			99.98			99.98		
20		98.10						
30		99.94						
40		99.98						
60								

Sanosil Super 25 – antiviral universal disinfectant

Excerpt from:
"Expert opinion on the anti-viral effect of Sanosil Super 25 on the infectivity of Poliovirus, Papovavirus (SV-40), Adenovirus and Vaccine Virus"
National Institute of Hygiene, Budapest, Hungary, June 1988. **(DES T 50/e)**

Exposure time (hours)	Effect of **Sanosil Super 25** 0.1% concentration on the infectivity of **Poliovirus**		
	distilled water	0.2 % albumine	10 % foetal calf plasma
1 h	2.75	3.00	2.25
4 h	3.25	3.50	3.00
24 h	≥4.25	≥4.75	≥5.00

Exposure time (hours)	Effect of **Sanosil Super 25** 0.1% concentration on the infectivity of **Papovavirus (SV-40)**		
	distilled water	0.2 % albumine	10 % foetal calf plasma
1 h	2.50	1.50	1.50
4 h	2.50	2.00	2.00
24 h	≥4.00	≥1.50	≥3.50

Exposure time (hours)	Effect of **Sanosil Super 25** 0.1% concentration on the infectivity of **Adenovirus**		
	distilled water	0.2 % albumine	10 % foetal calf plasma
1 h	0	0	0
4 h	0.75	1.00	1.00
24 h	≥4.50	≥4.50	≥4.50

Exposure time (hours)	Effect of **Sanosil Super 25** on the infectivity of **Vaccine Virus**					
	Sanosil Super 25 0.025 %			**Sanosil Super 25** 0.1 %		
	Hanks solution	+0.2% albumine	+10% foe-tal calf plasma	Hanks solution	+ 0.2 % albumine	+10 % foe-tal calf plasma
1 h	2.75	2.75	2.50	≥2.25	≥2.25	≥2.25
4 h	≥4.00	≥4.00	≥4.00	≥2.75	≥2.75	≥2.75
24 h	≥4.00	≥4.00	≥4.00	≥4.00	≥4.00	≥4.00

1-log =-99.9% 2-log = 99.99% 3-log = 99.999% 4-log = 99.9999%

Excerpt from:
"Report on bacteriological sensitivity study of Sanosil Super 25"
Bombay Veterinary College, Department of Microbiology, Bombay, India,
August 2002. **(DES T 175/e)**

Report

Sample description:	Disinfectant (Sanosil Super 25)
Received on:	19.07.2002
Batch No. /Date Manufacturer:	NIL
Sample supplied by:	Sanosil Biotech Pvt. Ltd.
Concentrations supplied:	3%, 5%, 10% und 15%
Organisms used:	Bacillus anthracis
Time of exposure:	10, 20, 30 minutes, 1 hour, 2 hours

Method

1. Fresh broth culture of Bacillus Anthracis containing 10^6 org/ml was inoculated into tubes having 3%, 5%, 10% and 15% concentration of the given disinfectant.
2. Organisms were exposed to various time intervals viz. 10, 20, 30, 60 and 120 minutes.
3. 0.2ml of each "concentration + organism mixture" was plated onto nutrient agar plates after the specific time intervals and kept for incubations at 37°C for 48 hours.
4. Presence or absence of growth was observed and recorded.

Observations

Concentration used	Time of Exposure				
	10 min	20 min	30 min	60 min	120 min
3% **5%** **10%** **15%**	No growth on any plate				

Conclusions

The disinfectant product was found effective against Bacillus anthracis in-vitro at a concentration of 3% for 10 minutes.

Excerpt from:
"Report on the effect of Sanosil Super 25 efficacy against meningococci (Neisseria mengitidis)"
Prof. Dr. med R. Schubert, Hygiene Centre and Environmental Hygiene,
University Frankfurt/M, Germany, February 1988. **(DES T 44/e)**

Concentration of the trial preparation Sanosil Super 25	**Germ density 4.0 x 10^5 CFU/ml** Reaction time in minutes				**Germ density 1.7 x 10^9 CFU/ml** Reaction time in minutes			
	5'	15'	30'	60'	5'	15'	30'	60'
50 %	-	-	-	-	-	-	-	-
0.25 %	-	-	-	-	-	-	-	-
0.10 %	-	-	-	-	+	-	-	-
0.05 %	-	-	-	-	+	+	-	-
0.01 %	+	+	-	-	+	+	+	-
0.05 %	+	+	+	-	+	+	+	+
0.001 %	+	+	+	+	+	+	+	+

Explanation of symbols: + = growth / - = no growth

Excerpt from:
"Effectiveness of antimicrobial activity Sanosil Super 25 for use in soft drinks processing lines"
Institute for Food Microbiology and Consumer Goods Ltd., December 1990.
(DES T 65/e)

Type of micro-organism exposed	**Control before treatment**	**No. of surviving micro-organisms ***		
		Tap water	**Tap water + 2% blood serum****	**Tap water + orange juice**
Lactobacillus plantarum ATCC 8014	$1.7x10^6$	<10	<10	<10
Lactobacillus (wild)	$1.0x10^7$	<10	<10	<10
Saccharomyces cerevisiae ATCC 2338	$2.9x10^{3***}$	<10	<10	<10
Aspergillus niger ATTC 16404	$1.3x10^3$	$1.0x10^1$	<10	$2.0x10^1$

* Counts are expressed per 1 gr. of water.

** The disinfectant activity has been tested in the presence of 2% blood serum or 2% orange juice, representing organic matter.

*** If a yeast contamination of over $X10^3$ is involved, a contact time of **60 min.** is recommended, with a 3% Sanosil Super 25 solution.

Excerpt from:
"Virocare™ (Sanosil Super 25) Virus Efficacy Data"
Victorian Infectious Diseases Reference Laboratory, Fairfield, Australia, October 2001
(DES T 176/e)

Mycobacterium Tuberculosis (resistant strain $H_{37}R_v$)	**Time to inactivate**
Virocare** (10%)	5 minutes #
2% Glutaraldehyde	20 minutes

Mycobacterium Tuberculosis (wild-type strain)	**Time to inactivate**
Virocare** (10%)	5 minutes #
2% Glutaraldehyde	5 minutes

Hepatitis C Virus Surrogate (BVDV)	**Time to inactivate**	**Virocare ****
Cell free BVDV	1 minute #	3.4 %*
Cell free BVDV in blood	1 minute #	3.4 %*
Cell-associated BVDV	1 minute #	3.4 %*

HIV Virus	**Time to inactivate**	**Virocare ****
Cell free HIV	1 minute #	1% *
Cell-associated HIV in medium	1 minute #	3.4% *

Explanatory Notes:

shortest time period conducted in tests
* lowest concentration tested
** Virocare™ corresponds to Sanosil Super 25

BVDV = Bovine viral diarrhoea virus, a surrogate for hepatitis C Virus

All tests achieved a complete inactivation of viruses and mycobacteria.

Excerpt from:
"Expert study of the disinfectant Sanosil Super 25"
Testing Station of the Swiss Breweries, Zurich, Switzerland, December 1984. **(DES T 20/e)**

Low germ content

Test organism	Working time (min.)	Control (cells/ ml)	Disinfection sample			
			without added wort		with added wort	
			1.0%	2.0%	1.0%	2.0%
Saccharomyces cerevisiae	30	3.5×10^2	0 (100%)	0 (100%)	0 (100%)	0 (100%)
Lactobacillus sp	30	4×10^2	0 (100%)	0 (100%)	0 (100%)	0 (100%)
Pediococcus sp	30	5×10^3	0 (100%)	0 (100%)	0 (100%)	0 (100%)

High germ content

Test organism	Working time (min.)	Control (cells/ ml)	Disinfection sample			
			without added wort		with added wort	
			1.0%	2.0%	1.0%	2.0%
Saccharomyces cerevisiae	30	3.5×10^5	1.9×10^3 (99.5%)	0.4×10^3 (99.89%)	4.7×10^3 (98.7%)	2.5×10^3 (99.3%)
	60	1.6×10^5	1.0×10^3 (99.71%)	0 (100%)	$0.5\ 10^3$ (99.86%)	0 (100%)
Lactobacillus sp	30	5×10^4	0 (100%)	0 (100%)	0 (100%)	0 (100%)
	60	5×10^4	0 (100%)	0 (100%)	0 (100%)	0 (100%)
Pediococcus sp	30	5×10^6	0 (100%)	9 (100%)	6×10^2 (99.98%)	2×10^2 (99.99%)
	60	$5\ 10^6$	0 (100%)	0 (100%)	0 (100%)	0 (100%)

Excerpt from:
"Effectiveness of antimicrobial activity Sanosil Super 25 for use in milk products processing lines"
Institute for Food Microbiology and Consumer Goods Ltd., December 1990. **(DES T 66/e)**

Working solution: 3% in tap water, contact time: 30 min.

Type of micro-organism exposed	Control before treatment	No. of surviving * micro-organisms	
		Tap water	Tap water + 2% blood serum
Staphylococcus aureus COA. (+) ATCC 6538	$1.3X10^6$	<10	<10
Enterobacter aerogenes ATCC 15949 (Coliforms)	$3.0X10^6$	<10	<10
Streptococcus faecalis (wild type)	$1.0X10^6$	<10	<10
Pseudomonas aeruginosa ATCC 9027	$2.0X10^6$	<10	<10
Bacillus cereus ATCC 14579	$4.6X10^3$	<10	<10
Bacillus subtilis ATCC 6633	$1.0X10^4$	<10	<10
Lactobacillus - (wild type)	$1.0X10^7$	<10	<10
Saccharomyces cerevisia ATCC 2338	$2.9X10^3$	<10	<10
Aspergillus niger - spores ATCC 16404	$1.3X10^3$	$1.0X10^1$	<10

Excerpt from:
"Sanosil Super 25 Suspensionstest für die Milchwirtschaft"
Hygiene Mikrobiologie Labor, Meggen, Switzerland, June 1991. **(DES T 78/d)**

Test organism: FAM No.:	Sanosil Super 25 concentration							
	without skimmed milk				with 0.3% skimmed milk			
	2 %	1 %	0.5 %	0.25 %	2 %	1 %	0.5 %	0.25 %
1. E. coli 1124	6	6	6	6	6	6	6	6
2. Ent. aerogenes 1037	6	6	6	6	6	6	6	6
3. Ps. aeruginosa 1502	6	6	6	6	6	6	6	6
4. Ps. fluorescens 1650	6	6	6	6	6	6	6	6
5. S. marcescens 1455	6	6	6	6	6	6	6	6
6. S. aureus 1406	6	6	6	6	6	6	6	6
7. M. luteus 1808	6	6	6	6	6	6	6	6
8. S. agalactiae 1598	6	6	6	6	6	6	6	6
9. S. faecium 1719	6	6	6	6	6	6	5	4
10. Myc. phlei 1461	6	6	6	6	6	6	6	6
11. Bac. subtilis 1131	6	6	6	6	6	6	5	4
12. Klu. fragilis 1724	6	6	6	6	5	5	5	4
13. Pen. roqueforti 1495	6	6	6	6	6	5	4	4
14. Geo. candidum 1140	6	5	5	5	5	5	4	3

6 points = very good / 5 points = good / 4 points = sufficient / 3 points = not sufficient

Range of Equipment

Determination methods / regulation devices

Sanosil® SANOSTRIPS 100

The Sanosil® Measuring Strips allow a quick determination of the Sanosil® content as well as the pH value.

Measuring range:

Sanosil®:	0 - 100 mg/l
pH value:	6.5 – 7.8

DES M 2/en

Sanosil® SANOSTRIPS 200

The Sanosil® Measuring Strips allow a quick determination of the Sanosil® content.

Measuring range:

Sanosil®:	0 - 200 mg/l

DES M 1/en

Sanosil® SANOTEST 200

The Sanosil® content, as well as the pH value, are determined photometrically by adding the corresponding reagents.

Measuring range:

Sanosil®:	0 - 200 mg/l
pH value:	pH 6,8 - pH 8,4

DES M 8/en

Sanosil® 37860 Universal Photometer

The Sanosil® 37860 Photometer operates according to photometric principles. Apart from the Sanosil® content and the pH value, 27 other substances can be determined:
aluminium, ammonium, cadmium, chlorine, chloride, chromium, cyanide/thiocyanate, iron, gold, hydrazine, copper, magnesium, manganese, nickel, nitrate, nitrite, peroxide, phenols, phosphate, oxygen, silver, silicium, sulfate, sulfide, zinc, tin.

Measuring range:

Sanosil®:	0 - 200 mg/l

DES M 9/en

Sanobasic Timer Programmable Dosing System

Sanobasic Timer is a programmable dosing system with a built-in peristaltic pump fort he simple dosing of Sanosil® Disinfectants in swimming pools or in industrial applications.

DES M 3/en

Sanobasic pH, pH Measuring and Dosing System

Sanobasic pH allows the continuous monitoring of the pH value and the corresponding dosage of the required product by means of a peristaltic pump.

DES M 4/en

Regulation & Dosing Equipment / Cold Fogging Equipment

Sanosil® SANOMATIC 2000 (for swimming pools)

This microprocessor controlled equipment was developed for the automatic measurement and regulation of the Sanosil® content and the pH value in swimming pools.

Measuring and control range:

Sanosil®:	0,1 - 200 mg/l
pH value:	pH 0,0 - pH 14,0

DES M 19/en

Sanosil® SANOMATIC 2000 (for industrial applications)

This microprocessor controlled equipment was developed for the automatic measurement and regulation of the Sanosil® content and the pH value.

Measuring and control range:

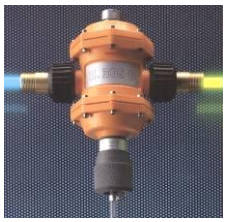
Sanosil®:	10 - 2000 mg/l

DES M 15/en

Sanosil® TrueDos 209 Digital Dosing Pump

With this digital pump, the dosing rate is entered directly in ml/l or in l/h. The dosing is virtually continuous, providing unmatched uniform dosing characteristics.

DES M 7/en



Sanosil® H 302 & 305 FINE METERING UNITS

The Sanosil® H 302 and H 305 Fine Metering Units are partially volume-driven, needing no external energy supply. The Sanosil® Disinfectant is dosed proportionally to the main flow.

DES M 30/en

Sanosil® SANOMIX

For simple and accurate mixing of Sanosil® Disinfectant solutions in different concentrations. By means of special maintenance-free mixing nozzles the disinfectant is continuously diluted with tap water, and the solution in the required concentration can immediately be used.

DES M 14/en

Sanosil® POWERFOG

Portable pneumatic cold fogging unit.

DES M 6/en

Sanosil® TURBOMAT

Sanosil® TURBOMAT is a high-quality, electrically powered cold fogging unit for the fine dispersion of Sanosil® Disinfectants in rooms with a maximum area of 30 x 60 m.

DES M 32/er

Sanosil Super 25 – antiviral universal disinfectant

Disinfectant Solutions for the private sector

Sanosil® D10

Liquid Disinfectant for drinking water, in tear-up bags
Sanosil® D10 is particularly suited for the disinfection of drinking water of poor quality, well water, etc.
Sanosil D10 is delivered in 10 ml tear-up bags.

DES P 11/en

Sanosil® DDW

Liquid Disinfectant for drinking water, in dispensing flask
Sanosil® DDW is particularly suited for the disinfection of drinking water of poor quality, well water, etc.
Sanosil DDW is available in different sizes from 15 ml to 1000 ml.

DES P 30/en

Sanosil® DS SPRAY

200 ml Sanosil® DS Disinfection Spray
The Sanosil® DS Disinfection Spray is an environment-friendly, universal disinfecting spray with an outstandingly good effectiveness. The Sanosil® DS Disinfection Spray contains no propellants. The necessary pressure for the atomisation of the disinfectant is achieved manually.

DES P 31/en

Sanosil® KANGOROO-PACK

3.8 litre Canister with incorporated 0.2 litre Disinfection Spray
The Sanosil® DS Disinfection Spray is an environment-friendly, universal disinfecting spray with an outstandingly good effectiveness.
The 200 ml Sanosil® Kangoroo-Pack –Spray bottle can be refilled. The canister content is enough to refill the spray bottle approx. 20 times.
After use, the spray bottle can be affixed to the refill canister.

DES P 44/en

Sanosil® KOALA-PACK

5 litre Canister with incorporated 0.33 litre Disinfection Spray
The Sanosil® Disinfection Spray is an environment-friendly, universal disinfecting spray with an outstandingly good effectiveness. It is easy and safe to use. The 330 ml Sanosil® Koala-Pack - Spray bottle can be refilled. The canister content is enough to refill the spray bottle approx. 15 times. After use, the spray bottle can be affixed to the refill canister. For easy handling, a refill cap is provided.

DES P 20/en

Hazardous Goods Freight Regulations

Rail/Road:	RID/ADR	Class 5.1 (8), II
Sea Freight:	IMDG	Code 1515/Ems No. F-G, S-Q
Air Freight:	prohibited	
UN No.:	2014	
Customs Item No.:	3808.94 90	

The original container **MUST** be transported in an **UPRIGHT POSITION**.

Storage Instructions

- Store Sanosil® disinfectant in its original container in a cool place.
- The original container must **AT ALL COSTS** be stored upright so that the oxygen arising from the continual breakdown of the chemicals can escape freely through the vent.
- Use storage area for Sanosil® disinfection products only.
- Keep free of combustible materials.
- Owing to its stability, Sanosil Super 25 has a storage life of at least one year at temperatures between 5° C and 25° C.
- Have water hose available for fire fighting and washing down any handling and storage area.

Empties

Sanosil Super 25 is delivered in disposable containers which cannot be taken back by the supplier.

Handling, Behaviour in case of Accidents

- The safety instructions on the label of the original containers must be strictly observed.
- Although not strictly speaking toxic, undiluted Sanosil Super 25 can have a corrosive effect on the skin, mucous membranes and respiratory passages, and is especially dangerous for the eyes.

- **STRONG OXIDANT**
- **CAN CAUSE EYE DAMAGE AND SKIN BURNS**
- **OXYGEN STEPPING OUT CAN ACCELERATE INFLAMMATION OF COMBUSTIBLE MATERIAL**

- **SAFETY GOGGLES** must therefore be worn at all costs when handling Sanosil Super 25.
- It is also recommended to use rubber gloves (rinse with water after use).

- Should the eyes be splashed by disinfectant, they should be **IMMEDIATELY** and copiously rinsed in water.
- If Sanosil Super 25 is accidentally swallowed, **IMMEDIATELY** take repeated gulps of lukewarm water.
- In both cases a doctor should **AT ALL COSTS** be consulted **AT ONCE**.
- Have eye baths and safety showers available, if possible. Ensure there is adequate ventilation when peroxide vapours may occur.
- If spilled, Sanosil Super 25 should be rinsed immediately in copious amounts of water. Escaping Sanosil Super 25 presents no danger for the sewerage system or ground water.
- Have water hoses available for fire fighting and washing down any handling and storage are.
- Use only vessels or containers fitted with a pressure relief device in operable condition.
- Use clean vessels and equipment of compatible materials Empty all utensils and drain equipment after use. Wash out with water.
- Prevent all contamination. Do not return unused portions to original container, dilute these with plenty of water and flush to drain.
- Wash away any spillage immediately, wash contaminated materials e.g. clothes, do not allow them to dry out before washing.

Our operating instructions both oral or written are based on extensive tests. Our advice is given to the best of our existing knowledge but is not binding insofar as their 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. Otherwise, our usual conditions of delivery and payment apply.

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- **Sanosil S010 – Acute oral toxicity up and down procedure in rats**
  Eurofins, Product Safety Laboratories, Dayton, USA, July 2007 **(DES T 227)**
- **Sanosil S010 – Acute dermal toxicity study in rats – limit test**
  Eurofins, Product Safety Laboratories, Dayton, USA, July 2007 **(DES T 228)**
- **Sanosil S010 – Primary Skin Irritation Study in Rabbits**
  Eurofins, Product Safety Laboratories, Dayton, USA, July 2007 **(DES T 229)**
- **Sanosil S010 – Dermal Sensitization Study in Guinea Pigs (Buehler Method)**
  Eurofins, Product Safety Laboratories, Dayton, USA, July 2007 **(DES T 230)**

Sanosil Super 25 – antiviral universal disinfectant

- **Sanosil S010 – Virucidal Efficacy of a Disinfectant for Use on Inanimate Environmental Substances Virus: Human Immunodeficiency Virus type 1**
  ATS Labs, Eagan, MN 55121, USA, August 2007 **(DES T 231)**
- **Sanosil S010 – Standard Test Method for Efficacy of Sanitizers, Recommended for Inanimate Non-Food Contact Surfaces (Modification for Spray Product Application), Test Organism: Staphylococcus aureus, Enterobacter aerogenes**
  ATS Labs, Eagan, MN 55121, USA, August 2006 **(DES T 232)**
- **Sanosil S010 – AOAC Germicidal Spray Method, Test Organism: Staphylococcus aureus**
  ATS Labs, Eagan, MN 55121, USA, December 2006 **(DES T 233)**
- **Sanosil S010 – AOAC Germicidal Spray Method, Test Organism: Salmonella enterica**
  ATS Labs, Eagan, MN 55121, USA, December 2006 **(DES T 234)**
- **Sanosil S010 – AOAC Germicidal Spray Method, Test Organism: Pseudomonas aeurginosa**
  ATS Labs, Eagan, MN 55121, USA, December 2006 **(DES T 235)**
- **Sanosil S010 - AOAC Germicidal Spray Method, Test Organism: Staphylococcus aureus – MRSA**
  ATS Labs, Eagan, MN 55121, USA, December 2006 **(DES T 236)**
- **Sanosil S010 – Standard Test Method for Efficacy of Sanitizers, Recommended for Inanimate Non-Food Contact Surfaces (Modification for Spray Product Application), Test organism: Staphylococcus aureus – MRSA**
  ATS Labs, Eagan, MN 55121, USA, December 2006 **(DES T 237)**
- **Sanosil S010 - Standard Test Method for Efficacy of Sanitizers, Recommended for Inanimate Non-Food Contact Surfaces (Modification for Spray Product Application), Test organism: Salmonella enterica**
  ATS Labs, Eagan, MN 55121, USA, January 2007 **(DES T 238)**
- **Sanosil S010 - AOAC Germicidal Spray Method, Test Organism: Escherichia coli**
  ATS Labs, Eagan, MN 55121, USA, August 2007 **(DES T 239)**
- **Sanosil S010 – Virucidal Efficacy of a Disinfectant for Use on Inanimate Environmental Surfaces, Virus: Influenza A Virus**
  ATS Labs, Eagan, MN 55121, USA, August 2007 **(DES T 240)**
- **Sanosil S010 - Virucidal Efficacy of a Disinfectant for Use on Inanimate Environmental Surfaces, Virus: Influenza A (H5N1) virus**
  ATS Labs, Eagan, MN 55121, USA, August 2007 **(DES T 241)**
- **Sanosil S010 – Acute Inhalation Toxicity Study in Rats – limit test**
  Eurofins, Product Safety Laboratories, Dayton, USA, July 2007 **(DES T 242)**
- **Sanosil S010 – Primary Eye Irritation Study in Rabbits**
  Eurofins, Product Safety Laboratories, Dayton, USA, July 2007 **(DES T 243)**
- **Sanosil S010 – Fungicidal Germicidal Spray Method, Test Organism: Trichophyton mentagrophytes**
  ATS Labs, Eagan, MN 55121, USA, February 2008 **(DES T 244)**
- **Sanosil S010 – Standard Test Method for Efficacy of Sanitizers, Recommended for Inanimate Non-Food Contact Surfaces (Modification for Spray Product Application), Test Organism: Proteus Mirabilis**
  ATS Labs, Eagan, MN 55121, USA, March 2008 **(DES T 245)**
- **Sanosil S010 – Germicidal and Detergent Sanitizing Actions of Disinfectants, Test Organism: Staphylococcus aureus, Escherichia coli**
  ATS Labs, Eagan, MN 55121, USA, August 2007 **(DES T 246)**
- **Sanosil S010 – Standard Test Method for Efficacy of Sanitizers, Recommended for Inanimate Non-Food Contact Surfaces (Modification for Spray Product Application), Test Organism: Staphylococcus aureus, Enterobacter aerogenes**
  ATS Labs, Eagan, MN 55121, USA, February 2008 **(DES T247)**
- **Sanosil S010 – Standard Test Method for Efficacy of Sanitizers, Recommended for Inanimate Non-Food Contact Surfaces (Modification for Spray Product Application), Test Organism: Staphylococcus aureus, Enterobacter aerogenes**
  ATS Labs, Eagan, MN 55121, USA, September 2007 **(DES T 248)**
- **Profiling of surface disinfectants Sanosil S003 Ag and Sanosil S006 Ag on non-enveloped viruses: Polio-virus type 1, Adenovirus type 5**
  Simec AG, CH-4800 Zofingen, April 2008 **(DES T 249)**
- **Profiling of surface disinfectants Sanosil Super 25 Ag 3% and Sanosil Super 25 Ag 6% on non-enveloped viruses: Polio virus type I, Adenovirus type 5**
  Simec AG, CH-4800 Zofingen, June 2008 **(DES T 250)**
- **Effect of Sanosil and Pseudomonas fluorescens on Bean Common Mosaic Potyvirus Incidence in French Bean**
  University of Mysore, India, February 2009 **(DES T 251)**
- **Determination of the Bactericidal Activity of Sanosil Super 25 Ag against Legionella Pneumophila. prEN 13623, 60 Min.**
  Laboratório Control Microbiológico S.L., Madrid, Spain, March 2009 **(DES T 252)**
- **Determination of the Bactericidal Activity of Sanosil Super 25 Ag against Legionella Pneumophila. prEN 13623, 24 hours**
  Laboratório Control Microbiológico S.L., Madrid, Spain, March 2009 **(DES T 253)**
- **Results of 3 months trial test with Sanosil C on Pemex Cooling Towers**
  Pemex Refinación, Salamanca, Mexico, November 2008 **(DES T 254)**

- **Evaluation of Antiviral Effects of Various Disinfectants on Dental Hand Pieces**
  University of Medical Sciences, Tehran, Iran, 2009 **(DES T 255)**
- **An Innovative Method for the Control of Legionella Infections in the Hospital Hot Water Systems with a Stabilized Hydrogen Peroxide-Silver Formulation**
  Public Health Laboratory, Haifa, Israel, March 2008 **(DES T 256)**
- **Antimicrobial effect of PandemEx D in Hand Disinfection. Test bacteria: E. Coli. prEN 1500:2000**
  Dept. of Disinfection, National Center for Epidemology, Budapest, Hungaria, April 2009 **(DES T 257)**
- **Antimicrobial effect of Sanosil Derm in Hand Disinfection. Test bacteria: E. Coli. prEN 1500:2000**
  Dept. of Disinfection, National Center for Epidemology, Budapest, Hungaria, April 2009 **(DES T 258)**
- **Antimicrobial effect of Sanosil RidoGerm in Hand Disinfection. Test bacteria: E. Coli. prEN 1500:2000**
  Dept. of Disinfection, National Center for Epidemology, Budapest, Hungaria, April 2009 **(DES T 259)**
- **Sanosil Super 25 – Experience in application of bactericidal agents in water cooling towers of manufacturing enterprises for prevention of Legionellosis**
  Scientific research institute for Disinfectology of Rospotrebnadzor, Moscow, Russia, November 2008 **(DES T 260)**
- **Virucidal efficacy of a Disinfectant for use on inanimate environmental surfaces, virus: Swine Influenza (A) virus Product identity: Sanosil S010**
  ATS Labs, USA, May 2009 **(DES T 261)**
- **Occupational / Bystander Inhalation Exposure and Risk Assessment of fogging Sanosil S010 with Sanosil Micro Mister (Sanosil Halo)**
  2009 **(DES T 262)**
- **Evaluation of the Antimicrobial Activityof Sanosil Super 25 S006**
  Research Institute for Tropical Medicine, Manila, Philippines, 2009 **(DES T 263)**
- **Comparison of the effects of Sanosil and glutaraldehyde 2% in disinfecting ventilator connecting tubes in hospitals**
  Tehran University of Medical Science, Iran, 2009 **(DES T 264)**
- **Microbiological Status of a MRSA patient room after treatment with Sanosil Halo**
  Laboratory of Hygiene and Microbiology, Helsinki, Finland, 2010 **(DES T 265)**
- **Evaluation of Antiviral Effects of Various disinfectants on Dental Handpieces**
  Hasani Tabatabai M, Iran, 2007 **(DES T 266)**
- **Wirksamkeit des EasyFog-Systems zur Desinfektion von Trinkwasserschläuchen Desinfektionsmittel: Sanosil 3%**
  Bionovis Hygieneinstitut OHG, Giessen, Germany, May 2008 **(DES T 267)**
- **Anwendung von Desinfektionsmittel für Legionellen-Prävention in Kühltürmen. Sanosil Super 25**
  Wissenschaftlicher Rat für Humanökologie, Russische Föderation, Dezember 2009 **(DES T 268)**
- **Sanosil® Halo Fogger Efficacy Study Evaluation of the Sanosil Fogging Room Disinfection System against MRSA and Pseudomonas aeruginosa bacteria. Sanosil S010**
  ATS Labs, USA, September 2010 **(DES T 269)**
- **Test of Cytotoxicity Determination and to Test of Skin Excitability Determination on a Human Sanosil S003 Ag**
  National Institute of Public Health, December 2009 **(DES T 270)**
- **Sanosil® Halo Fogger Efficacy Study Evaluation of the Sanosil Fogging Room Disinfection System against Influenza A (H1N1) virus. Sanosil S010**
  ATS Labs, USA, November 2010 **(DES T 271)**
- **Sanosil® Halo Fogger Efficacy Study Evaluation of the Sanosil Fogging Room Disinfection System against Rhinovirus type 37 Sanosil S010**
  ATS Labs, USA, November 2010 **(DES T 272)**
- **Prüfbericht: Sanosil S003 als Mittel zur Flächendesinfektion Prüfverfahren: prEN 1276, DIN EN 1650, DIN EN 13697**
  Institut für Krankenhaushygiene und Infektionskontrolle, Giessen, Germany, April 2011 **(DES T 273)**
- **Prüfbericht: Sanosil S006 als Mittel zur Flächendesinfektion Prüfverfahren: prEN 1276, DIN EN 1650, DIN EN 13697**
  Institut für Krankenhaushygiene und Infektionskontrolle, Giessen, Germany, April 2011 **(DES T 274)**
- **Flächendesinfektionsmittel Sanosil S003 Gutachten gemäss "Standardmethoden der DGHM zur Prüfung chemischer Desinfektionsverfahren**
  Dr. med. F.A. Pitten, Giessen, Germany, Oktober 2011 **(DES T 275)**
- **Sanosil S010 Efficacy of a Sterilant Applied to a Room Via Fogger or Misting Device Test Organism: Clostridium difficile – pore form**
  ATS Labs, USA, Oktober 2011 **(DES T 276)**
- **Flächendesinfektionsmittel Sanosil S003 Gutachten gemäss "Standardmethoden der DGHM zur Prüfung chemischer Desinfektionsverfahren**
  Hygiene Nord GmbH, Greifswald, Germany, Januar 2012 **(DES T 277)**