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# SUPERTAB

WATER IN CONTROL

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 ENGLISH



## **SUPERTABS: CONTROLLED BACTERIAL PRESSURE REDUCTION**

The SuperTab is a new development of a product that has been used in many applications (including aquaculture) for many years.

SuperTab is an oxidant in tablet form. It increases the redox potential of water, but more importantly, the anaerobic bacteria are strongly suppressed. The SuperTab is a highly selective oxidant and easy to use.

**CAUTION: The SuperTab is an oxidising product. Always read the Product Safety Sheet.**

Before using this product, carefully read all of the information provided. If you are unsure about the contents of this manual/information brochure or the use of the product, do not use this product. If there is anything you do not understand, please ask in the store where you purchased the product.

Once you remove the foil from the tablets, you confirm having read and understood all of the information.

**This product is distributed by:**

Air-Aqua BV, Nederland.

**Purpose of this product:**

The purpose of this product is to reduce the bacterial pressure of water by means of oxidation.

**SAFETY FIRST: Read the Product Safety Sheet before using this product or opening the packaging of the tablets!**

**CAUTION:** Keep out of reach of children. Only suitable for people who are aware of the potential hazards of this product.

**CAUTION:** ALWAYS use the supplied gloves when using this product.

**LIABILITY PROVISIONS:**

**CAUTION:** By using this product you agree to the following liability provisions.

1. If the product is used for purposes other than the purpose described in this manual it is done entirely at your own responsibility, in terms of damage to both the product and to other materials. We exclude all liability for any application not expressly confirmed by us in writing.
2. The use of the product in aquaculture may not be combined with the use of other additives, medicinal products or pesticides.

Each user bears the sole responsibility for the correct use of this product. This manual does not relieve you from your obligation to ensure the safe application and use of this product. By using this manual, you acknowledge that under no circumstances the manufacturer can be held liable for damages and/or personal injury and/or consequential damages resulting from the use of this product. This applies in particular to damages resulting from improper and/or unsafe actions, such as direct inhalation of concentrated chlorine dioxide and failure to comply with the requirements as described in the product safety sheet.

3. We expressly exclude any form of consequential damage and emphasise that the guarantee is limited to the product itself. We will not take responsibility for any additional damage or consequential damage occurring.

4. Upon receipt, the customer MUST inspect the product for damage and/or shortcomings.
5. Any liability resulting from improper handling and use of the product by the customer or third parties will be excluded. This applies, in particular, to the influence of thermal, chemical, or external influences, as well as the non-compliance with the instructions in the user manual and the product safety sheet.
6. Claims due to defects of the product shall expire six months after delivery to the customer. The same applies to claims for damages, regardless of nature or legal ground.

## **PROPERTIES OF SUPERTAB**

SuperTab consists of a mixture of sodium chlorite and additives. If a tablet is added to water, chlorine dioxide (ClO<sub>2</sub>) is formed. **Chlorine dioxide should not be compared to or confused with chlorine!**

In the case of chlorine dioxide, the oxygen atoms/electron transfer causes the oxidation. The chloride ion (as in sodium chloride (=salt)) does not take an active part in the reaction. The pungent smell of chlorine can therefore not be detected in the water when using chlorine dioxide.

Chlorine dioxide is very effective in killing pathogens such as fungi, bacteria and viruses. Chlorine dioxide is a very selective oxidant and reacts mainly with organic substances. The major advantage of chlorine dioxide, in comparison with other oxidants (hydrogen peroxide, ozone and chlorine), is its low oxidation power, in combination with a high oxidation capacity.

**Low oxidation power:**

The more powerful the oxidant, the more dangerous it is for living organisms. Because of its power and potential harmful effects on, for example fish, no free ozone may be present in the water. Therefore, ozone is always used out of reach of the fish, and it is ensured that no residual ozone is present in the water.

Oxygen is a very weak oxidant: as much oxygen as possible should be present in the water to prevent pathogens and to neutralise harmful (reducing) substances.

Chlorine dioxide lies above oxygen, but far below ozone with regard to its oxidation power. A fixed low concentration will therefore not result in any problems for fish or other living organisms.

**High oxidation capacity:**

To neutralise the same amount of dirt 2.5 times the amount of other oxidants is needed compared to chlorine dioxide. In other words, the concentration of chlorine dioxide only needs to be 40% of that of other oxidants to kill anaerobic bacteria or to neutralise organic material.

The combination of low oxidation power and high oxidation capacity makes this product very suitable for relatively safe and easy use in aquaculture.

Contrary to many other oxidants, chlorine dioxide is also very effective at low temperatures and high pH values. Unlike chlorine, chlorine dioxide does not affect the pH value.

Chlorine dioxide is a lot less effective in the dark, which reduces the adverse effects on biological filters to a minimum. Also due to the low oxidation power, bacteria, which provide the conversion process of proteins/ammonia/nitrite to nitrate, are hardly affected by low concentrations of ClO<sub>2</sub>. Because anaerobic bacteria (pathogens) have a very thin skin, they are already killed at very low concentrations.

Anaerobic bacteria cannot become resistant to chlorine dioxide because, unlike UV or antibiotics, the cell wall is destroyed.

#### **PRACTICAL APPLICATION OF THE SUPERTAB**

The SuperTab is very soluble in water (an effervescent tablet). Depending on the amount of water to which the SuperTab is added, a certain concentration of ClO<sub>2</sub> in the water is reached. Tables 2 and 3 show the concentrations resulting from the use of the SuperTab. Only use SuperTab at pH-levels above 7.

At a concentration of about 0.04 mg ClO<sub>2</sub>/l, the bacterial pressure is greatly reduced without having a negative effect on the biology and aquaculture in the water. From a concentration of 0.1 mg/l, the ammonia and nitrite levels should be measured regularly.

At higher concentrations (from 0.2 mg/l to 0.5 mg/l) ClO<sub>2</sub> is very capable of significantly reducing and/or solving bacterial problems in fish. The fish will react slightly irritated at higher concentrations. The functioning of the biological filter may also be (significantly) reduced. According to the German drinking water standard (TrinkwV2001), a concentration of 0.4 mg of chlorine dioxide/l is allowed.

#### **APPLICATION EXAMPLES** (see also Table 4):

##### **(Koi) ponds with fish:**

###### **- Initial dose and maintenance during the season:**

For the Koi Keeper it is important not to let the bacterial pressure increase and to keep it well-controlled. A concentration of 0.04 mg/l is required for maintenance doses in the pond. This means 1 SuperTab per 50,000 litre water. If you have a 10,000 litre pond, you can dissolve 1 SuperTab in a 1-litre container and then use a dose of 200 ml (also see Summary Table 2) in order to get a concentration of 0.04 mg/l (0.00004%).

At the time of applying a dose, the chlorine dioxide will be 'consumed'. The UV lamp will also slowly break down the product. After one week, a further dose will be required to maintain the concentration.

When the organic load in the pond is high (i.e. when first using the product), the quantity dispensed will be 'consumed' much quicker. In this case, it is advisable to apply a dose every other day, 4 times in succession. Then apply a dose twice per week for 4 weeks.

Also, the organic load is much higher in the summer than it is in the winter. Therefore, as the water temperature decreases, it is advisable to use less every week (approximately 25% at water temperatures of 6-10 °C and 50% at temperatures of 10-15 °C).

Be careful (avoid) using SuperTab at pH-levels below 7. Oxidising products react much stronger at low pH-levels.

In addition to the reduction of the bacterial pressure, much of the organic material will disappear from the walls and the interior of the piping after prolonged use. Your pond will gradually become visibly cleaner.

###### **- High bacterial pressure**

If the bacterial pressure in the pond is very high, the dose should be increased to 1 SuperTab per 20,000 litres or even 1 SuperTab per 10,000 litres. If this dosage is repeated every day for a week, the bacterial pressure will drop considerably. Caution: at dosages higher than 0.1

mg/l per week, the behaviour of the fish should be carefully monitored. The ammonia and nitrite levels should also be measured daily as there is a chance that biology is slightly affected by a higher dose. If high levels of ammonia and/or nitrite are present, some water should be changed during the treatment, or the maintenance doses should be suspended until the biological filter has recovered.

##### **(Swimming) ponds without fish:**

For swimming ponds without fish, a higher dosage of 0.1 - 0.2 mg/l is recommended. The product has no chlorine smell and is therefore especially suitable to strongly reduce bacterial pressure. Over time, a layer of silt forms in a swimming pond. This can often cause the bacterial pressure to reach unacceptable levels. At low levels, chlorine dioxide will have no harmful effects on the plants. The SuperTab also reduces the specific swimming pond smell: when using the SuperTab, the water will smell considerably fresher.

##### **Cleaning surfaces, rinsing and disinfecting systems:**

Surfaces, piping and water basins can be disinfected using a concentration of 0.4 mg/l in clean (!) tap water. This will also remove biofilm.

**USER MANUAL:**

Among other ingredients, the SuperTab contains disodium peroxodisulphate and sodium chloride. Never use the SuperTab in combination with other water treatment products and/or medicinal products.

**Before using the SuperTab, always read the Product Safety Sheet** (see the following chapter)

- Use a dark container filled with fresh (tap) water (use at least 1 litre of water).  
In 1 litre of water, the concentration will be 2.000 mg/l, with 5 litres of water 400 mg/l.  
**Do not use an open bottle or bucket.**
- Determine the temperature of the water (ideally around 20 °C).
- Add 1 SuperTab. **Do not smell the concentrated solution! (Concentrated) ClO2 gas is harmful.**
- Close the container.
- Avoid shaking the container. Furthermore, do not stir as the tablet dissolves. Keep to the waiting times indicated in Table 1, so the SuperTab will be dissolved completely and properly.
- Only after completion of the reaction time gently shake the bottle.
- Be aware of ClO2 vapour when pouring the concentrated solution!
- If you only use part of the solution, store the remaining solution in a cold, dark and well-ventilated place. The solution will then last for 6 weeks.
- Keep the solution and tablets out of reach of children.

TABEL 1: REACTION TIME FOR DISSOLVING SUPERTAB		
WATER TEMPERATURE	FULL REACTION TIME	COMMENTS
10°C	> 60 minutes (up to 6 hours)	long reaction time
20°C	< 30 minutes	ideal temperature
30°C	< 20 minutes	-----
40°C	< 10 minutes	maximum temperature

TABEL 2: SUPERTAB SOLUTION		
WATER (L)	SOLUTION (MG/L)	SOLUTION (%)
1	2.000	0.2
2	1.000	0.1
5	400	0.04
10	200	0.02
20	100	0.01
100	20	0.002
200	10	0.001
1.000	2	0.0002
2.000	1	0.0001
10.000	0.2	0.0002
20.000	0.1	0.00001
50.000	0.04	0.000004

TABEL 3: 1L SOLUTION SUPERTAB: 2000 MG/L			
SIZE OF BASIN (LITRE)	DOSE IN ML FOR A CONCENTRATION OF		
	0.04 MG/L	0.1 MG/L	0.2 MG/L
100	2	5	10
250	5	12.5	25
500	10	25	50
1.000	20	50	100
2.000	40	100	200
5.000	100	250	500
10.000	200	500	1000
15.000	300	750	1500
20.000	400	1000	2000
25.000	500	1250	2500
30.000	600	1500	3000
40.000	800	2000	4000
50.000	1000	2500	5000

## SAFETY SHEET SUPERTAB

TABEL 4: APPLICATIONS PH>7			
APPLICATION	RECOMMENDED CON-CENTRATION (mg/l)	FREQUENCY OF DOSING	COMMENTS
Koi pond starting dose	0.04	every other day for 1 week	
Koi pond maintenance dose	0.04 - 0.10	weekly	
Koi pond contaminated	0.1	every other day for 1 week	Daily measurement of ammonia and nitrite. In case of higher levels, stop dosing until levels return to normal.
Koi pond bacterial problems	0.1 - 0.2	daily for 1 week	Daily measurement of ammonia and nitrite. In case of higher levels, renew water. Monitor the reaction of the fish. In case of doubt, stop dosing until levels return to normal.
Quarantine bacterial problems	0.2 - 0.4	daily for 1 week	Daily measurement of ammonia and nitrite. Renew at least 30% water daily (preferably 50%). Monitor the reaction of the fish. In case of doubt, stop dosing until levels return to normal.
High level of occupancy (used for sales)	0.1	2 à 3x per week	Daily measurement of ammonia and nitrite. In case of higher levels, stop dosing until levels return to normal.
Swimming pond with fish	0.04 - 0.1	weekly	
Swimming pond without fish	0.1 - 0.2	weekly	

CHEMICAL PRODUCT	SUPERTAB TABLETS
<b>1. Company Information</b>	<b>Distribution in EU by:</b> <b>Air-Aqua BV</b> Achthoevenweg 8C 7951 SK Staphorst Tel: +31 522 468963 Fax: +31 522 468944 E-mail: info@air-aqua.nl
<b>2. Composition/ Ingredients</b>	
Chemical identity	Tablet composition consisting of Sodium Chlorite (CAS 7758-19-2) and additives
EINECS-No./EC-No./ELINCS-No.	231-836-6
Hazard symbol	O (oxidising) C (corrosive)
<b>3. Dangers</b>	
	Contact with combustible material may cause fire Contact with acids and water creates a toxic gas Harmful if swallowed Risk of serious damage to eyes Toxic if in contact with the skin Causes irritation to the eyes and respiratory tract Causes burns Very toxic to aquatic organisms
<b>4. First Aid Measures</b>	
General precautions	Wear skin and eye protection Move the affected person to outside the danger zone Remove contaminated clothing immediately Inhalation Bring the victim into the fresh air. In case of respiratory problems apply artificial respiration. If breathing remains difficult give oxygen. Get medical attention
Contact with the skin	Immediately and thoroughly rinse the skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention Wash clothing and shoes before using them again
Contact with eyes	Flush the eye immediately and thoroughly with plenty of water for at least 15 minutes while keeping the eye open. Get medical attention
Ingestion	If the victim is conscious, immediately give plenty of water to drink in little sips (dilution). Do not give anything orally if the person is unconscious. Consult a physician immediately Immediately consult a physician and show the label and/or the MSDS. Use gastroscope to clean the stomach
Information for the physician	

CHEMICAL PRODUCT SUPERTAB TABLETS	
<b>5. Fire Fighting Measures</b>	
Extinguishing media	Foam or water in large quantities (water is for cooling and dilution)
Unsuitable extinguishing agents	Limited amount of water
Fire fighting instructions	Wear protective clothing and breathing apparatus Open fire may cause dangerous smoke and/or gas In case of fire, extinguish with foam (if not present then with abundant water)
Distinctive fire and explosion danger	Product is oxidising. Upon heating, the product falls apart and produces oxygen or other gases, which may increase the flammability of other materials. Contact with moisture produces chlorine dioxide gas. Lower explosion limit (LEL standard) for chlorine dioxide is 10%. If the product comes into contact with fire in a small space, it is possible that the use of too little water or spray will result in the release of enough chlorine dioxide gas to cause an explosion. The product dissolves quickly and without damage in large amounts of water
<b>6 Accidental Release Measures</b>	
Personal	Wear protective clothing and breathing apparatus
Safety rule	Collect the product and store in a suitable airtight, sealable and dry container
Cleaning guidelines	Dilute the chlorine dioxide solution (100 -200 ppm). pH neutralisation is not necessary Rinse with plenty of water Ventilate the area of the spill and clean the area with cleaning equipment Avoid dust formation
<b>7. Handling and Storage of the Tablets</b>	
Handling	Avoid dust formation during handling/dosing Only store in original packaging Only use once and in whole. DO NOT use in parts Wear protective gloves and a breathing apparatus Protect from moisture Follow the instructions carefully and avoid overdose Avoid contact with eyes, skin and clothing
Fire and explosion safety indications	Avoid contact with heat, sparks, open flames and static electricity Avoid acids and flammable substances
Storage	Only store in unopened and original packaging

CHEMICAL PRODUCT SUPERTAB TABLETS	
Storage room	Store in a dry, clean and closed container in a well-ventilated place
Combined storage	Avoid contact with metals, alkalis, acid substances, reducing agents and combustible materials
<b>8. Exposure Control/Personal Protection</b>	
	Avoid contact with food and beverages Immediately remove clothing after contact Ensure adequate ventilation, especially in confined spaces, to avoid exposure above the maximum allowable limit
Skin protection	Avoid contact with the skin. Wear protective clothing and a legally approved respirator
Eye protection	Wear safety goggles
Hand protection	Wear PVC gloves. After use, always wash hands thoroughly
<b>9. Physical &amp; Chemical Properties</b>	
Physical state and appearance	Tablet
Colour	White
Odour	Nearly odourless to slight chlorine smell
Solubility	Reaction of the product with water forms chlorine dioxide. Use no more than 20g/litre water
pH value	6 average, 100g/l water
<b>10. Stability and Reactivity</b>	
Conditions to avoid	Heat, moisture and light exposure In reaction with water chlorine dioxide fluid and chlorine dioxide gas are formed
Materials to avoid	Reducing agents (transformation) Strong alkalis (transformation) Oxidants (gas) Acids (gas) Flammable substances (fire)
<b>11. Toxicological Information</b>	
Acute oral toxicity	For 200 ppm chlorine dioxide solution: Acute inhalation LC 50 (Rat, 4 h) > 2.07mg/litre
Acute dermal toxicity	For 100 ppm chlorine dioxide solution: direct contact LD50 (Rat) > 5000mg/kg
Irritation of the skin	For 100 ppm chlorine dioxide solution: Primary Dermal Irritation Index (rabbit) = 0.1 (mildly irritating)
Irritation of the eyes	For 100 ppm chlorine dioxide solution: Primary Eye Irritation Index (rabbit) = not irritating

CHEMICAL PRODUCT SUPERTAB TABLETS	
<b>12. Ecological and Health Information</b>	
Fish Toxicity	LC50 (96 h) = 100–2000 mg/l (Brachydanio rerio, OECD 203)
Bacteria Toxicity Possible health risks	EC50 = 100-800 mg/l (OECD209)
Inhalation	Exposure to dust particles of this product causes irritation to the respiratory tract. May cause coughing, breathing difficulties and a sore throat
Ingestion	Harmful if swallowed. May cause pain, nausea, vomiting and diarrhoea
Contact with skin	Causes skin irritation. Longer contact with high concentrations may cause skin damage
Contact with eyes	Causes considerable irritation to the eyes
<b>13. Disposal</b>	
	Used product has different dangers and/or composition. This MSDS does therefore not apply to used/dissolved product. Remove product in accordance with official local regulations
Waste key number	060714
Waste description	Inorganic chemical waste
Original packaging	Do not reuse packaging Clean empty packaging with water
<b>14. Transport information</b>	
	Hazardous Goods recorded in transport regulations GGVSE/GGVE/RID/ADR/IMDG-Code/ICAO-TI
Transport ADR/RID/IMDG/ ICAO/IATA/ICAO classification	Classification 5.1 / II
Hazard number	50-B
UN-number	UN 1496
Product Type indicator	Oxidising solid, N.O.S.
Comment	Store in dry and cool place, avoid direct light and protect against fire Keep away from children, visitors and unauthorised persons
<b>15. European / International Regulations</b>	
Labels according to EC-directives 67/548/EECs Identification numbers and hazard symbols	The product is classified  (O)Oxidising (Xn)Dangerous (N)Dangerous for the environment     Classification (O) 5.1

CHEMICAL PRODUCT SUPERTAB TABLETS	
Risk Phrases (R)	<b>8</b> Contact with combustible material may cause fire <b>22</b> Harmful if swallowed <b>24</b> Toxic in contact with skin <b>32</b> Contact with acid liberates very toxic gas <b>34</b> Causes burns <b>41</b> Risk of serious damage to the eyes <b>50</b> Very toxic to aquatic organisms
Safety Phrases (S)	<b>1/2</b> Keep locked up and out of the reach of children <b>8</b> Keep container dry, avoid moisture <b>14</b> Keep away from acids <b>17</b> Keep away from combustible material <b>22</b> Do not breathe dust <b>24</b> Avoid contact with skin <b>26</b> In case of contact with eyes, rinse immediately with plenty of water and seek medical advice <b>36/37/39</b> Wear suitable protective clothing, gloves and eye and face protection <b>45</b> In case of an accident or if you feel unwell seek medical advice immediately (consult the MSDS where possible) <b>61</b> Avoid release to the environment
<b>16. Additional information</b>	
	This information is based on our present state of knowledge and is intended to describe our products in relation to potential security issues, without guaranteeing the properties or describing intrinsic qualities.
<b>Extra Information</b>	
	<b>Always wear a legally approved breathing apparatus or respirator when handling SuperTab tablets and chlorine dioxide solutions to prevent inhalation of ClO2 gases.</b>