

The logo for Lavaris LAKE is centered within a circular frame. It features the brand name 'Lavaris' in a bold, white, sans-serif font on a dark blue rectangular background. Below this, the word 'LAKE' is written in a smaller, white, sans-serif font on a light blue, wavy banner that resembles a water surface.

Lavaris

LAKE

**WATER IS
THE PRINCIPLE
OF ALL THINGS**

**INSTRUCTIONS FOR USE
PRODUCT INFORMATION**

WATER - ORIGIN OF ALL LIFE!

It is from water that, over millions of years, not only our flora and fauna, but also we ourselves have developed. Water is therefore the key element in our garden and ornamental ponds, swimming pools, and biotopes, where it plays an important role in all vital exchange processes between vegetation and animals. For this reason, it should contain a great variety of soluble and trace elements, as well as gases in the right quantity and proportion. It is only in an environment like this that pond plants and animals can coexist in harmony.

The Lavaris Lake product range offers you a solution to 98 % of the water problems you might encounter.

The procedure is very simple.

The procedure is very simple. Our accurate AquaCheck-Set, the testing kit in the convenient case, enables you to obtain quick and precise readings, reflecting the condition of your pond or lake. Or why not use our reasonably priced analysis service? Send in your water samples, which will then be professionally analysed by specialists in our laboratory. The test report with our recommendations provides solutions to your problems and offers guidelines for the application of the Lavaris Lake products. Why not order a sample bottle over the phone?

When it comes to new ideas, concepts, and product innovations in the field of water maintenance and improvement, Lavaris Lake is your partner! But "know-how in water" does not come overnight. As a subsidiary of Söll GmbH, Lavaris Lake has achieved and proven its competence in this field. This is the result of continuous research and development, combined with our expert knowledge and personal commitment. The outcome of our competence and dedication is the well-known and reliable quality of the Lavaris Lake products. This could already be considered a high achievement, but we at Lavaris Lake do not rest on our laurels. In order to remain state-of-the-art, we invest significantly in training, product development, and communication.

Why is Lavaris Lake on the cutting edge of research and technology?

Quite simply because, in our company, innovative spirit and ambition go hand in hand with expert knowledge and flexibility. These qualities form the basis of new technologies for water purification and maintenance and result in safe and efficient products, thus ensuring product reliability for our customers. This has been proven by our trademarks and patents in all matters aquatic. Since most of our products are manufactured by our parent company, we can provide quality, flexibility, reliable delivery, and good value. In order to attain our goal of unrivalled "know-how in water," we at Lavaris Lake focus on Research & Development, quality assurance, distribution, and after sales service.

WATER IS THE ORIGIN ...

...AND THE CULMINATION OF ALL THINGS.

PRODUCT ADVANTAGES AT A GLANCE

Based on biological and ecological principles, the Lavaris Lake products are unique both in effect and function. And they achieve lasting results! All Lavaris Lake products have the same goal: to reactivate the natural purification mechanisms, which ensure the consistent quality of uncontaminated water. The water is encouraged to utilize its own resources.

All Lavaris Lake products are strictly in accordance with the law, in particular with the new law on chemicals and the recent directive concerning biocides. This is something that cannot always be taken for granted in our line of business! Our products for the purification of drinking water, the restoration of lakes, ponds, and pools, as well as for aquaculture (fish farming), are professionally tried and tested!

A research project carried out by the Federal Ministry for Education and Research has recently proven the efficiency and superiority of the Lavaris Lake product range

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LAVARIS LAKE Pond Care Products

AlgoClear (liquid)
Immediate remedy for algae
 Blocks photosynthesis and hinders light absorption with the triple-duty active component Spektro-Sorp®, preventing blue-green algae bloom and reducing algae growth

SeDox (powder)
Combats excessive phosphate
 Bonds dissolved phosphate to apatite, depriving the algae of nutrients; active oxygen greatly increases nitrogen decomposition; sustained effectiveness for 6 – 8 weeks; 100 % bio-compatibility

OptiLake (powder)
Improves water quality
 A basic care product that improves the habitat of plants and animals by stabilizing the water values (pH/KH), and helps to fight excess heavy metals and ammonia poisoning; absolutely essential when using rain water

AlgoLon® (powder)
Fights excessive thread algae infestation
 Destroys the algae with active oxygen

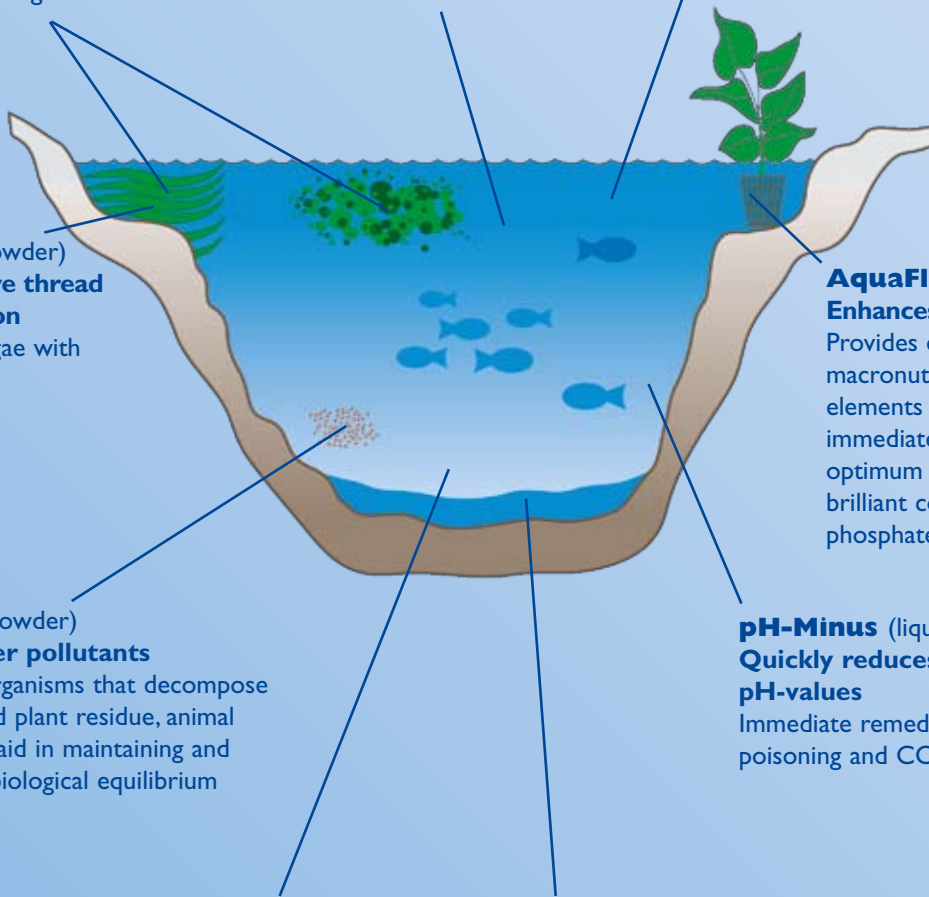
AquaFloraEnerg (liquid)
Enhances plant growth
 Provides essential macronutrients and trace elements that can be absorbed immediately, resulting in optimum plant growth and brilliant colors; contains no phosphates

ClearLake (powder)
Combats water pollutants
 Natural microorganisms that decompose leftover feed and plant residue, animal excrement, etc. aid in maintaining and revitalizing the biological equilibrium

pH-Minus (liquid)
Quickly reduces high (alkaline) pH-values
 Immediate remedy for ammonia poisoning and CO₂ deficiency

OxyActive (powder)
To remedy oxygen deficiency
 Immediately regulates the oxygen content of the water and remedies any deficiencies that have occurred

SiltEx (powder, 2-component mixture)
Fights sludge deposits
 Sustainable reduction of sludge deposits; doubly effective in combating decay and formation of hazardous gas due to the microorganisms contained in the product; optimum for biotopes



IMPORTANT:

- **Powder products** must be poured **directly** into the pond – **do not mix** in a vessel before application!
- **Liquids**, on the other hand, must be **diluted before application!** Follow instructions on diluting!
- **Handle algicides with care: Always read package and product information before using!**

FIELDS OF APPLICATION

Effectiveness: +++ = optimally effective, ++ = highly effective, + = effective, - = not effective

Produkt:	OptiLake	SeDox	AlgoClear	AlgoLon®	ClearLake	Oxy-Active	Aqua-Flora-Energen	pH-Minus	SiltEx
Area of application:									
Use for new ponds	+++	with high phosphate-levels	preventive treatment	-	+++	with excess CO ₂	+++	-	-
Use after filter cleaning	-	-	-	-	+++	-	+	-	-
Use after changing water – buffer effect –	+++	with high phosphate-levels	preventive treatment	-	+++	with excess CO ₂	++	-	-
Use after cleaning pond	+	++	++	as needed	-	-	-	-	-
Reduces ammonium, nitrite and nitrate	+	-	-	-	+++	-	-	-	++
Decomposes waste products	-	++	-	++	+++	++	-	-	+++
Decomposes silt	-	++	-	++	++	++	-	-	+++
Enriches water with oxygen	-	+	-	+++	-	+++	-	-	++
Increases KH (carbonate hardness)	+++	-	-	-	-	-	-	-	-
Stabilizes pH-/KH-value	+++	-	-	-	-	+++	-	-	-
Reduces high pH-values	+++	-	-	-	-	-	-	+++	-
Fights algae	+	++	+++	-	+	+	-	-	++
Fights blue-green algae	+	++	+++	-	+	+	-	-	+
Fights thread algae	+	++	++	+++	+	+	-	-	+
Destroys unicellular algae (green water)	+	++	+++	-	++	+	-	-	+
Increases fish vitality	+++	-	-	+	-	+++	-	-	-
Stimulates plant growth and enhances appearance	+++	+	-	+	+	-	+++	-	+
Increases visible depth	+++	++	+++	++	+++	-	-	-	+
Should be used in combination with:	as needed	OptiLake, AlgoClear	OptiLake, SeDox	OptiLake, SeDox	OptiLake	OptiLake	OptiLake	OptiLake	OptiLake
Should be applied before/ after the following products:	at least 1 day before liquid products	at least 1 day before liquid products	at least 1 day after powder products	use SeDox after AlgoLon	at least 1 day before liquid products	at least 1 day before liquid products	at least 2 days before or after AlgoClear	use OptiLake after pH-Minus	at least 1 day before liquid products
Environmentally safe?	+++	+++	-	+++	+++	+++	+++	-	+++

Pond Maintenance Scheme

Water is the key element of all garden ponds and biotopes, and it is a significant factor in all vital exchange processes between vegetation and animals. It is essential that the water contain a variety of soluble materials, trace elements and gases in the right quantity and proportion. This is the only way for a healthy environment, resistant to stagnation, to develop in your pond. Lavaris Lake products offer a natural solution to 98 % of all water problems and help to prevent the problems in the first place.

This pond care calendar was created to guide you in applying Lavaris Lake products properly and effectively. It describes all of the necessary measures in the proper sequence. We are confident that this schedule and our Lavaris Lake products will help you to enjoy your pond or lake for many years to come.

➔ **It is imperative that water values be tested regularly! Testing must always occur at the same time of day, whereby the pH-value should be measured in the evening, since it rises throughout the day.**

This ensures that irregularities are detected and countermeasures implemented before the problem gets out of hand. We have listed the essential water parameters on pages 8 and 9 to give you an overview.

I. NEW POND / START IN SPRING

The carbonate hardness should always be at least 5 °dH and the pH-value between 7.5 and 8.5! If the values are not within these ranges, the natural balance should be restored by applying **OptiLake**.

OptiLake – the basic pond care product (refer to page 12)

- Improves water quality and creates an ideal habitat for the pond population
- Increases carbonate hardness and prevents fluctuations in pH-value
- Helps to prevent excess heavy metals and ammonia poisoning
- Essential when using rain water

When a new pond is created, we recommend applying **SeDox** (double dosage), in existing ponds single dosage. This permanently eliminates copper and other metal from the water. **SeDox** causes phosphate (e.g. in the water or the plant soil) to bond completely and be converted to apatite. This prevents algae from growing quickly, because the nutrients that the algae need are no longer available. However, the phosphates remain accessible as nutrients to the other plants in the form of apatite.

SeDox – bonding phosphate (refer to page 19)

- The phosphate dissolved in the water bonds to form apatite; 100 % bio-compatibility
- Active oxygen due to greatly increased nitrogen decomposition
- Better sludge decomposition
- Purely mineral, no heavy metals or aluminium
- Works for 6 – 8 weeks

Then begin the biological process with **ClearLake** (water micro-organisms, year round care). **ClearLake** should be used only when the water is at least 10 °C.

ClearLake – natural bacteria (refer to page 14)

- Enhances and accelerates the biological self-purification process of the water
- Limits algae bloom and helps to achieve biological equilibrium
- Combats decay and formation of hazardous gas
- Activates the biological decomposition of sunken leaves, dead plants, feed residue, etc.

Prevent Blue-green and other Algae with AlgoClear

Conventional algae such as suspended algae (water appears green) or thread algae do not look nice, but they are relatively harmless. Blue-green algae (recognized by thick, slimy, shimmering blue-green clumps floating on the pond surface) on the other hand, can produce hazardous substances in the water and often trigger allergies, nausea, rashes and asthma!

AlgoClear – special algae-fighting agent (refer to page 16)

- Immediate remedy for stubborn algae formation
- Effectively prevents blue-green algae from blooming and reduces new growth

➔ **HANDLE ALGICIDES WITH CARE.
READ PACKAGE AND PRODUCT INFORMATION BEFORE USING!**

Pond Maintenance Scheme

2. DURING THE POND SEASON

Rule of thumb: Carbonate hardness never under 5 °dH, pH-value never over 9!

If the KH-value is low and the pH-value fluctuates, or if unsuitable water is used for the pond, we recommend applying **OptiLake** to stimulate the microbiological process!

If there is a problem with algae, **AlgoClear/AlgoLon®** and **SeDox** should be used again as described above.

For thorough oxygenation of the water and sediment as well as to prevent germs and marsh gas (colour and cloudiness), we recommend applying **OxyActive**.

OxyActive – oxygen control (refer to page 22)

- Remedies acute oxygen deficiency and regulates the water's oxygen content
- Promotes sustained biological self-purifying capacity

For healthy plants and bright colours, we recommend using **AquaFloraEnergien** during the entire vegetation period, particularly in a new pond or when lack of oxygen is severe.

AquaFloraEnergien – phosphate-free aquatic plant fertilizer (refer to page 23)

- Provides vital plant nutrients and prevents lack of nutrients
- Strengthens and activates plant growth and makes the blossom colours brighter
- Increases the resistance of plants to external factors
- Phosphorous-free

Mid August or later:

ClearLake, to ensure urea decomposition

3. AUTUMN/END OF SEASON

To best prepare the pond for the approaching winter months, we recommend applying **SeDox** in September/October – after cleaning (removing sludge, leaves, etc.) – to bond the phosphate. This will prevent algae bloom, which can happen even during the winter if there are a few sunny days. Also, **SeDox** releases oxygen in the water, which benefits the plants and organisms. If you do not have a way to vacuum the deposits from the bottom of the pond, they can also be removed with our product **SiltEx**:

SiltEx – Sludge Eliminator (refer to page 21)

- Microorganisms and active oxygen make it doubly effective in combating deposits, decay and the formation of hazardous gases
- Bonds phosphorous and prevents algae bloom; optimal for biotopes, too

One **OptiLake** treatment should also be administered to stabilize the biological equilibrium and to break down hazardous substances (ammonium, nitrite, heavy metals).

4. ALLYEAR ROUND: AlgoLon®

Destroys excessive thread algae with active oxygen. Sprinkle **AlgoLon®** directly onto the thread algae nests. Use in the morning!

➔ **HANDLE ALGICIDES WITH CARE.**

READ PACKAGE AND PRODUCT INFORMATION BEFORE USING!

AquaCheck® Set – testing like a professional (refer to page 10)

- Always indicates the precise pH-value, KH-value (carbonate hardness) and nitrite value, regardless of the temperature
- Easy to use, with professional measuring instruments

Water Analysis – In our DIN-certified Laboratory (refer to page 11)

Just request an analysis bottle and then send it to us to be analysed in our lab.

The parameters of the water – Indicators of its quality

PH-VALUE

The pH-value can be considered the most significant parameter in characterizing your water quality. It determines whether the water is too acidic or too alkaline, and whether this condition can have a detrimental effect on fish or plants. In an intact ecosystem, the pH-value of the pond water should be situated between 7.5 and 8.5. Most natural lakes or ponds, containing calcium and being exposed to the carbon dioxide in the atmosphere, display a pH-value of 8.2 - 8.3. At this pH-level, the concentrations of the hydrogen carbonate ions and carbonate ions contained in the dissolved carbon dioxide are balanced. A pH-value above or below this level is acceptable within the limits mentioned above. However, this is usually caused by unfavourable environmental factors, human intervention, or the effects of civilization on the habitat water. The pH-value is an important parameter with regard to the ammonium and nitrite levels.

CONDUCTIVITY

The conductivity of the water can be considered an indicator of its salt content. Water that is low in ions has a very low conductivity, whereas sea water, for example, has a very high conductivity. The water's conductivity is usually measured in $\mu\text{S}/\text{cm}$ (= Mykro-Siemens/cm). The conductivity of freshwater and pond water ought to be situated between 300 and 1200 $\mu\text{S}/\text{cm}$. If the conductivity is below this level, the water can be considered ion-deficient, and is bound to react to even minor influences, for example with a drastic change in pH-value. If the water displays a conductivity of above 1.200 $\mu\text{S}/\text{cm}$, it no longer comes under the category of freshwater.

TOTAL HARDNESS

Besides the soluble gases already mentioned, water contains a number of soluble minerals (ions). In this context, the water soluble magnesium and calcium ions play an important role in building up the hardness of the water. The concentration of the magnesium and calcium ions dissolved in the water (e.g. in the form of chloride) determines the total hardness of the water.

The total hardness of the water is an important component in a well-balanced pond ecosystem. No fish or plant could survive in water that is absolutely pure and ion-free. The hardness of the water is measured in $^{\circ}\text{dH}$. (from the German expression 'Grad($^{\circ}$) Deutscher Härte'), or, alternatively, in mmol/l . The total hardness of natural freshwater is situated between 5 and 20 $^{\circ}\text{dH}$. The total hardness is a combination of permanent and temporary (= carbonate hardness) hardness.

CARBONATE HARDNESS

The concentration of calcium hydrogen carbonate in the water is crucial for the stability of the pH-value. An indicator of this concentration is the water parameter known as carbonate hardness. A carbonate hardness that is sufficiently high can stabilize the water's pH-value by counteracting an increase or decrease in pH-value. It is for this reason that water displaying a sufficient level of carbonate hardness is called 'well-buffered'. The carbonate hardness, like the total hardness, is measured in $^{\circ}\text{dH}$., or, alternatively, in mmol/l . In natural freshwater, it should be situated between 5 and 12 $^{\circ}\text{dH}$.

NITRITE

Nitrite is a water-soluble, inorganic nitrogen compound, which – in water – is produced from the insufficient microbiological degradation of nutrients (e.g. of food residues). Another cause of nitrite formation in a pond is its introduction via polluted inflows or via rain water (particularly after thunderstorms). If the ecosystem in the pond is intact, nitrite should not be scientifically detectable. Nitrite concentrations of only 0.2 mg/l can severely damage your pond in the long term, and may poison your fish. The main effect of nitrite is that it accumulates in the blood of fish and thus prevents their intake of oxygen. The fish show symptoms of suffocation.

An important parameter with regard to the nitrite content is the pH-value. The lower the pH-value, the more toxic for the pond life an increased nitrite level becomes. The ammonium and nitrate levels, respectively, are also important parameters in relation to the nitrite content. If these are also increased, this is an indication of a biological imbalance in the pond or lake. Either your pond does not contain enough nitrogen-degrading micro-organisms, or the existing micro-organisms have been damaged and can therefore no longer work efficiently.

The parameters of the water – Indicators of its quality

AMMONIUM

Ammonium, like nitrite, is a water-soluble nitrogen compound, which can enter your pond via fish excrements that have not been sufficiently microbiologically degraded. Ammonium can also enter your pond via fertilizers or surface water. An important parameter with regard to the ammonium content is the pH-value. The higher the latter, the more toxic for the pond life the ammonium becomes. In combination with an increased pH-level in the water, the ammonium turns into ammonia, which can severely damage the mucous membranes of the fish.

NITRATE

Nitrate, like ammonium and also nitrite, is a nitrogen compound, which exists in the water in its dissolved form. Nitrate is not toxic as such, but it acts as a nutrient for algae. Insufficient microbiological degradation can cause the nitrate level to rise. Another reason for an increase in nitrate is its introduction into the pond via surface water.

PHOSPHATES

Phosphates are the main nutrient for algae. The phosphate level must not exceed 0.03 mg/l. Even the smallest increase can trigger off an excessive growth of algae. Phosphates are introduced via fish feed (all fish feed contains a certain level of phosphate), or when the pond is filled with water that is rich in phosphate. Tap water is often very high in phosphate. If unsure about the phosphate concentration in your tap water, your local water board will provide you – either by phone or fax – with the latest test results of your drinking water. Like nitrate, phosphate may enter your pond via surface water. Certain minerals in the building materials of your pond can also release phosphate into the water. Algae store phosphate in their organism. It is for this reason that – despite an excessive growth of algae – no phosphate can be detected in the water. The problem is that when the algae die, they release the previously absorbed phosphate into the water, which can trigger off the growth of new algae. It is virtually impossible to remove phosphate naturally. Almost always, special products are needed to bring down the phosphate content. Phosphates, and therefore algae, are the main problem in artificial ponds.



Additional information: Toxicity of various water components

Water as a chemical compound consists of various components. A range of environmental factors cause various substances to repeatedly enter the water (e.g. eluviation, seepage, etc.). However, many of these substances are hazardous to animals and plants in the pond when they exceed certain levels. A brief overview:

Ammonia..... over	0,05 mg/l	Copper	over	0,14 mg/l
Ammonium.... over	0,5 mg/l	Manganese..... over		650 mg/l
Cadmium..... over	4,0 mg/l	Nickel..... over		30 mg/l
Chlorine	over 0,4 mg/l	Nitrate	over 100 – 300	mg/l
Iron..... over	0,5 mg/l for animals	Nitrite	over	0,1 mg/l
..... over	1,0 mg/l for plants	Mercury	over	0,25 mg/l
Cobalt..... over	35,0 mg/l	Sulfate..... over		250 mg/l



AquaCheck – testing like a professional

FIELDS OF APPLICATION

The **AquaCheck** Set, a precise and highly sensitive testing kit, provides pond owners with a clear picture of the water quality. The exact, accurate results of parameters such as pH-value, carbonate hardness (KH), nitrite concentration as well as alkaline and acid concentration reliably reflect the water quality and enable you to implement any measures necessary to improve the quality of the water. The **AquaCheck** Set aids in determining and adapting the optimal living conditions for fish, plants and other water organisms when the water has been changed or when the pond has been filled for the first time, and it serves as a long-term monitor of pond conditions..

PURPOSE OF THE DETERMINATION OF WATER PARAMETERS

The exact determination of certain water parameters such as pH-value, nitrite level and carbonate hardness as well as alkaline and acid concentration allows a detailed analysis of the quality of your pond water. Unfavorable conditions for fish and vegetation can be determined quickly and easily, and the proper measures can be implemented. “A stitch in time saves nine.” The measuring reagents used are very stable and provide precise results even after they have been opened.

a) The pH-value

The pH-value is an indication of the acids and bases in the water. The biochemical equilibrium in the pond, which directly affects the water quality, is a factor of the pH-value. Drastic fluctuations in the pH-value can be stressful to fish and micro-organisms, which can cause a decrease in the number of species in the pond and lead to the extinction of the bacteria essential to the decomposition of harmful substances. The consequence of a weakened biochemistry can be insufficient breakdown of water components or e.g. the transformation of nitrate to nitrite, the latter being toxic to fish. Fluctuations in pH-value are caused by photosynthesis and respiratory processes of the plants and algae, which vary throughout the day (day-night variations in pH-value). If deviation is greater than one pH-unit, act promptly to increase the buffer capacity. The acid or alkaline concentration changes drastically even with small deviations in pH-value. For example: When the water has a pH-value of 6, the water contains 10 times more acid than when the pH-value is 7 and 100 times (10×10) more acid than when the pH-value is 8.

If the pH-value of the water is too high, the plants will lack nutrients and the fish will be more susceptible to parasites. In an alkaline environment – meaning that the pH-value is high – ammonium is converted to toxic ammonia, which can cause disease or even death to the fish. On the other hand, when the pH-value is too low, there is a high concentration of heavy metals and carbonic acid, which is also detrimental to the pond inhabitants. The toxicity of the nitrite also rises substantially when the pH-value is low, because more nitrous acid – a type of nitrite – forms. We recommend that you regularly check the pH-value to ensure that your fish enjoy an optimal habitat. Water that is slightly alkaline (pH 7.5 – 8.5) is the most favorable for inhabited water.

b) The KH-value

The carbonate hardness (KH) of the pond water stabilizes the previously adjusted pH-value. It is an indicator of the water's capacity to react to harmful acids and bases. We recommend checking the KH regularly to protect your fish from harm that could be caused by an overly acidic or basic environment. A good carbonate hardness balance is also beneficial to plant growth.

The KH reflects the calcium and/or magnesium ions bonded to the hydrogen carbonate (HCO_3^-). In fresh water the KH-value determines the buffer capacity and can thus be considered its equivalent. The carbonate buffer system is the most important buffer system in water as well as in the blood and tissue of fish. A small part of the carbon dioxide dissolved in the water is transformed into carbonic acid, which lowers the pH-value. The presence of calcium triggers the formation of calcium hydrogen carbonate (KH). If the pond lacks carbon dioxide, the carbonic acid component falls while the pH-value rises. The lack of carbon dioxide in the water causes calcium hydrogen carbonate (KH) to decompose to insoluble calcium carbonate and carbonic acid. This process is called “biogenic decalcification.” When algae bloom is abundant, the algae metabolism causes high carbonate hardness to decompose completely.

If the water is not adequately buffered, the pH-value may fluctuate significantly, which places excessive strain on fish and on the micro-organisms that break down toxins. Sensitive species may even become extinct. pH-value fluctuations can also cause harmful substances such as ammonia and nitrite to form. The higher the buffer capacity of the water, the higher its resistance to irregularities.

AquaCheck – testing like a professional

c) Nitrite

Nitrite is a powerful toxin for water organisms. Even minimal concentrations can harm, poison or kill fish. Although less toxic than ammonia, a nitrite concentration of 0.1 – 0.2 mg/ltr. is enough to cause permanent harm or death to your fish. The toxicity of nitrite increases as the pH-value and the chloride level fall. Gasping for breath in combination with heavy breathing or hectic movement for no apparent reason are symptoms of nitrite poisoning. Nitrite is a by-product of the decomposition of organic matter to nitrate. Disturbance of the biological equilibrium, malfunctioning filters or decay at the bottom of the pond can cause the nitrite content of the water to rise. If the nitrite concentration remains over 0.3 mg/ltr. for an extended period of time, the water quality is greatly diminished. In this case, we recommend that you use special bacterial products that break down the nitrogen, e.g. ClearLake. It is imperative that you check the nitrite concentration of the water regularly to be able to immediately implement any measures necessary.

CONTENT

- pH test for exact determination of the pH-value, consisting of: pH-indicators 1 to 6, resealable test tube
- KH test for determination of carbonate hardness and acid and alkaline concentration, consisting of: KH indicators 1 and 2, KH test solution, resealable test tube, measuring syringe
- Nitrite test for determination of the nitrite content, consisting of: nitrite reagents 1 to 3, nitrite test solution, resealable test tube (Refer to KH test), measuring syringe (Refer to KH test), spatula
- Detailed instructions

Please store in a cool, dry place, protected from frost. **Keep out of reach of children!**



Water Analysis – in our DIN-certified Laboratory

To determine the quality of pond and water to be added to the pond.

If you wish to determine the suitability of water before using it in your pond, or if you would like us to examine the quality of the water already in the pond, simply request an analysis bottle from us. Our analysis bottles are specially preserved so that the values remain constant for several days and can still be tested after several days in the mail (Note: We can't analyze water in other containers/bottles!). Fill the bottle completely with water, then place it in the included box and send it to us immediately. We will send you the results a few days later.

The essential water parameters:

- KH-value (= carbonate hardness, $KS_{4,3}$)
- pH-value
- Total hardness
- Electrical conductivity
- Nitrite (NO_2)
- Nitrate (NO_3)
- Ammonium (NH_4)
- Phosphate content (PO_4 = dissolved phosphate)

Additional/other analysis (e.g. total phosphate, iron, ...) are available at an additional charge.



OptiLake – The Basic Pond Care Product

FIELDS OF APPLICATION

In all stagnant water • To stabilize/restore water quality • To precipitate heavy metals • To reduce the toxicity of nitrite • To combat ammonia poisoning of fish. **Also approved for use in treating potable water.**

EFFECT

The water parameters often change and become instable due to the growth of algae and/or ornamental plants, the fish population, adding water and dead leaves falling into the pond. pH-values that remain above 8.5 and strong fluctuations in the pH-value place a strain on plants and animals. **OptiLake** improves the water quality, enabling ecological equilibrium to be achieved. **OptiLake** provides essential calcium and carbon dioxide to quickly create an ideal environment for all fish, plants and pond inhabitants. This buffer ensures a stable pH-value between 7.5 and 8.3 in the pond/biotope, and fluctuations in the pH-value are prevented. An optimal carbon dioxide concentration as well as ideal hydrogen carbonate and calcium contents are imperative to the survival of all living organisms in the pond. **OptiLake** also supports the growth and reproduction of algae-eating micro-organisms (e.g. daphnia and rotatoria), so biological self-purification of the pond begins immediately! Optimal conditions for micro-organisms that break down toxins are created in the pond and the filters. A positive side effect is that **OptiLake** reduces the corrosion of pumps and pipes.

DOSAGE

a) Ideal application time:

OptiLake can be used at any time of year. Treatment with **OptiLake** is particularly important in the spring and summer, when the biological equilibrium is at the greatest risk. When rain water is used in a pond, **OptiLake** is essential. Rain water does not have sufficient carbonate hardness, so drastic fluctuations in the pH-value can occur.

b) Type of application

Spread **OptiLake** evenly over the entire surface of the pond **without first diluting it in water**. The water will be cloudy for a short time after treatment, but this is normal. Rinse powder residue off of plants. The filters can remain in operation, and animals can remain in the pond.

c) Dosage

100 g **OptiLake** per 1000 liters (1 m³) of pond water.

An overdose of OptiLake is not possible. However, an insufficient quantity will not produce the desired effect. In certain cases, a higher dose may be needed: This is the case if, in the early evening the pH-value is greater than 9.5 and/or the KH-value is less than 3.5 °dH (**Rule of thumb: KH greater than 3.3 °dH = 100 g/m³ · KH between 1.6 and 3.3 °dH = 200 g/m³ · KH less than 1.6 °dH = 300 g/m³**). Use the **AquaCheck Set**, part of the Lavaris Lake pond care program, to determine the pH-value and KH-value. When the values are known, consult the included table for the required dose.

NOTES

a) Diminished effect

If there is a permanent acid or alkaline source in the pond, **OptiLake** will be consumed faster, because it will have to continuously neutralize the water. When it is used up completely, the pH-value is no longer stable. Certain types of cement or concrete sometimes used to build ponds may constantly release lye into the water, which will cause the pH-value to rise sharply. Caution: **OptiLake** dissolves in water. When the water is replaced, some of the product is removed from the water and is no longer effective. When algae is blooming, administer **AlgoClear 1** – 2 days after treating the water with **OptiLake**.

b) Interaction with other products

• From the Lavaris Lake water treatment program:

Liquid products (e. g. **AlgoClear**) **should be administered not sooner than 1 day after OptiLake**. Powder products can be used shortly after **OptiLake**. No adverse reactions are known.

• Pond care products from other manufacturers:

If after treatment with **OptiLake** the water becomes cloudy or brown for an extended period of time, it is probably the result of prior use of peat, humus or other water purification substances. In some cases the water can be cleared with **OxyActive** from the Lavaris Lake product range.

OptiLake – The Basic Pond Care Product

c) Tips

If, after treatment with other pond care products, the pH-value remains consistently high, **OptiLake** alone will not achieve the desired result without excessively high doses. In this case, check both the pH-value and KH-value using tests in the **AquaCheck** Set. The enclosed instructions indicate the quantity of **pH-Minus** required to bring down the pH-value. Then stabilize the pH-value with **OptiLake** as described in the instructions. Please do not use any powder products containing gypsum; gypsum is not easily soluble in water and it will penetrate the sediment. In the sediment, gypsum can be reduced to highly toxic hydrogen sulphide (smell of rotten eggs) and can cause substantial damage to the biotope.

When there is vigorous algae bloom in the pond, administer **AlgoLon**[®] (only fights thread algae!) and/or **AlgoClear** after using **OptiLake**. This will prevent increased algae growth due to the better quality of the water. When algae growth is extremely persistent, we recommend administering **SeDox**, which sustainably bonds phosphate, the main algae nutrient.

- Prevent water/humidity from penetrating the package before use; this would reduce the effectiveness!
- Treated water can be used to water plants.

PACKAGE SIZES

OptiLake is available in the following quantities: 1 kg, 5 kg, 10 kg, 25 kg, 50 kg

Please store in a cool, dry place, protected from frost. **Keep out of reach of children!**



Quick test for KH- and pH-value

FIELDS OF APPLICATION

For quick testing of the pH-value and the KH-value (more accurate results can be obtained with the **AquaCheck** test set).

KH quick test: This test can be used e.g. after heavy rainfall to quickly and easily determine whether the carbonate hardness (KH) of the pond water is still high enough. Use one of the two test tubes for the first test. If the KH is too low, administer **OptiLake** to stabilize the water. After adding **OptiLake**, use the second test tube to check whether the dosage was sufficient.

pH quick test: For this test you will need both test tubes for proper evaluation. The test tubes are filled halfway with water. After shaking vigorously, the color of the water will indicate the state of the pH-value. A dose of **OptiLake** will usually help to achieve stability, whether the value is too high or too low.

If after treatment with **OptiLake** the pH-value is still too high (alkaline), use **pH-Minus** to lower the value and then stabilize it with **OptiLake**.



ClearLake – Microbiological Water Purification and Care

FIELDS OF APPLICATION

ClearLake should be used to trigger the microbiology of a new pond, in filters after screen replacement/cleaning, in extremely cloudy water, to decompose toxins, after administering medication, ...

EFFECT

ClearLake, with its combination of micro-organisms, amplifies the biological self-purification process in ornamental ponds. **ClearLake** activates the biological decomposition of dead leaves and plants, fish excrement, and food and fertilizer residue, and it leads to sustainable stability of the pond. **ClearLake** helps to create biological equilibrium in the pond, and it combats putrefaction and the development of toxic gas. **ClearLake** promotes clear, healthy water as well as healthy plant growth.

ClearLake is based on the application of specially-bred micro-organisms that decompose and mineralize pollutants (uric acid, oil, grease, cellulose, ...) in the water. The result is natural-looking water with the ideal biological equilibrium. **ClearLake** also helps to break down toxins (nitrite, ammonia, ...), which improves the quality of life for all plant organisms.

DOSAGE

a) Ideal application time

ClearLake can be administered as soon as the water temperature is over 10 °C. Until the micro-organisms in **ClearLake** have settled on firm surfaces (takes a few days), the UV filters should be switched off, usually several days. UV radiation is harmful to the organisms!

b) Type of application

If the pond has a filter, half of the recommended quantity of **ClearLake** should be sprinkled into the filter, while the other half is introduced directly into the pond water. If the pond has no filter, sprinkle the entire quantity of **ClearLake** evenly over the surface of the water.

If algae is spreading quickly, administer **ClearLake** as stated under “Dosage” and then repeat the treatment after two weeks. When algae growth is stubborn and excessive, the micro-organisms can not fight the nutrient contents quickly enough.

Adequate carbonate hardness is imperative to support the microbiology. The Lavaris Lake basic pond care product **OptiLake** can achieve this quickly. Ideally, you should use **OptiLake** for essential, basic care of the plants and organisms in your pond and **SeDox** for sustainable phosphate bonding and oxygen supply to micro-organisms.

This biological application will lead to “clear” results within a few days. When the water is very polluted, the process may take several weeks.

c) Dosage

50 g **ClearLake** is enough for 1000 liters (1 m³) of pond water.

The first treatment should be administered in the spring, at the beginning of the pond season. This will generally prevent the first algae bloom. Treatment should be repeated approx. 3 – 4 months later, in the summer. An additional treatment should occur in the autumn, just before the end of the season, to break down any pollutants that have accumulated in the water.

NOTES

a) Diminished effect

We recommend that you regularly check the pond water parameters, e.g. pH-value and carbonate hardness, with the **AquaCheck** test set. If the pH-value is not within the range of 7.5 – 8.5, the pond water is not in biological equilibrium and the activity of the micro-organisms, like those contained in **ClearLake**, is considerably diminished. In this case, the water should be treated with **OptiLake** to optimize the pH-value before administering **ClearLake**.

b) Interactions

Do not use any chemical water care products and/or fish medications before or during treatment, because this would reduce the effectiveness of the micro-organisms. If chemical agents have been used, wait 5 – 10 days before administering **ClearLake**.

PACKAGE SIZES

ClearLake is available in the following quantities: 1 kg, 2,5 kg, 5 kg, 10 kg, 25 kg, 50 kg.
Please store in a cool, dry place, protected from frost. **Keep out of reach of children!**

All of the micro-organisms in our products comply with safety class I and pose no threat to humans, animals or the environment!

Additional information: Pond Algae, part I

Thread algae and suspended algae serve an important purpose in a pond. They are the main source of nourishment for small crabs, and their metabolism produces essential oxygen. If the algae multiplies too quickly, the biological system in the pond will no longer be balanced and other problems will result. An abundance of algae can greatly impact the pH-value and cause oxygen deficiency at night. These occurrences will reduce the biodiversity, triggering even more algae problems.

Suspended Algae

These single-cell algae cause the water to turn green. They occur frequently in the spring, before the plant vegetation period, as so-called "algae bloom." In a balanced pond, the small crabs consume some of the suspended algae. To be able to evaluate the severity of the suspended algae infestation, it is helpful to know the visible depth, which can be measured with a yardstick. Simply bend the lowest section of a folding yardstick 90°, then submerge it until it is no longer visible. The visibility is a good indication of whether remedies were successful.

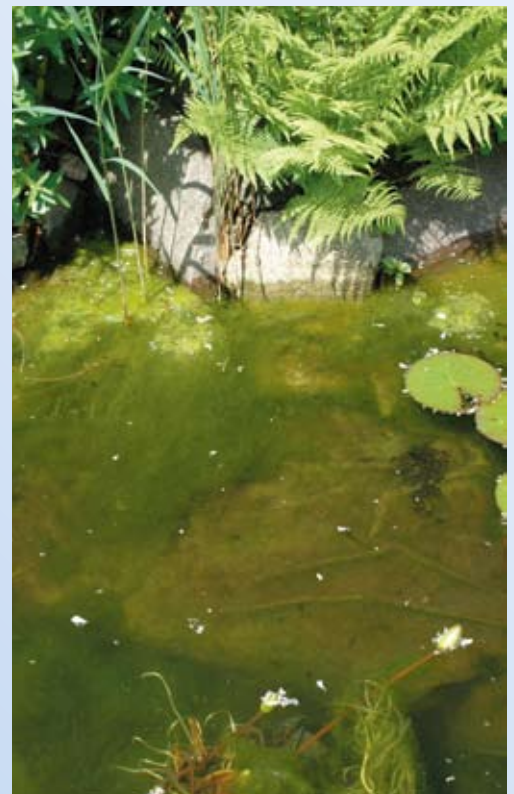
AlgoClear reduces the suspended algae in a controlled manner, allowing the pond to adjust properly. After the suspended algae is taken care of, it is important to bond the phosphates (with **SeDox**) to prevent more algae from growing.

Thread Algae

The bundled strands of algae that frequently appear on stones and aquatic plants or on the surface occur when thread algae has been combated but the phosphates were not bonded. The clear water is an ideal environment for thread algae growth. Thread algae tend to form in streams or near filter outlets because a fresh supply of nutrients can be found here.

Mechanical removal of thread algae is not effective. Pieces of the algae would be distributed throughout the pond, causing even greater algae growth.

When **AlgoLon®** is sprinkled on the algae, the active oxygen that is generated reliably destroys the algae. As with suspended algae, it is important to bond the phosphate after applying **AlgoLon®** to prevent future algae growth.



Continuous on page 17



AlgoClear - The Special Algae-fighting Agent (Liquid Algicide)

FIELDS OF APPLICATION

AlgoClear was developed to impede the mass development and single reproduction of algae in ornamental ponds and biotopes. The liquid biocide **AlgoClear** is particularly effective in combating single-cell green algae (the water appears green) and thread algae (**AlgoLon** would be the more effective product, because it works more quickly) as well as in preventing and suppressing blue-green algae. Excessive algae growth is an indication of an incorrect biological balance. This unintended process is often the result of an elevated nutrient content, causing otherwise harmless substances such as phosphate and nitrate to accelerate algae growth. This in turn leads to unsatisfactory environmental conditions as well as to the killing of plants and fish. If excessive phosphate and nitrogen continue to be supplied, even **AlgoClear** can not always properly compensate. Then the only solution is to reduce the supply of nutrients, e.g. by decreasing phosphate. In this case we recommend our product **SeDox**.

EFFECT

AlgoClear does not eliminate algae with a chemical blast. Instead, it reduces algae growth by providing a pigment, not visible to the human eye, that deprives the algae of an essential element of sunlight. Another ingredient prevents the algae from absorbing the required nutrients. Depriving the algae of nutrients and light causes it to die slowly, which places less of a strain on the pond than when the algae is killed quickly. It benefits the biological balance of your pond with an intelligent combination of active substances that stop the damaging effects of the algae metabolism. This prevents excessive depletion of carbonate hardness caused by a large quantity of algae, and great pH-value deviations are avoided. Regular use of **AlgoClear** effectively prevents renewed algae growth and provides ideal conditions for a healthy biological balance in the water.

DOSAGE

a) Ideal application time

AlgoClear works most effectively when it is used in the early stages of algae development. Algae usually blooms in the spring. It may also be necessary to administer another dose in the summer and autumn. **AlgoClear** should be applied in the morning, because the daily metabolism of the algae allows the best absorption of the ingredients then.

b) Type of application

Dilute the proper amount of **AlgoClear** with approx. 10 parts water and then distribute it evenly throughout the pond. To optimize the effect, divide the dosage into two portions and distribute it in the water on two consecutive days.

c) Dosage

- In the initial phase of algae growth and as a preventive measure:
50 ml **AlgoClear** per 1000 liters (1 m³) of pond water.
- We recommend an additional dose two to three weeks later (50 ml **AlgoClear** per 1000 liters of pond water) to increase effectiveness and to combat germinating spores.
- To fight excessive algae infestation, apply doses of 50 ml/m³ each on two consecutive days.
- When your pond is infested with blue-green algae, a special dosage is necessary: Treat the pond on five consecutive days with one fifth of the normal dosage (10 ml per 1000 liters of water) each day.

NOTES

a) Interaction with other products

From the Lavaris Lake water treatment program: pond treating agents in powder form should be poured into the water before using **AlgoClear**, because the effectiveness of **AlgoClear** is reduced when treatment of powder products occurs right after **AlgoClear** is added. If powder products are to be used after **AlgoClear** (p.e. **SeDox**), wait at least 48 hours before treatment.

Other pond water additives: If peat, straw, straw extracts, humus materials or similar substances are applied before treatment, **AlgoClear** will be less effective and the water may appear cloudy or brown.

b) Diminished effect

AlgoClear is less effective when the pH-value of the pond water is over pH 8.5. Thus it is advisable to lower the pH-value with the Lavaris Lake product **OptiLake** before administering **AlgoClear**. We recommend that you regularly check the pH-value, the KH-value and the nitrite content with the **AquaCheck** test set.

AlgoClear – The Special Algae-fighting Agent (Liquid Algicide)

c) Effect on living organisms

Repeated overdoses of **AlgoClear** can be harmful to animals and plants in the pond! If this occurs, adding **OptiLake** will neutralize the effects of **AlgoClear**. Fish can remain in the pond during treatment. The pond water can be used to water plants even after treatment with **AlgoClear**.

TIP

As they die, some types of blue-green algae release toxins that can be harmful to living organisms. We recommend that you comply with the suggested dose when treating for blue-green algae infestation or when in any doubt. If enough bacteria are colonized in the pond in the spring, the development of excessive algae can be prevented. Our product **ClearLake** contains a high concentration of very active pond bacteria. Too much phosphate in the water is always the cause of stubborn algae growth. **SeDox** sustainably bonds phosphate, the most important algae nutrient in pond water, and removes it from water circulation. It makes sense to apply **SeDox** in the autumn/winter/spring and right after a treatment to combat algae; this will remove the algae nutrient phosphate from the water.

PACKAGE SIZES

AlgoClear is available in the following quantities: 1 ltr., 5 ltr., 10 ltr., 50 ltr., 100 ltr. Please store in a cool, dry place, protected from frost. **Keep out of reach of children!**

- **HANDLE ALGICIDES WITH CARE.**
- **READ PACKAGE AND PRODUCT INFORMATION BEFORE USING!**

baua no.: N-12249

Additional information: Pond Algae, part 2

Blue Algae

Blue algae is a cyano bacterium, not an actual type of algae. Blue algae grows quickly and coats stones, the bottom of the pond and water plants with a bluish film that spreads rapidly. Blue algae is toxic. It produces poisonous substances (cyanotoxins) that can cause severe damage and symptoms in humans. Blue algae is easily identified by the foul smell: Rub an algae sample on the palm of your hand; a foul smell indicates that it is blue algae.

The Nutrients

Excessive algae growth is always an indication that there is something wrong with the pond. The most common problem is an abundance of nutrients. Phosphates are leftovers from yesterday and the day before. They come from feed residue, fish excrement, dead plant parts, sludge or pollen. Heavy rain can also wash phosphate from the pond banks into the water, and even tap water may contain up to 6.7 mg of phosphate per liter. Algae can grow at concentrations as low as 0.035 mg/l, so checking and limiting phosphate is the most important measure to prevent algae infestation.



AlgoLon® - Combats Thread Algae (Powder Biocide)

FIELDS OF APPLICATION

AlgoLon® destroys thread algae and aids in decomposing waste products (e.g. sludge) in ponds intended for various purposes: swimming ponds, ornamental ponds, ponds with ornamental fish, Koi ponds, water with new plants.

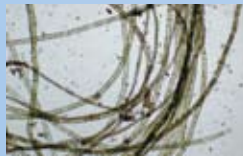
EFFECT

AlgoLon® quickly releases active oxygen in the water. Oxidation begins immediately, destroying the cell structure of the thread algae. The dead algae can be skimmed out of the water a few hours after the product is administered; any remaining thread algae is trapped in the filter. The oxygen in **AlgoLon®** also improves decomposition of the sludge at the bottom of the pond, where ventilation is poor. The activity and effectiveness of the bacteria that decompose sludge is improved, because it has access to more oxygen. **AlgoLon®** enhances filter functioning. The slime mold living in symbiosis with the thread algae is killed by the patented formula. Unless the slime mold is combated, methods such as mechanical removal of thread algae is counterproductive.

AlgoLon® decomposes and leaves no residue. It contains no heavy metals or organic biocides and does not accumulate in organisms. It is a good idea to administer **SeDox** after using **AlgoLon®**; this will bond the phosphates, the main cause of algae growth.



Thread algae near the bank



Intact thread algae cells (before treatment)



Thread algae 1 min, after administering **AlgoLon®**



The reaction is in full force after 5 min.



Thread algae cells 15 min. after treatment



Three hours after treatment



Twenty-four hours after treatment



The cells have sustained substantial damage after 24 hours



The algae is completely decomposed one week after treatment. The biomass can be suctioned off or decomposed with **SiltEx**.

DOSAGE

a) Application

AlgoLon® should be used in rain water and other soft water only after administering **OptiLake**. The pH-value may not exceed 8.5 at the time of application. If the pH-value is higher, first administer **pH-Minus**, then **OptiLake**, then **AlgoLon®**.

b) Dosage

30 g **AlgoLon®** per 1000 liters (1 m³) of pond water.

Apply directly to the thread algae nests in the morning; sprinkle across the surface when the algae has spread substantially. Wait at least three days before repeating treatment. Check the pH-value. **AlgoLon®** can be used repeatedly throughout the season if needed.

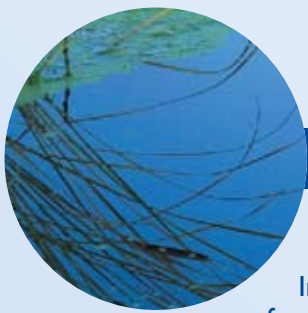
PACKAGE SIZES

AlgoLon® is available in the following quantities: 1 kg, 5 kg, 10 kg, 25 kg, 50 kg

Please store in a cool, dry place, protected from frost. **Keep out of reach of children!**

- **HANDLE ALGICIDES WITH CARE.**
- **READ PACKAGE AND PRODUCT INFORMATION BEFORE USING!**

baua-Nr.: N-19713



SeDox – Prevents Algae by Bonding Phosphate

FIELDS OF APPLICATION

In ponds with a high phosphate content, when there is a continuous supply of nutrients (e.g. from contaminated water, fish population, etc.) and/or with excessive sludge sediment.

EFFECT

SeDox converts phosphate, the most important nutrient for algae in water, to the insoluble mineral apatite, thus depriving the algae of the nutrient phosphate. **SeDox** is effective for at least six weeks. During this time, it reduces the phosphate content of the water to less than 0.035 mg/l, the critical factor for algae growth. **SeDox** also facilitates the decomposition of sludge in ornamental ponds and biotopes, preventing sludge from forming quickly. The apatite that is formed is not harmful to fish or other living organisms. It is absorbed as a nutrient through the roots of aquatic plants (with the exception of algae).

DOSAGE

a) Ideal application time

SeDox is most effective before and after the winter, because this is when the concentration of nutrients in the pond water is highest. It is essential to administer **SeDox** in the spring, because the phosphate concentration, which causes algae to grow, increases in the winter. **SeDox** is also effective at very low water temperatures. When a substantial amount of the water is replaced or water is added to the pond, **SeDox** should be added; tap water often contains a high concentration of phosphate. When algae bloom is excessive, **SeDox** should be administered before or several days after **AlgoClear/AlgoLon®**, because the dying algae releases nutrients into the water and **SeDox** can bond the nutrients.

b) Type of application

Spread **SeDox** evenly over the surface of the pond **without first diluting it in water**. Rinse powder residue off of plants. The filters can remain in operation, and animals can remain in the pond during treatment with **SeDox**. **SeDox** works for 6 – 8 weeks and should not be removed from the pond during this time. Otherwise the phosphate concentration can not be reduced to less than 0.035 mg/l. Do not use robots or other ground cleaning equipment during this time! If a stream flows into the pond, **SeDox** should also be sprinkled into the stream.

c) **Dosage:** 30 g **SeDox** per 1000 liters (1 m³) of pond water.

NOTES

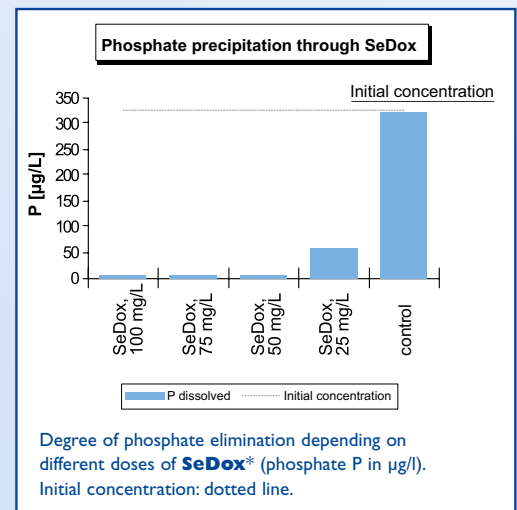
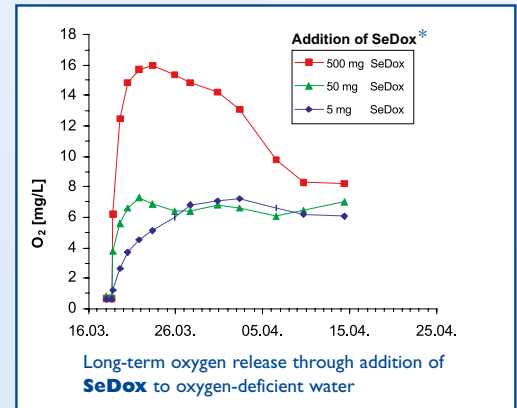
a) **Diminished effect:** If the phosphate level is elevated year round due to external factors (fish feed, surface water high in nutrients, dead leaves, etc.), **SeDox** should be used all year (every eight weeks, because this is how long it remains active in the water).

b) **Tips:** **SeDox** should not be administered if the pH-value of the water is greater than 8.8! In this case, the water should be pre-treated with **pH-Minus** and then **OptiLake**, products from the Lavaris Lake pond care program.

c) **Contraindications: Ponds with sturgeon:** **SeDox** may be used only in places **that the sturgeons do not go and do not eat**, e.g. in the preliminary filter zone. An ingredient in the product could be harmful when ingested by sturgeon.

PACKAGE SIZES

SeDox is available in the following quantities: 1 kg, 2.5 kg, 5 kg, 10 kg, 25 kg and 50 kg. Please store in a cool, dry place, protected from frost. **Keep out of reach of children!**



* Caution: The stated dosage applies to the old formula (60 mg/l). The product has since been improved. Refer to "Dosage" in the product description.

Additional information: Phosphate • Phosphorous • Algae growth

Phosphate and phosphorous (P) are not the same thing! When measuring water values, it is imperative to be aware of which substance is being examined.

Phosphate (PO_4^{3-}) is nontoxic. All organisms need it to survive. It is a component of DNA and an energy supply for life. The German Drinking Water Ordinance allows up to 6.4 mg/l of phosphate in potable water. However, this biologically germ-free water offers suspended and thread algae a substantial advantage in absorbing the available nutrients (fish feed, pollen, leaves, sludge, ...).

Phosphorous is crucial to algae growth: 0.1 mg phosphorous = 0.306 mg phosphate
One tenth of this amount is enough to trigger excessive algae growth in a pond - the limit is 0.035 mg/l phosphate.

The so-called springtime maximum of phosphorous (P) in natural lakes serves as the basis for the gross algae growth: 0.1 mg of phosphorous or 0.3 mg of phosphate per liter of water can generate 250 g of algae biomass.

Thus 1 mg phosphorous (P)/l generates 2.5 kg of algae biomass,

So the resulting algae mass corresponds to 2.5 million times the weight of the phosphorous!

In addition to phosphorous (P), algae growth is dependent upon carbon (C), nitrogen (N) and sunlight (certain wavelengths).

Nitrogen and carbon are never the cause of mass algae growth; they merely determine the types and effects of algae!

To generate new algae mass, the individual elements – in addition to sunlight – are needed in this proportion (Redfield formula): 1 part phosphorous : 15 parts nitrogen : 130 parts carbon

So the easiest way to stop the creation of new algae is to deprive the cycle of the smallest part – meaning phosphorous (e.g. with **SeDox**).

Additional information: Pond Sludge

Sludge consists of dead organisms, leaves, plant residue, pollen or fish excrement. It also contains a small amount of inorganic components such as gravel or clay. The residue settles at the bottom of the pond, forming a loose layer. Microorganisms usually decompose pond sludge, ensuring equilibrium between sludge production and decomposition.

But if greatly fluctuating pH-values reduce biodiversity – meaning that many organisms die – excessive sludge may form. Too many fish and algae bloom can also cause an excess of sludge in the pond.

Oxygen is needed for microorganisms to decompose pond sludge. However, there is a lack of oxygen in deeper parts of the pond, so sludge can not be decomposed. This can in turn generate fermentation gas.

The best time to get rid of sludge is in the autumn. Sufficient oxygen at the bottom of the pond is particularly important during the coldest time of year. Fish and insects spend the winter there and, along with the microorganisms, need oxygen. The more sludge there is, the greater the oxygen loss in the winter.





SiltEX - Fights Pond Sludge

FIELDS OF APPLICATION

Silt forms in every pond over time, due to leaves, dead microorganisms, leftover feed and fish excrement. Such deposits consume vital oxygen and they begin to rot, causing the water to become cloudy and smell foul. Also, phosphates and nitrogen are emitted from the mass, which can cause vigorous algae growth. With **SiltEX** you can easily rid your garden pond of sludge and sediment!

EFFECT

- Doubly effective with clear water bacteria and active oxygen
- Greatly reduces organic sludge deposits and prevents new deposits
- Combats decay and formation of hazardous gas
- Binds phosphorous and prevents algae bloom
- Optimum for biotopes

Component A, purely mineral: Decomposition of organic pond silt

Our patented combination of minerals actively oxidizes and decomposes the sediment layer. **SiltEX** bonds heavy metals and other substances hazardous to fish, such as phosphate, the main nutrient for algae. The result: a noticeable reduction in silt and effective prevention of algae flowering. Foul smells are immediately neutralized.

Component B, purely biological: Bacteria ensure clear water

The powerful microorganisms immediately begin to decompose sludge, dead algae, plant particles, leaves and fish toxins. The result: clear, fresh pond water.

SiltEX breaks down approx. 80 % of organic deposits at the bottom of the pond within a few weeks. This prevents nitrogen accumulation.

DOSAGE

a) Ideal application time

The water temperature should be at least 10 °C for optimal microbiological decomposition. Do not use **SiltEX** in water over 25 °C.

b) Type of application

Mix the two components of **SiltEX** (A + B) well and sprinkle directly over the pond. Rinse powder residue off of plants. The filters (with the exception of the ground filter) can remain in operation, and animals can remain in the pond.

c) Dosage

For 1000 liters of pond water:

25 g from the container = "component A" and

5 g from the bag inside of the container, labeled "component B"

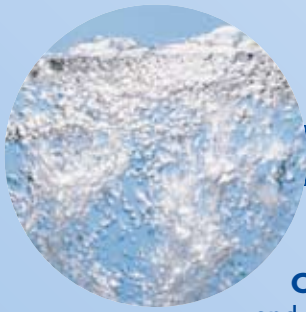
The amount applied can be doubled when sludge deposits are abundant. Mix the two components well and sprinkle over the pond.

In some cases (very stubborn deposits, strong current, ...) an additional dose may be needed. However, the second dose should not be administered until at least six weeks after the first.

PACKAGE SIZES

SiltEX is available in the following quantities: 1 kg, 5 kg, 10 kg, 25 kg, 50 kg

Please store in a cool, dry place, protected from frost. **Keep out of reach of children!**



OxyActive – Immediate Aid for Oxygen Deficiency

FIELDS OF APPLICATION

OxyActive is used to treat acute oxygen deficiency, which can cause fish in ornamental ponds and biotopes to die, and it regulates the water's oxygen content. If there is an abundance of sludge and sapropel in the pond, **OxyActive** can counteract the development of fermentation gases. Brown sediment at the bottom of the pond, which can trigger algae growth, usually disappears quickly. Biological self-purification of the biotope is sustainably improved.

EFFECT

OxyActive immediately provides vital oxygen. A high concentration of nutrients in the water during the warmer seasons causes algae to bloom. As the algae dies, it sinks to the bottom of the pond and becomes sludge, where it is broken down by oxygen-consuming bacteria. The result is grave oxygen deficiency in the biotope. **OxyActive** regulates the oxygen content of the water and facilitates the natural decomposition of waste products, without creating toxic gases such as ammonia or hydrogen sulphide. The bacteria can work much more rapidly and effectively, because they receive sufficient oxygen for their metabolism. Thus **OxyActive** prevents biotopes from stagnating and, at the same time, its special combination of ingredients stabilizes the biological equilibrium of the water. If the water is slightly yellow or brown, treatment with **OxyActive** will make it more brilliant and transparent.

DOSAGE

a) Ideal application time:

OxyActive should be administered in the summer, during extended periods of warm weather, whenever there is strong algae infestation and when algae residue accumulates at the bottom of the pond. This product should also be used when the pond indicates grave oxygen deficiency (e.g. when fish gasp for breath).

b) Type of application

Spread **OxyActive** evenly over the entire surface of the pond **without first diluting it in water**. Filters and other equipment can remain in operation during treatment. Avoid sprinkling **OxyActive** into the suction funnel of the filter system!

c) Dosage

100 g **OxyActive** per 1000 liters (1 m³) of pond water.

NOTES

a) Interaction with other products

From the Lavaris Lake water treatment program:

Liquid products should be administered either one day before or several days after using **OxyActive**. **OxyActive** can be safely used at the same time as other powder products in the Lavaris Lake pond care program .

b) Effect on living organisms

The stated dosage of **OxyActive** is safe for both flora and fauna. Fish and other pond inhabitants can remain in the water during treatment. Water treated with **OxyActive** can be used to water plants.

c) Contraindications

OxyActive may not be administered if the pH-value of the water is greater than 9.0! In this case, it is advisable to lower the pH-value with the Lavaris Lake product **pH-Minus** before administering **OxyActive**.

PACKAGE SIZES

OxyActive is available in the following quantities: 1 kg, 5 kg, 10 kg, 25 kg, 50 kg

Please store in a cool, dry place, protected from frost. **Keep out of reach of children!**



AquaFloraEnergen – Phosphate-free Aquatic Plant Fertilizer

FIELDS OF APPLICATION

Fights acute nutrient deficiency (insufficient growth, yellow leaves, dead leaf tips and edges, poor flowering – particularly water lilies – and dull colors) in all bodies of water (with the exception of salt water). **AquaFloraEnergen contains no phosphates.**

EFFECT

AquaFloraEnergen provides pond vegetation with vital macro-nutrients and trace elements that can be absorbed immediately. It contains iron, which aquatic plants need for many essential processes, thus promoting optimal plant growth in a pond. The ratio of the individual nutrients in **AquaFloraEnergen** is precisely attuned to the specific needs of pond vegetation. The optimal nutrient supply also improves functioning of the filter bacteria.

DOSAGE

a) Ideal application time:

During the entire vegetation period, particularly in new bodies of water and when there is grave nutrient deficiency.

b) Type of application

Dilute the proper amount with approx. 10 parts water and then distribute it evenly throughout the pond. Avoid direct contact with plant parts in the surface of the water. If there is algae bloom, the pond should be treated with **AlgoClear** before administering **AquaFloraEnergen**. The filters and other equipment can remain in operation, and animals can remain in the water.

c) Dosage

- Normal:
100 ml **AquaFloraEnergen** per 1000 liters (1 m³) of pond water.
- For a new pond or in the event of acute nutrient deficiency (double dose):
200 ml **AquaFloraEnergen** per 1000 liters (1 m³) of pond water.
- We recommend refreshing the nutrient level with half the dose after 4 – 6 weeks.
50 ml **AquaFloraEnergen** per 1000 liters (1 m³) of pond water.

NOTES

Sufficient carbonate hardness is imperative to healthy plant growth. The Lavaris Lake water treatment product **OptiLake** creates the ideal conditions.

Interaction with other products: We are not aware of any reactions with other water treatment products.

PACKAGE SIZES

AquaFloraEnergen is available in the following quantities: 1 ltr., 5 ltr., 10 ltr., 50 ltr., 100 ltr.

Please store in a cool, dry place, protected from frost. **Keep out of reach of children!**



AlgoTec - Fights Algae in Industrial Water

FIELDS OF APPLICATION

AlgoTec was developed to impede the mass development and single reproduction of algae in irrigation or fire ponds, fountains, water basins, etc. **AlgoTec** is particularly effective in combating single-cell green algae (the water appears green) and thread algae as well as blue-green algae.

AlgoTec works for up to six weeks. An additional treatment may be required after that. Intended for use in stagnant water and in bodies of water with self-contained circulation.

- Contains no copper, which
- Reduces corrosion of pumps and pipes
- Inhibits photosynthesis of algae
- Fights algae for up to six weeks
- Restricted use with ornamental plants
- Can be used when fish are in the water
- Biodegradable

EFFECT

AlgoTec puts an end to algae growth with an intelligent combination of active substances that stop the damaging effects of the algae metabolism. This prevents excessive depletion of carbonate hardness, and drastic pH-value deviations are avoided. Algae growth is substantially reduced by blocking photosynthesis.

Regular use of **AlgoTec** (every six weeks) effectively prevents algae from growing again.

The treated water should not be used as a regular source for watering grass or the surrounding plants. Do not use the treated water more than one time per month for irrigation purposes.

DOSAGE

a) Ideal application time:

AlgoTec works most effectively when it is used in the early stages of algae development. Algae usually blooms in the spring. Algae production can also increase in the summer and autumn.

b) Type of application

The dosage calculated on the basis of the size of the pond and the quantity of **AlgoTec** must be diluted with at least 10 parts pond water. Distribute the diluted **AlgoTec** evenly over the pond.

Use is restricted with ornamental plants.

c) Dosage

- When used regularly (every six weeks) or when applied as soon as algae begins to grow:
50 ml **AlgoTec** to 1000 liters (1 m³) of pond water.
- or
- For more frequent application (every three weeks), e.g. to combat germinating spores:
25 ml **AlgoTec** to 1000 liters (1 m³) of pond water.
- When algae infestation is excessive, it is beneficial to double the dosage for the initial treatment, meaning 100 ml **AlgoTec** to 1000 liters (1 m³) of pond water.

PACKAGE SIZES

AlgoTec is available in the following quantities: 5 ltr., 10 ltr., 50 ltr., 100 ltr.

Please store in a cool, dry place, protected from frost. **Keep out of reach of children!**

- **HANDLE ALGICIDES WITH CARE.**
- **READ PACKAGE AND PRODUCT INFORMATION BEFORE USING!**

baua-Nr.: N-26139



AlgoTec Spezial – Fights Algae in Water WITHOUT Plants or Fish

FIELDS OF APPLICATION

AlgoTec Spezial was developed to combat the vigorous growth of algae in INDUSTRIAL bodies of water WITHOUT ornamental vegetation and WITHOUT fish population (e.g. water basins, surface fountains, waterworks, etc.). **AlgoTec Spezial** is particularly effective in fighting single-cell green algae (the water appears green), thread algae and blue-green algae. Blue-green algae are gone within 24 hours of treatment.

Effective even at high pH-values!

AlgoTec Spezial also offers long-term protection from algae:

- Inhibits photosynthesis of algae
- Prevents algae growth for an entire season
- Especially for stagnant water
- Particularly effective against blue-green algae

EFFECT

AlgoTec Spezial blocks algae photosynthesis. It does not decompose during the season, so it continues to inhibit algae growth.

DOSAGE

a) **Ideal application time:**

AlgoTec Spezial should be applied as soon as algae begins to develop, so in the spring.

b) **Type of application**

The dosage calculated on the basis of the size of the pond and the quantity of **AlgoTec Spezial** must be diluted with at least 10 parts pond water. Distribute the diluted **AlgoTec Spezial** evenly over the pond.

Do not use in ornamental ponds, swimming ponds or fish ponds!

c) **Dosage**

• In the initial phase of algae growth:

50 ml **AlgoTec Spezial** to 1000 liters (1 m³) of pond water.

or

• To combat germinating spores (every 3 - 4 weeks):

25 ml **AlgoTec Spezial** to 1000 liters (1 m³) of pond water.

• To fight excessive algae infestation, the initial treatment should be two doses of 50 ml/m³ each on two consecutive days.

Caution! Do not use if aluminum or zinc was used in construction of the pond.

AlgoTec Spezial can corrode the metal.

PACKAGE SIZES

AlgoTec Spezial is available in the following quantities: 5 ltr., 10 ltr., 50 ltr., 100 ltr.

Please store in a cool, dry place, protected from frost. **Keep out of reach of children!**

- **HANDLE ALGICIDES WITH CARE.**
- **READ PACKAGE AND PRODUCT INFORMATION BEFORE USING!**

baua-Nr.: N-2634 I

Harmful to aquatic organisms, can cause long-term damage to water.



pH-Minus – Quick Remedy for Elevated pH-values

FIELDS OF APPLICATION

pH-Minus quickly brings down a high (alkaline) pH-value (over 9) in ornamental ponds and biotopes and provides an immediate remedy to acute ammonia poisoning and CO₂ deficiency. Elevated pH-values can cause fish to appear apathetic. Poor plant growth in the pond is a sign of CO₂ deficiency. **pH-Minus** also enhances the effectiveness of **AlgoClear** in water with high pH-values, and it amplifies the effect of **OptiLake** if administered before **OptiLake**.

EFFECT

pH-Minus works very efficiently and quickly. Lowering the pH-value immediately combats acute ammonia poisoning and remedies CO₂ deficiency in plants. It also improves plants' absorption of other nutrients, which makes them grow faster. **pH-Minus** leaves no residue in the water and contains no chelating agents. When **pH-Minus** is added to alkaline water, fish can breathe better, they are healthier and they eat more.

DOSAGE

a) Ideal application time

Whenever the pH-value is greater than 9.0 in the evening, which occurs primarily in the spring and summer, when the weather is warm and algae may bloom.

b) Type of application

Dilute **pH-Minus** with approx. 20 parts water. Distribute the solution evenly throughout the pond. Avoid direct contact with plants and animals. Filters and other equipment can remain in operation while **pH-Minus** is introduced into the water.

c) Dosage

Prior to treatment with **pH-Minus**, the pH-value should be checked with the pH-test from the Lavaris Lake **AquaCheck** Set; the best time is just before sunset. Continue to check the pH-value. It should not fall more than one unit per day.

- pH > 9.0: 250 ml **pH-Minus** per 1000 liters (1 m³) of pond water
- pH 8.5 – 9.0: 100 ml **pH-Minus** per 1000 liters (1 m³) of pond water.
- **It is important to check the pH-value a half hour after treatment.** If the pH-value is still above 8.5, add an additional 100 ml **pH-Minus** per 1000 liters (1 m³) of pond water. The pH-test in the **AquaCheck** Set will give a precise indication of how much **pH-Minus** is needed.

NOTES

a) Interaction with other products

From the Lavaris Lake water treatment program:

pH-Minus works to its full potential in any combination with other Lavaris Lake pond care products. To maximize the effectiveness of powder products from the Lavaris Lake pond care program, administer **pH-Minus** before using the powder products.

Other pond water additives: We are not aware of any reactions with other water treatment products.

b) Diminished effect

pH-Minus is a product that lowers the pH-value. Its effect is immediate, but it does not stabilize the pH-value in the long term. If the sources of persistent increases in the pH-value are not eliminated (e.g. algae bloom), the value will quickly climb above 9.0 again. In this case, **pH-Minus** should be administered along with the Lavaris Lake pond care products **AlgoClear** and **SeDox**. When algae growth is under control and the pH-value is lower, stabilize the water with **OptiLake**. Certain materials (concrete, cement, natural stone, etc.) can also cause the pH-value to rise. Then **pH-Minus** can not achieve sustainable results, because the stone continue to release lye, sometimes for many years. Pond water treated with **pH-Minus** can be used to water plants.

c) Contraindications

pH-Minus may not be used in acidic water (pH-value below 7.0)!

d) Effect on living organisms

pH-Minus is safe for humans, animals and plants in the recommended dose and diluted form. Fish and other pond habitants can remain in the pond during treatment.

pH-Minus – Quick Remedy for Elevated pH-values

e) Caution

If a second treatment with **pH-Minus** is needed, the carbonate hardness (KH) may be depleted, resulting in an increase in acidity (0.5 ltr. **pH-Minus** will lower the carbonate hardness of 2000 ltr. of pond water by approx. 2 °dH!). To check the KH-value, use the KH-test from the **AquaCheck** Set. To increase the KH-value, use the Lavaris Lake pond care product **OptiLake**.

pH-Minus may be stored and transported only in the original container. We will assume no liability for damage that may occur if the product is transferred to a different container!

PACKAGE SIZES

pH-Minus is available in the following quantities: 5 ltr., 10 ltr., 50 ltr., 100 ltr.

Please store in a cool, dry place, protected from frost. **Keep out of reach of children!**

Additional information: Fluctuations in pH-value and their effects

A change of 1.0 in the pH-value in a pond is not comparable to e.g. a change of 1.0 (liter) in the liquid quantity in a bucket! The deviation of 1.0 is the same number for both, but changes in pH-value are NOT calculated linearly as with liquids; a negative decade logarithm is applied instead. Even a change of 0.1 in the pH-value can cause problems.

What does this mean for the water in your pond?

A simplified explanation for this negative decade logarithmic change:

The pH-value is an indication of the ratio of acid and alkaline/base in the water.

An increase in the pH-value of ± 1 corresponds to a 10-FOLD INCREASE in the alkaline/base!

The pH-value 7 (neutral; do not confuse with the ideal pH-value of 8.3!) means that there are equal parts acid and base in the water.

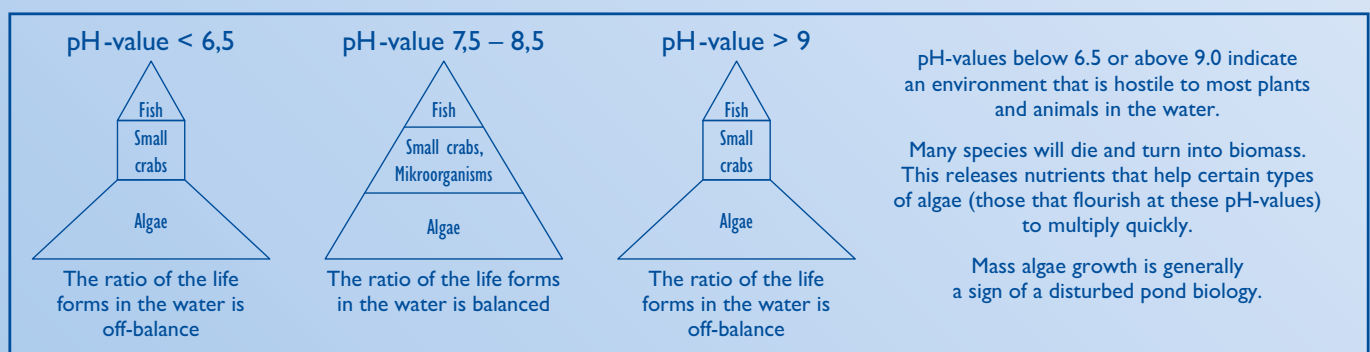
pH-value fluctuations:

Increase from pH 7.0 to pH 8.0 = pH 8.0 means there is 10 x more alkaline/base in the water than pH 7.0

Decrease from pH 7.0 to pH 6.0 = pH 6.0 means there is 10 x more acid in the water than pH 7.0

Decrease from pH 7.0 to pH 5.0 = pH 5.0 means there is $10 \times 10 = 100$ x more acid in the water than pH 7.0

For the life and the biological food pyramid in the water, the changes in pH-value are as follows:





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