

bluemanual

for the maintenance of your pool



the guarantee for your pool

On chemical products: storage and handling

Remember that ASTRAL products for the maintenance of your swimming pool are highly concentrated, so it is important that you take the corresponding precautionary measures. Only use these products for the indicated purpose and before using them, read the instructions on all of the labels carefully. There are a few principles that you should always bear in mind:

Storage

Conserve chemical products in the original container, with it closed properly and in a cool, dry and well-ventilated place. Keep them out of direct sunlight. Do not store them near to food, easily inflammable materials (oils, paints, fuels, inflammable residues) or easily corrosive materials. You should always keep chemical products out of reach of children and unauthorised people. Never keep open bags; you should always use up all the contents.

Adding

When using delicate substances, take the corresponding precautionary measures: if necessary, wear gloves or protective goggles or clothing etc (check the label). Always wash out anything that is left in the dispenser beaker. Concentrated chemical products should never be mixed together. Never pour water over concentrated chemical products - these products should always be dissolved in abundant water. If you used a dispenser, always clean it out with water before use and dry it well so that any leftovers of different chemical products do not get mixed together.



In case of accidents

If any of the products come into contact with the skin or eyes, immediately wash with plenty of water and if the problem persists, consult a doctor (take along the packaging and the labels). If you need immediate help, seek advice from an emergency toxicology centre (see the product labels). Collect any dry chemical products that have been poured out, dissolve them in abundant water, and pour them away. Liquid chemical products should always be washed with plenty of water.

Risk of holes: particularly when dealing with concentrated acids (pH-Minor) you should take care not to splash or allow any grains to get on your clothes. They will only take a few seconds to dissolve the fibre.

Packaging

The packaging of ASTRAL products always includes legal information and considers as many ecological concerns as possible. All the pots, bottles, buckets and drums are made using ecological materials (PP or PE). The plastic recipients, once washed out with water, can easily be recycled. Whenever possible, AstralPool packs in cardboard boxes, which are ideal for recycling.



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What is your water like?



Mains water can be hard, semi-hard or soft. Hard water contains many calcium or magnesium salts that precipitate if the pH value is high. These crystals cloud the water, cover the walls with a rough crust, and block the filters and pipes. To prevent this, with the water at more than 15°dH, we recommend that immediately after filling the pool, you add a hardness **stabiliser or anti-scaling product**: **ASTRAL Super Descaler**.

Using water from a well almost always leads to an additional problem: the danger of iron precipitations depending on the type and quantity of iron ions contained in the water, after adding the disinfectant product, the water turns brown, black or green. This colouring can be eliminated by periodically adding **ASTRAL Super Descaler** to the water. However, if the water is already coloured when it enters the pool, the iron must be totally oxidised and flocculated (see page 11).

Automatic regulation/dispensing plus automatic measuring

This means that both the physical addition of the product to the water and the determination of the quantity with respect to established residual values are done automatically.

- Chlorine tablets
- Liquid chlorine
- Active oxygen
- Bromine tablets
- pH Regulators

through **AstralPool Automatic Control Systems**



□ Automatic dosing unit



□ Dosing pump



□ Automatic Measurement and Regulation System

Salt electrolysis

Automatic chlorine generation in the pool water based on the salt (3-4 g/l) that is added at the start of the season. Chlorine is produced via electrolysis and disinfects the water. In principle, apart from pH regulators, chemical products do not need to be added.

Ozone generation

Automatic ozone generation, a powerful and highly efficient oxidiser that is being used more and more to disinfect swimming pools. It does not produce smells and reduces the use of chlorine or bromine in the pool. Ozone is produced in the pool itself via a very low power generator. Completely automated system.

Automations



If you would rather not do the work yourself, there are different possibilities and degrees of automation that make the maintenance of your swimming pool easy and comfortable. For example:

Automatic dispensing (and manual measuring).

This means that the adding of the disinfectant or pH regulator is done automatically but you will still need to manually check the correct residual in the water.

- **Chlorine tablets** through an automatic dosing unit
- **Liquid chlorine** through a dosing pump
- **Bromine tablets** through an automatic dosing unit
- **Active liquid oxygen** through a dosing pump
- **Liquid pH regulators** through a dosing pump

Filtering

A filter can be perfectly defined as a system or device that separates solid and liquid materials. That is basically what it is. With good circulation in the pool, most of the floating or suspended particles will get trapped in the filter. There are three types of filter.

Sand filters:

These are the most commonly used filters because they are cheap and easy to maintain and the filtering is of a high standard. The sand in the filter is cleaned by backwashing. If we provoke the flocculation of particles in suspension, the quality of the water will be even better.

Cartridge filters:

These offer a high standard of filtering, better than sand filters but not quite as good as diatom filters. The cartridges are either cleaned or replaced. Sometimes, flocculation is not possible.

Diatomaceous earth filters:

Diatoms are the fossilised remains of marine microorganisms, small bivalve molluscs and microscopic algae. As they are highly porous, they are extremely efficient filters.



At water temperatures of up to 25°C, the filter should operate for long enough to turnover the whole volume of water 1 or 2 times a day; this normally means about 8 hours. At higher water temperatures and/or with the use of soft chemical products, such as, for example, active oxygen, it is a good idea to filter for a longer time.

Many residual maintenance products stay in the pool water as dissolved substances (chlorides, sulphurs). The content of these in the water can be degraded by regularly adding more water. Given that chloride / sulphur content of more than 200 mg/l can affect the metal parts and material at the joints, you should add 3-5% fresh water each week and periodically change all of the water.

Is pH regulation necessary?



Yes, keeping the right pH level is essential for the maintenance of your pool water. The ideal value is between 7.2 and 7.6. A stable pH value is infrequent in pool water because as the water heats up, the pH value tends to increase, especially in hard waters. This has to be corrected by adding a pH reducer (Astral pH-Minor).

Experience tells us that pH fluctuations are most intense at the start of the season, so for the first few weeks it is a good idea to check the pH value of the water every 1 or 2 days. Treatment products also affect the pH value. Most particularly, sodium hypochlorite ("bleach or liquid chlorine") considerably enhances the pH value after it is added.

How to calculate water volume

Calculation of water volume

To work out the correct dosage of swimming pool water maintenance products, you will need to know how many cubic metres of water your pool holds. It is important that the constructor provides you with this data. If that is not the case, depending on the shape of the pool, the formulas to work out the approximate volumes of the most common types of pool are the following:

Rectangular pool $L \times W \times D = \dots \text{ m}^3$	Oval pool $L \times W \times D \times 0,89 = \dots \text{ m}^3$
Round pool $L \times W \times D \times 0,79 = \dots \text{ m}^3$	Figure of eight shaped pool $L \times W \times D \times 0,85 = \dots \text{ m}^3$
L = length	W = width D = depth



If the pool is irregularly shaped, the approximate solution is to divide it into different sections (which will most probably be similar to one of the simpler shapes detailed above) and add the different totals together. Once you have worked out the volume of your pool, follow what it says in the instructions on the labels to add each of the chemical products correctly.

How to clean the pool properly



Prevention of white stains

Concentrated disinfectants act as whiteners. For this reason, **slow dissolving chlorine tablets** should not be thrown directly into the pool, but should instead be placed in a floating dispenser or skimmer. Quick dissolving **Rapid Chlorine Tablets** are dissolved in the skimmer (with the pump switched on).

There is no danger of whitening with powdered or **liquid disinfectants that are dispensed directly into the water**, as these substances dissolve instantly. To be on the safe side, turn on the circulation and pour them in different parts of the pool.

Warning: Chlorine granules can whiten clothes when damp.

Cleaning the filter

Sand filter:

For continuous maintenance, a sand filter should be backwashed to eliminate accumulated dirt and germs. The frequency of these washes varies for different pools. Do it at least every eight days or when the filter's pressure gauge is about to reach the red area. An annual treatment with **solid ASTRAL Filnet** will disinfect and remove lime deposits. It is recommended that the sand be changed every eight years.

Cartridge filter:

Despite the filter's large surface area, dirt and lime can block its elements much faster than you would imagine. Change the cartridges in good time or clean them with a spray of water or in a washing machine. If there is lime, leave it to soak in **filter cleaner**.

What happens if the pH value is too high?

- Reduces efficiency of chlorine
- Smell of chlorine due to combined chlorine (chloramines)
- Irritation to the mucus
- The skin's natural protective acid layer is eliminated
- No flocculation effect
- Precipitations of lime

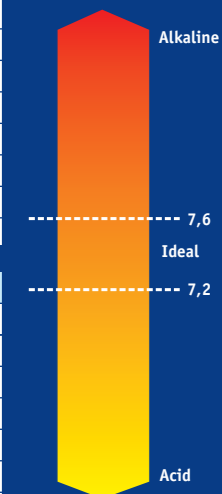
What happens if the pH value is too low?

A low pH value is something that happens fairly infrequently. If the pH value is lower than 7.0, the metal parts will corrode and the joints will come under attack. It will also inhibit flocculation. The situation is corrected by adding an **alkaline granulate: ASTRAL pH-Plus**.

Table of dosage quantities

pH value before addition	Quantities of ASTRAL pH-Minor to be added in kg per volume of pool water in m ³										
	15 m ³	20 m ³	25 m ³	30 m ³	40 m ³	50 m ³	60 m ³	70 m ³	80 m ³	90 m ³	100 m ³
8,2	1,2	1,6	2,0	2,4	3,2	4,0	4,8	5,6	6,4	7,2	8,0
8,1	1,1	1,4	1,8	2,2	2,9	3,6	4,3	5,0	6,8	6,4	7,2
8,0	1,0	1,3	1,6	1,9	2,6	3,2	3,9	4,5	5,1	5,8	6,4
7,9	0,8	1,1	1,4	1,7	2,2	2,8	3,4	3,9	4,5	5,0	5,6
7,8	0,7	1,0	1,2	1,4	1,9	2,4	2,9	3,4	3,9	4,3	4,8
7,7	0,6	0,8	1,0	1,2	1,6	2,0	2,4	2,8	3,2	3,6	4,0
7,6	0,5	0,6	0,8	1,0	1,3	1,6	1,9	2,2	2,6	2,9	3,2
7,5	0,4	0,5	0,6	0,7	1,0	1,2	1,4	1,7	1,9	2,2	2,4

pH value before addition	Quantities of ASTRAL pH-Plus to be added in kg per volume of pool water in m ³										
	15 m ³	20 m ³	25 m ³	30 m ³	40 m ³	50 m ³	60 m ³	70 m ³	80 m ³	90 m ³	100 m ³
6,3	1,1	1,4	1,8	2,2	2,9	3,6	4,3	5,0	5,8	6,5	7,2
6,4	1,0	1,3	1,6	1,9	2,6	3,2	3,9	4,5	5,1	5,8	6,4
6,5	0,8	1,1	1,4	1,7	2,2	2,8	3,4	3,9	4,5	5,0	5,6
6,6	0,7	1,0	1,2	1,4	1,9	2,4	2,9	3,4	3,9	4,3	4,8
6,7	0,6	0,8	1,0	1,2	1,6	2,0	2,4	2,8	3,2	3,6	4,0
6,8	0,5	0,6	0,8	1,0	1,3	1,6	1,9	2,2	2,6	2,9	3,2
6,9	0,4	0,5	0,6	0,7	1,0	1,2	1,4	1,7	1,9	2,2	2,4



The best way to **disinfect** your pool water



After every swimming session, bacteria, viruses, and germs get into the water, and nothing can be done to stop that. Although only a small percentage are pathogenic, these microorganisms can dirty the water and cause unpleasant slimy surfaces. We can avoid this by adding a **good disinfectant**, while at the same time oxidation will eliminate the organic contamination that inevitably gets into the water. This has to be done to prevent an ideal environment for fungi and bacteria to grow.

As a disinfectant, along with the traditional chlorine and bromine, there is also a soft alternative: **activated oxygen**.



Cleaning dark dirt at the flotation line

Dust in the air, suntan lotions and cosmetics eventually end up being deposited on the flotation line of the water. Such forms of dirt are best eliminated using ASTRAL's **Scum line degreaser** and an appropriate cloth. Never use any type of hard cleaning device, as the scratches they cause will fill with dirt even more quickly. If you clean just after backwashing, it will be easier because the water level will be lower.

Spot-Ex Stain Remover

To get rid of coloured stains, dirt or lime, use **Spot Ex**. This product eliminates even the most tenacious stains, without using chemical products. For stains on the bottom of the pool, **Spot Ex** can simply be placed on the end of an extendible pole.

Cleaning of metal ladders

ASTRAL's **Stainless Steel Cleaner-Brightener** easily cleans metal or stainless steel surfaces and objects, giving them back their original shine.

How to clean the pool properly



Thorough spring-cleaning

If necessary, before the pool becomes operative, empty it out and clean the surface using **ASTRAL Extra Descaler**. We recommend that this cleaning is done while there is not much sun, so as to keep the sides and bottom of the pool damp. Let the product act for half an hour and then wipe it away with plenty of water. Once the pool is clean, you can start filling it.

Maintenance cleaning

Nothing can be done to stop leaves, grass and insects getting into the water. Whatever gets caught in the skimmer or the pre-filter of the pump can be eliminated quickly, while anything floating on the surface or that sinks to the bottom can be removed using a net. As organic dirt uses up disinfectant and acts as a nutritional source for microorganisms, it is a good idea to take out such residues almost every day. To make the job easier, you could install an **automatic pool-cleaner** or the **Net'n'Clean integrated pool-cleaning system**.

Cleaning of lime stains

AstralPool offers **Extra Descaler** for swimming pools, which helps eliminate even the most tenacious of lime crusts, such as those when cleaning for the new season in spring. If there is not such an intense layer of dirt, you could also use **Gelamin**. Thanks to its consistency, this **cleaning gel** does not get washed away so easily for a longer lasting effect. Do check the incompatibilities of the material and if you have any doubts, try a small test first. Never use a domestic cleaner as this would introduce unwanted substances to the water that could cause clouding, foam or the proliferation of algae.

Active oxygen

This non-chlorine method is ideal for all pool users with sensitive skins or noses. Thanks to continuous improvements in this product over the last 15 years, the system is now so highly developed that in Germany one out of every two covered pool owners now use active oxygen.

Active oxygen does not smell and does not irritate the eyes or the skin. For maximum hygienic safety, the new **Oxy-Active COMPLET** product is made up of three components:

- **granulated oxygen** for disinfecting,
 - **granulated algacide** to prevent the appearance of algae
 - **double-effect flocculant cartridges** to eliminate dirt from the water.
- This product neither contains chlorine nor copper, and does not create foam.**

AstralPool offers three methods based on active oxygen:

- **Oxy- Active COMPLET**, as described earlier
- **Oxy- Active LIQUID**, which combines disinfecting and antialgae with a clarifying effect
- finally the traditional system of **Oxy-Active TABLETS**, along with **Microbid** (non-foaming liquid algacide).

Bromine

An alternative form of disinfectant is the relatively unknown bromine tablet. **No smell. Ideal for covered pools.** For slow and continued disinfecting of pools and spas using an automatic dispenser. High capacity for oxidisation and disinfecting; highly tolerant of pH values.

Slow dissolving chlorine

Owing to its fast and complete disinfecting effect, many pool owners use chlorine, whether in 200 g tablets, 500 g or 600 g blocks, or in granulated or powdered form.

To avoid clouds of white, the tablets should be added using a floating dispenser. As an alternative, they can be placed in the skimmer. Beware to keep the filter in good condition, as much of the efficiency of the disinfectant is lost if the filter is dirty.

A NON-COMBURENT version of **trichlorine tablets and blocks** is now also available. This means that these products are less dangerous, which holds several advantages for distributors, who are obliged to store the products in accordance with Royal Decree 379/2001 and Seveso regulation II. **The functions and effectiveness** of these tablets are the same as those of comburent chlorine products.



Multi-functional products

Multi-functional products are a very popular alternative. ASTRAL's "Multi-Action" range combines continuous chlorination with anti-algae and flocculation effects, and comes in granulated, tablet or block form. The most innovative AstralPool product is called "Action-10", which performs ten tasks at the same time (disinfecting, algaecide, flocculant-coagulant, reduction of pH level, stabiliser, bactericide, viricide, algaestatic, anti-scaling and fungicide).



Triobloc

AstralPool offers you a modern and highly efficient alternative that does not contain copper: ASTRAL's **Triobloc**. This product is all-inclusive of concentrated active substances for permanent chlorine disinfecting, for algae prevention and for flocculation. **You neither need to measure nor touch the product.** Thanks to the slow, continuous dissolving process and its built-in clearing effect, **Triobloc** maintains water crystal clean for two weeks...

Duralong

Integral pool treatment, with bactericide, algaecide and flocculant activity, including a floating dispenser.

Quick dissolving chlorine

Quick dissolving chlorine is used for two types of disinfecting:

- For permanent treatment; small quantities of chlorine are dispensed at short (daily) intervals
- For emergency disinfecting in case of problems; cloudy water or water with algae can be remedied, with the help of shock chlorination, even in water that has been treated with active oxygen or bromine.

Quick dissolving chlorine (**20g Rapid Chlorine Tablets or Granulated Dicloro**) are dispensed using a skimmer with the pump switched on. They can also be dissolved in a bucket of water, and then the water is spread evenly across the surface of the water.

Hipocal Granular, the so-called calcium hypochlorite, is ideal for soft waters. The use of ASTRAL **Chlorine Stabiliser** is only convenient and necessary in non-stabilised chlorine products such as calcium hypochlorite and liquid chlorine. It prevents more intense decomposition of the active substance through heat and ultraviolet irradiation.

Water analysis



You should check the water regularly to avoid any unpleasant surprises. Especially when you have recently filled the pool with water, you should **check its pH value** every 1 or 2 days. As for **disinfectant content**, you should check the water at least once a week.

Nominal recommended values:

pH value	7,0 - 7,6
Chlorine content	0,5 - 2 mg/l (free residual chlorine (DPD))
Active oxygen (granulated)	5 - 8 mg/l (approx 1 h after adding)
Active oxygen (liquid)	2 ppm
Bromine	1 - 3 mg/l

The **algaecide content** can only be determined in a laboratory; with a dosage as prescribed, the values oscillate at around approximately 2-5 mg/l.

Fast and practical: Test Strips

In a matter of seconds, you can tell what your water is like as these measure several parameters at the same time: **pH, free chlorine and alkalinity**. You simply need to submerge them in the water and compare the colours against the supplied tables.

Totally exact: analysis in a beaker (DPD)

The small sample of water in the beaker is coloured depending on the substance to be tested. The measurement value is determined by comparing colours.

How to maintain the swimming pool during winterising and absences



Winterising

When winter arrives, in outdoor pools, the water level has to be lowered to below the inlet nozzles and the filter and pipes are emptied. Water should be left in open-air swimming pools dug out at ground level to compensate for pressure and prevent colouring, for example, because of leaves falling into the pool. However, we recommend placing ASTRAL **icebreaker floats** on the water, or something similar, so that the walls of the pool are not damaged should the water freeze. In addition, add a **winteriser** to the water so that it will be easier to put the pool back into service when spring comes around. ASTRAL's **Foamless winteriser** eliminates the growth of algae and lime precipitations throughout the winter months. As a complete winter treatment, ASTRAL also offers **Inverlong** for those people who wish to keep their pools crystal clear also throughout the coldest months of the year.

Maintenance during absences

When you are away from the pool for a long time, it is a good idea to take certain precautions. AstralPool recommends:

- Cleaning the filter carrying out backwashes.
- Regulating the pH value at 7.0 and 7.2 by adding **pH-Minor** or **pH-Plus** depending on whichever is needed.
- Adding a double dosage of disinfectant and algicide (for absences of 8 to 14 days) or adding **Triobloc** to the skimmers (for absences of 2 to 3 weeks).
- Not stopping the installation completely, but rather reducing the operation times.

This procedure is recommended for all the chlorine, bromine and oxygen based maintenance systems. While you are away, it is always a good idea to **cover the pool with an ultraviolet-proof cover**.

Algae prevention



Owing to algae spores transported aurally, dangerously slippery layers of algae can be formed in the swimming pool. Algae in a swimming pool are not just aesthetically unpleasant, they also jeopardise correct disinfection. As time goes by, these algae form a slimy layer that can only be penetrated, and with difficulty, by high dosages of antidotes (chlorine).

ASTRAL brand **algicides** act against all types of algae that can be found in swimming pools. Even small quantities are efficient thanks to the high content of active substances. In order to live, algae need light, nutrient substances and heat. They will find plenty of these around an uncovered swimming pool in the summer, but if we add regular quantities of **algicide**, the growth of algae will be prevented in the future.

There are some **algicides** that do not produce foam or only very little. Foam formation is also very closely related to the hardness of the water (hard water: less foam and soft water: more foam). If algae have already been formed, in most cases it is not enough to simply add algicide. In such cases, you will need to use **shock chlorination** (see the pool maintenance disc at the back of this manual). In ASTRAL's **Oxy-Active COMPLET, Oxy-Active LIQUID, Action-10, Multi-Action, Duralong and Triobloc** products, the substances for algae prevention are already included.

How to make water transparent



Flocculation is increasingly popular because it helps to keep the **water more transparent** and also **saves disinfectant**. As filters can only retain particles down to a certain size, some smaller grains of dirt and suspended particles can go right through the filter and get back into the water. But when a **flocculant** is used, these dirt particles get larger and form floccules that are trapped in the filter. The formation of this layer of floccules on the upper face of the filtering medium (sand) **increases the quality of the filtering process**. That is why flocculation cannot be used in diatom filters, because the filter would soon get blocked. Flocculation is ideal for sand filters. In some cartridge filters flocculation can also take place, but they then need to be backwashed more frequently.

Flocculation

Double-effect Cartridge Clarifier achieve two things:

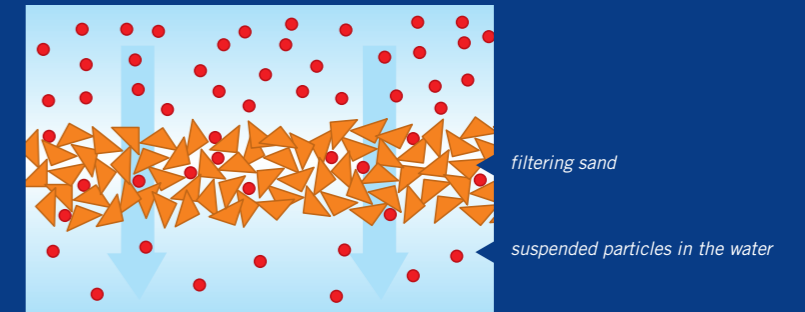
- The water becomes crystal clear, because the small, suspended particles are retained by the filter.
- Given that these contaminant substances disappear from the water cycle in the next backwash of the filter, the process also "offloads" the disinfectant used, implying considerable savings in the use of disinfectant.

In order to achieve the **optimum flocculation effect**, it is essential that the water be at the right pH level. Floccules can only be formed correctly if there is a pH level of between 7.0 and 7.4.

There are essentially three types of flocculant:

- **Liquid Flocculants** (for automatic dispensing or for recuperation flocculation in the pool)
- **Cartridge or Sachet Flocculants** that are placed in the skimmer (ASTRAL's most outstanding example is that called **Double-Effect Cartridge Clarifier**)
- **"Claritab" Flocculants** in highly concentrated tablet form, which are placed in skimmers.

Filtering without flocculation



Filtering with flocculation

