POOL AND FOUNTAINS SYSTEMS

POOL OPERATION & MAINTENANCE MANUEL

Professional Swimming Pool Management Guide

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Pool Operation Manual

In order to prepare a swimming pool in a healthy and proper manner before each season, various cleaning and disinfection chemicals are required. For this reason, receiving proper training on the use of cleaning and disinfection chemicals or consulting a professional company would be the most appropriate approach.

From both a health and aesthetic perspective, pool maintenance and periodic chemical control are the most important points to pay attention to. During the season, the pool water must be checked regularly every day to maintain the desired water values. The most essential materials that ensure this are pool chemicals. There are many different types of pool chemicals, and each has its own specific area of use.

It should never be forgotten that even if a system is built in compliance with standards and equipped with high-quality equipment, improper operation of the swimming pool will inevitably result in unhealthy pool water.

The pool chemicals used during the swimming season can generally be categorized as chlorine, pH reducer, algaecide, flocculant, clarifier, foot disinfectant, surface cleaner, ion remover, and winter maintenance chemicals.

What are the procedures that should be carried out for a swimming pool, starting from the pre-season preparations and continuing throughout the season? Let us examine them step by step.

Inspection of Pool Equipment

Before putting the pool into operation for the season, all pool equipment should first be inspected and serviced.

1- Sand Filter :

The filtration sand of the sand filter should be checked. Is the sand in suitable condition for the new season? Are the granules of the required size and cleanliness? Are the connection components on the filter leaking water? Is the pressure gauge functioning properly? All of these should be inspected, and if necessary, replaced with new components.

2- Filtrastion Pums :

The pre-filter basket of the circulation pump should be cleaned. The connection fittings must be inspected and replaced if necessary. During the initial start-up of the pump, the electrical installation should be checked, and it must be verified whether the pump is operating in the correct rotation direction or in reverse.

3- Automatic Disinfection or Salt Chlorination System :

The operation of the **Automatic Control Regulator and dosing pumps** must be checked.

Are the connection fittings leaking water?
The dosing pump hoses, as well as the suction and discharge check valves, should be inspected and replaced if necessary.

4- Electric Systems:

Elektrik panosu ve sistemi kontrol edilmeli çalışmayan malzemeler yenisi ile değiştirilmelidir. Tüm kablolar kontrol edilmeli, deforme olmuş veya özelliğini yitirmiş kablolar yenisi ile değiştirilmelidir. Kablolar mutlaka yanmaz özellikli (Halogen free) olmalıdır. Şaft malzemeleri kablo bağlantıları kontrol edilmeli, kısa devreye veya problemlere karşı gevşek bağlantılar yerinden sökülüp tekrar sağlam bir şekilde klemens bağlantılar monte edilmelidir.

5- Pool Lamp :

The **lighting fixtures must be inspected**. Any non-functioning lamps should be replaced with new ones.

Additionally, after every lamp replacement, **all gaskets inside the housing must be renewed**.

As a secondary protection measure, the cable entry and gasket area must be sealed using **polyurethane-based silicone resistant to pool chemicals** to ensure proper waterproofing.

6- Pool transformator:

Transformers must be inspected.They should be installed inside sealed, insulated enclosures to prevent exposure to moisture and corrosion. Any malfunctioning transformers must be replaced with new ones. If possible, transformers equipped with an LED indicator showing operational status during operation should be preferred.

7- PVC Piping System :

The PVC piping system and connection fittings must be inspected.
Connections with leakage problems must be repaired.
Deformed pipes and fittings must be replaced before proceeding with water filling.

Pool Cleaning:

To prepare the swimming pool for the season, the water remaining from winter must be drained.
After draining, the surfaces should be rinsed thoroughly with clean water.
The coating surfaces should be brushed with acid diluted in water and applied to the walls.
During this process, occupational safety rules must strictly be followed.
Under no circumstances should work be carried out without gloves, boots, and safety goggles.
After acid cleaning, the surfaces must be rinsed quickly with clean water to prevent damage to the grout joints.
All remaining acidic and dirty water inside the pool must be completely drained.
Then, algaecide should be applied to the pool walls using a brush.
Depending on the air temperature, after allowing the algaecide to dry (recommended: 1 day), the pool should be filled with clean water.
The pool must be filled with clean potable water.
Well water or tanker water with unknown properties may contain excessive iron, manganese, lime, etc., which can cause serious problems.
Since the filled water may need to be drained again in case of issues, we strongly recommend filling the pool with municipal network water.

Pool Chemical Values:

The use of chemicals depends on the volume of the swimming pool.

To maintain chemical balance, five essential pool chemicals are required. Depending on environmental factors and water characteristics, additional chemicals may sometimes be needed.

Pool chemicals include:

- pH Reducer

- pH Reducer
- Flocculant
- Algaecide
- Clarifier

Additionally, even in pools with automatic disinfection systems, a test kit capable of measuring pH and chlorine must be available for control purposes.

Required Pool Water Values

pH: 7.2 – 7.6 (Ideal: 7.4)
Redox: 650 mV – 750 mV (depending on pool usage)
Free Chlorine: 1.0 – 2.0 ppm (max. 3 ppm)
Combined Chlorine: max. 0.7 ppm
Water hardness (as CaCO3): 100 – 500 ppm
Daily fresh water addition: 30 liters per person

How to Use Pool Chemicals?

When putting the pool into operation for the first time, the pH balance must be adjusted first.

After adjusting the pH level to the ideal value (7.4), the chlorine level should be adjusted.

In pools monitored with a test kit, the ideal chlorine value should be approximately 1.0 ppm.

The pool water must be tested daily using test kits, and the required amount of chemicals should be added to maintain ideal values.

Chemical usage rates below are given as examples for a 100 m³ swimming pool. Chemical quantities must always be adjusted according to pool volume.

Important Warning

In liner-coated and inflatable pools, the use of granular (powder) chlorine and granular pH reducer may cause bleaching and discoloration in the area where the chemical is applied.

To extend the lifespan of liner materials:

- Use chlorine tablets or liquid chlorine in the skimmer basket.
- Use liquid pH reducer instead of granular form.

In automatic disinfection systems, liquid chlorine must be used.

All pool chemicals must be approved by the Ministry of Health. The availability of an MSDS (Material Safety Data Sheet) indicates product reliability.

pH Reducer

To lower the pH of a 100 m³ pool by 0.2 units, 1–1.5 kg should be dissolved in a bucket of water and distributed over the pool surface.

The system should run for 3–4 hours before retesting.

If the pH is still high, the process should be repeated until ideal levels are reached.

Chlorine

For initial filling:
Add 1.0 kg chlorine per 100 m³ after dissolving it in a bucket of water.

Daily dosage:
Add 200 g per 100 m³ dissolved in water and distributed over the pool surface.

If an automatic disinfection system is present, liquid chlorine should be added to the chemical tank instead of daily manual dosing.

The automatic system will measure pool values and dose the required amount automatically.

Flocculant

1 liter per 100 m³ weekly (to balance tank or directly into the pool).

Algaecide

Initial filling: 1.5 liters per 100 m³
Weekly: 0.6 liters per 100 m³

Clarifier

Initial filling: 1.0 liter per 100 m³
Weekly: 0.6 liters per 100 m³

Liquid Chlorine Usage

Liquid chlorine is supplied ready to use.

In machine rooms with automatic disinfection systems, it must be poured into chemical tanks.

After pouring 25 liters of liquid chlorine into the tank, the remaining volume should be filled with water.

Active chlorine concentration is approximately 12–14%.

The automatic system will dose chlorine according to pool measurements.

Liquid pH Reducer Usage

Liquid pH reducer is a diluted inorganic acid compound.

It is used to lower high pH levels so chlorine can work more effectively.

After pouring 25 liters into the tank, the remaining volume should be filled with water.

For best performance, keep pool pH between 7.0 – 7.2.

Pools using 90% granular chlorine must measure CYA (cyanuric acid).

Test Kit Usage

After opening the lids of the test kit, the compartments should be thoroughly cleaned. Then, a water sample should be taken from approximately 50 cm below the surface of the pool.

Test kits may be available in tablet or liquid form. For tablet kits, one tablet is added to the pH chamber. For liquid kits, 5 drops are added to the pH chamber. After adding the reagent, the lid is closed and the sample is gently mixed.

The pH level of the pool water is then approximately determined by comparing the resulting color with the reference color scale provided on the side of the test kit.