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DESIGNER BEADCRETE™ & DESIGNER POOL RENDER

POOL MAINTENANCE GUIDE

- **Important Note:** This Guide provides general advice for pool maintenance procedures normally associated with residential applications but may also be considered for commercial applications, selected on the basis to provide an acceptable probability of serviceability of the pool's operation throughout its design life. It does not preclude or substitute the professional advice of local pool maintenance providers nor neither their experienced knowledge of the practical procedures necessary for individual pools and the particular requirements of the pool environment conditions.

GENERAL POOL MAINTENANCE OBJECTIVES:

1. Recommended pool water levels should be maintained at all times in accordance with advice given by the pool builder or your local pool maintenance professional.

2. Ensure all pumping and filtration equipment is maintained in good order and functions in accordance with the manufacturer's specifications and operating instructions. The filter system is an important consideration of maintenance and should be washed and rinsed at regular intervals using 'backwash' mode as instructed by the system manufacturer.

3. If 'salt-chlorinator cells' are used – check regularly to ensure proper operation in accordance with the recommendations of the system manufacturer.

4. Regular removal of debris from the 'skimmer box' is important and so is regular removal of leaves or other foreign matter within the pool itself to minimise 'organic loading' of the pool water and undue influence of staining agents that may or will impact upon the aesthetic appearance of the pool interior.

5. Where automatic pool cleaning appliances are used ensure proper operation and function and particularly timer duration in accordance with the appliance manfacturer's specifications and instructions.

6. Broom and vacuum the pool interior at least at two-week intervals in acordance with the recommended operation of the appliance manufacturer to preclude 'build-up' of organic matter upon the pool interior surface and bacterial growth that can affect pool water hygiene, swimmer safety and the aesthetic appearance of the pool interior.

7. Pool chemistry levels for residential pools subject to frequency of use and climate conditions should be at least checked and adjusted weekly to preserve water hygiene and swimmer comfort.

8. IMPORTANT PREVENTATIVE MAINTENANCE – CALCIUM / MINERAL SCALE-STAIN & SALT-CELL PROTECTION:

   Under certain local water conditions and/or pool water chemistry imbalance from time to time increases the likelihood of white calcium buildup and other mineral deposits on all pool interior surfaces' including tiles; and within pool maintenance equipment and most commonly salt-cell chlorinated pools. Designer Pool Coatings recommend use of 'Beautec®' or equivalent new pool start-up protection against calcium / mineral buildup and thereinafter monthly or yearly treatment in accordance with advice from your pool maintenance professional. If calcium / mineral buildup is prolonged without preventative treatment, restoration may require use of 'Scaletec Plus®' or equivalent to achieve acceptable pool operation performance. For more information, visit www.easycarewater.com

IMPORTANT NOTE – COMMERCIAL POOL MAINTANENCE:

In the case of tourist resort pools and hotel pools and particularly relevant to theme-park water recreation facilities, maintenance of water chemistry and cleanliness is considered to be a priority to preserve swimmer comfort and hygiene. Principles of good standards of maintenance include regular daily checks and in the case of high frequencey use theme-park water recreation facilities, routine checks might be conducted at least at two-hour intervals. Water cleanliness is also a maintenance consideration to preclude undue influence of environment and conditions of in-service use impacting upon the aesthetic appearance of the pool interior.

GUIDE TO CONTROL OF ALGAE GROWTH:

Maintaining correct water balance and proper sanitization of the pool water is the most effective method to preclude algae growth. Algae is perhaps best described as marine plants that germinate from elements of air, sunlight and water and a regular supply of nutrients that most only become prevalent in poorly sanitized and irregularly balanced pool water. Commonly, algae spores enter the pool water attached to organic material such as leaves and other plant debris but may also be transported by wind and in some cases, the water supply to the pool itself.

Regularly check shallow water areas around steps and swim-outs for signs of potential algae growth. If the pool is 'shut-down' for winter closure or for any prolonged period, weekly inspection and checking water balance and sanitization levels is best practice. The pool should be kept free of organic plant matter at all times, so far as is practicable. If algae becomes present, immediately treat with a proprietary Algaecide in accordance with the manufacturers instructions or consult your local pool maintenance professional. "Chlorine Shock-Treatment" may be required under certain uncontrolled algae growth conditions. If this occurs, consult your local pool maintenace professional. In all cases of algae growth treatment, when the algae dies, the resulting residue must be brushed from the pool surface and removed by the pool filtration system. The pool water must be clean and clear,

sanitized and chemically balanced at the conclusion of any algae treatment maintenance.

GUIDE TO SANITIZING THE POOL WATER:

Sanitizing the pool water precludes bacterial growth that otherwise can lead to the heath risks of ear, eye, nose and throat infections to swimmers. It must also be noted that the family dog should not be enticed to swim in the pool since the humble pet can contribute up to twenty-times the bacteria contamination level by water volume when compared to human bacteria contamination.

Contributory factors that lead to bacterial growth are the 'organic loading' elements manifest in the pool water from the human body iteself and from plant debris, even from sunscreen cream and lotion application.

Recognised pool water sanitization methods are:

(i) Hypochlorous Acid "Chlorine" Method

Consult your local pool maintenance professional for advice. Regular 'chlorine' treatment at the prescribed dosage relevant to pool water capacity requires that the pool water is passed through the pool filtration system to remove the 'dead' bacteria. The method also requires use of a proprietary residual sanitizer in appropriate concentration so as to ensure that any ensuing bacteria that may enter the pool water is neutralised without delay. A residual level of 1.0 ppm to 2.0 ppm is generally considered a good standard of regular test maintenace for residential pools.

Chlorine may be purchased in granular, liquid or tablet variety but may also be labelled 'stabilized' or 'unstabilized'. Be advised also that granular chlorine cannot be dosed automatically. Liquid Chlorine cannot be stored beyond its specified shelf life – but can be dosed automatically.

(ii) Salt Chlorinator Cell Method

These are proprietary automated units requiring electric power supply to perform an electrolysis process that converts sodium chloride (salt) into hypochlorous acid (chlorine). Of particular importance is selection of a type and capacity capable of producing the MAXIMUM chlorine requirement of your pool's water volume. Manual inclusion of chlorine may be required from time to time to boost residual levels to the standard maintenance range of 1.0 ppm to 2.0 ppm

IMPORTANT NOTE: Stabiliizing the Pool Water:

Use of a Stabilizer (normally Isocyanuric Acid) in the correct dosage concentration with chlorine treatment will protect the chlorine from the deleterious effects of UV rays that dramatically reduce chlorine performance as an anti-bacterial agent. Consult your local pool maintenance professional for advice. Stabilizers normally exhibit high residual performance and only require top-up at the appropriate concetration from time to time to protect and maintain proper chlorine function. Failure to exercise control of stabilizer use

is contrary to good pool maintenace practices. Overdosing may or will reduce the effectiveness of the chlorine as an anti-bacterial agent.

Controlling Chlorine Odour:

Contrary to the traditional belief that high chlorine levels produce chlorine odour, in fact, the opposite is the most likely cause. Low chlorine levels have a higher concentration of odour-producing 'chloramines' and also increase the risk of eye and skin irritation to pool users. If chlorine odour is evident, check chlorine level and add chlorine to achieve the recommended balance. If odour continues to persist, consult your local pool maintenance professional. "Chlorine Shock" treatment may be the required solution.

Sanitizing Heated Pools:

Heated pools require special consideration for sanitization procedures. They normally require additional chlorine maintainence and more regular pool water chemistry testing and adjustment than a non-heated pool. The primary reason for maintenance vigilance of a heated pool is because of the more rapid reduction of the chlorine's effectiveness as an anti-bacterial agent in 'hot' water. Avoidance of use of stabilized chlorine products in heated pools is also considered best practice. Such use further weakens the chlorine's ability to sustain chemical treatment of bacteria. Consult your local pool maintenance professional for management advice and programmed maintenance recommendations specific to your heated pool construction and its equipment installation system.

Use of 'Chlorinel-Free' Pool Sanitizing Systems:

Proprietary systems offering alternative methods of pool water sanitization might normally be referred to under the generic term of 'chlorine-free' or 'chemical-free' pool water management products and equipment. The more immediately recognised alternative proprietary system are 'Ozone' and 'Ironizers'. Be aware that some alternative sanitizing systems may or will require replacement of the pool-filter medium to crushed glass or similar iron-free medium for compatibility with some 'chemical-free' proprietary devices. Consult your local pool maintenance professional for advice and to ensure that the system recommended will work in conjuction with the existing pool interior finish and not disrupt aesthetic appearance.

GUIDE TO POOL WATER BALANCE CHEMISTRY:

Maintenance consistency of the pool's water balance is standard practice to maintain the 'health' of the pool water, safe use for swimmer comfort, water clarity and aesthetic appearance and prevent unnecessary corrosion damage to the pool's management system, accesories and interior.

The most likely damage-causing variables within the water balance are:

- pH

- Total Alkalinity
- Calcium Hardness

pH – Measure of Water Balance Acidity Vs Alkaline

The pH Scale ranges from 0 to 14. Therefore, 7.0 being valued neutral. Values below 7.0 are acidic. Values above 7.0 are alkaline. Standards Australia AS 3633 defines the pH operating range within the scale of 7.0 to 7.8 but further stipulates a recommended pH range of 7.2 to 7.6 and normally considered most suitable for swimmer comfort, sanitizer compatibity and the pool's operational 'health' generally.

pH levels within the pool water constantly change in accordance with the conditions to which the pool is exposed from time to time, for example, when the water level of the pool is topped-up either manually or by rain water; high frequency of recreational use; and, by the addition of sanitizing chemicals.

Effects of pH on 'Chlorine' Sanitization:

Optimum 'chlorine' sanitization equally relies on the recommended pH level range for proper operational performance, regardless of the chlorine type or chlorination process used. Any pH level drift above Standards Australia operational parameters of 7.0 to 7.8 will reduce the sanitising effectiveness of the chlorine.

Total Alkalinity Measure:

Total alkalinity is a measure of bi-carbonates, carbonates and hydroxides present within the pool water. Standards Australia AS 3633 advises a total alaklinity range of between 60mg/L to 200mg/L (60-200ppm). Consult your local professional pool maintenance provider for specific advice relevant to pool type and water capacity. Low Total Alkalinity may or will cause erosion of the pool interior surface and may also result in pH level instability from only the smallest addition of other necessary pool maintenance chemicals.

Total Alkalinity may be adjusted by use of the following procedure:

- Adding bi-carbonate of soda (Buffer) to raise Total Alkalinity
- Adding acid to lower pH that lowers Total Alkalinity.
- Adding top-up water to the pool to alter Total Alkalinity

Controlling pH Values and Total Alkalinity:

As explained, the addition of Acid will lower the pH value and therefore also lower Total Alkalinity. It is therefore a necessary maintenance action that any adjustments need to be made simultaneously. Standards Australia advice given in AS 3633 would seek maintenance of the values set out below:

- pH Value of 7.2 to 7.6

- Total Alkalinity within the range of 100ppm to 120ppm considered normal industry practice within the recommended range of 60ppm to 200ppm. Consult your local professional pool maintenance provider for individual advice.

When performing Water Balance tests, this may or will at times record correct pH value whereas the Total Alkalinity tests low. Be aware that by adding 'buffer' (Sodium Bicarbonate) to raise Total Alkalinity will similarly raise the pH level. Conversley, by adding Acid (normally either Hydrochloric Acid or Sodium Bisulphate) to lower the pH value will similarly lower Total Alkalinity. Therefore, to properly adjust Water Balance under these circumstances will require Total Alkalinity to be artificially raise to the point where the addition of Acid is only in sufficient quantity to simulaneously lower the pH Level and Total Alkalinity Level to within the correct range advised in AS 3633.
Important Safety Note: Dilute Hydrochloric Acic (normally 1 part acid to 10 parts water) before placement in the pool water. Always add acid to water. Never, at any time, add water to acid.

Calcium Hardness Measure:

Calcium Hardness is the measured amount of disscolved calcium present within the pool water. Standards Australia AS 3633 advises a recommended range of between 80ppm and 500ppm. It is of the utmost maintenance importance that Calcium Hardness and Total Alkalinity is consistently brought into balance. Improper levels and particularly low levels will produce corrosive elements within the pool water deleterious to pool management equipment. High levels will produce scale formation on the pool interior and on pool maintenance systems equipment.

It is important to note that Calcium Hardness tests are not within the scope of standard test kits. Consult your local professional pool maintenance provider for the performance of Calcium Hardness tests. This should be done at regular intervals, in the first instance, to establish reference data on naturally occuring calcium levels or otherwise and thereinafter may only require periodical or annual testing and adjustment, subject to exposure conditions. Pool owners should be aware that use of Calcium Hypochlorite for pool sanitization purposes, a known chemical that will raise Calcium Hardness levels within the pool water, will require more frequent testing with the appropriate equipment.

Table 1: Guide to Typical Pool Water Balance Chemistry – AS 3633

Chemistry:	**Recommended Level:**
pH.	7.2 – 7.6
Total Alkalinity mg / L.	80 – 120
Calcium Hardness mg / L	150 for first 12 months of pool operation
Calcium Hardness mg / L.	100 – 250 after 12 months of pool operation
Free Chlorine..	1.5 – 3.0
Stabilised Pools (Isocyanuric Acid)	2.5 – 4.0

Note: ***For new pool construction & renovations – refer to Designer Pool Coatings'Pool Start-Up Guidelines' for general advice and recommended procedures for Designer Beadcrete™ & Designer Pool Render applications. General guidance to pool maintenance where extremely cold weather conditions naturally occur within the seasonal climate cycle, consult Designer Pool Coatings Guide to Pool Maintenance – Cold Climates.***

POOL SAFETY GUARANTEE

Designer Concrete Coatings Pty Ltd declare that there are none known short term nor neither chronic health effects induced from the ingredient properties of its manufactured Designer Beadcrete™ and Pool Render products when they are properly installed and achieve hard-set. Provisions of this declaration require that the product is applied is accordance with installation and finishing practices recommended by the manufacturer and with due dilligence to MSDS & PPE advice.
Failure of pool owners to undertake proper and regular checking and adjustment of chemistry levels of the pool water for the purpose of hygiene and swimmer comfort and neglect of a good standard of recognised pool maintenance procedures including the maintenance of documented water-test results history from the time of the pool's completion will void this Pool Safety Guarantee.

FOR TECHNICAL OR FURTHER INFORMATION CONTACT:

Designerite Pty Ltd

19 Liverpool Street (PO Box 939)
INGLEBURN, NSW, 2565 – Australia.

Telephone: (02) 9521 3899 – Fax: (02) 9829 3544
Web: www.designerite.com.au

Or contact your nearest Designer Beadcrete™ and Designer Pool Render Distributor.

IMPORTANT NOTE: