

## DEFINITIONS:

### ABRASION HAZARD:

A sharp or rough surface that would scrape the skin by chance during normal use.

### ACCESSIBLE:

Easily exposed for inspection and the replacement of materials and/or parts with the use of tools.

Accessible could also be used to describe 'ADA compliant' access. See ADA Access.

### ACID

A chemical compound which releases hydrogen ions into water, decreasing pH. Products like muriatic acid or sodium bisulfate (Lo 'N Sb) are used to lower pH and Total Alkalinity in pool water.

A liquid or dry compound used to reduce the pH of swimming pool or spa water. See SODIUM BISULFATE, MURIATIC ACID.

A chemical compound which releases hydrogen ions in water, having a pH below 7.0.

### ACID DEMAND

The amount of acid needed to lower pH to the proper level for pool water.

### ACID / BASE BALANCE

The concept of achieving a calculated near-neutral pH.

### ACIDITY

An expression of the acid, or low-pH state, of a liquid.

### ACTIVATED CARBON

Usually granulated, activated carbon, used to remove excessive oxidizers (e.g. ozone), colors and odors in water.

### ADA ACCESS:

Access to a Pool or building that is compliant with current standards required by Federal Law. ADA Compliant Access.

### AERATION

The process of mixing air and water. In a spa this can happen two ways: 1) Using an Air Blower to force air into an air channel or through the spa jets. 2) With Venturi Air Controls which allow air to be pulled into and mixed with the water the spa jet.

### AGGRESSIVE WATER

Water with a negative calcium-saturation index. Water that dissolves minerals and dissolves or corrodes metals.

## AIR PUMP ASSIST BACKWASH

The compressing of a volume of air in the filter effluent chamber (by means of an air compressor or by the water pressure from the recirculating pump) which, when released, rapidly decompresses and forces water in the filter chamber through the elements in reverse, dislodging the filter aid and accumulated dirt, carrying it to waste.

## AIR INDUCTION SYSTEM

A system whereby a volume of air (only) is induced into a hollow ducting in a spa floor, bench, or other location. The air induction system is activated by a separate air power blower.

## ALGAE

Microscopic plants deposited in pool or spa water by wind, rains, and dust. They thrive in sunlight and warm water, clogging filters, increasing the need for maintenance, and causing slippery surfaces. There are 21,000 known species of algae.

Green, black or brown microscopic plant life which is nourished by sunlight.

Microscopic plant-like organisms that contain chlorophyll. Algae are nourished by sunlight (carrying out photosynthesis). They are introduced by rain or wind and grow in colonies producing nuisance masses. These organisms include green, blue-green or black, brown, and yellow-green (mustard) algae. Pink/red colored algae-like organisms exist but are bacteria and not algae. There are 21,000 known species of algae.

Simple nuisance plant life which colonizes in water under favorable conditions.

## ALGAECIDE (also spelled ALGICIDE):

A natural or synthetic substance used for killing, destroying, or controlling algae.

## ALGAECIDE

Any chemical or material which kills algae.

## ALGICIDAL

Being capable of killing algae.

## ALGICIDE

A chemical added to water to kill algae infestations and prevent their recurrence.

A chemical or process for killing algae. An algistat is an agent for preventing their growth.

## ALGISTAT

Any substance or agent that inhibits the growth of algae.

## ALGISTATIC

Being able to inhibit the growth of algae.

## ALKALI DEMAND

The amount of alkali (base) needed in the water to raise pH and/or Total Alkalinity to the proper level.

## ALKALI

A basic solution that neutralizes acids by releasing carbonates and/or hydroxides.

## ALKALINE

When the pH of a solution measures above 7.0 on the pH scale. Alkaline (often referred to as 'basic') is the opposite of acid

That property of a compound that allows it to neutralize an acid.

## ALKALINITY

The amount of bicarbonate, carbonate, or hydroxide compounds present in the water. Total Alkalinity is a measure of the water's ability to resist pH change due to the presence of these compounds in the water.

The amount of bicarbonate, carbonate and possibly cyanuric ions present in water. A measure of the pH-buffering capacity of water.

The amount of bicarbonate, carbonate or hydroxide compounds present in water solution. See also TOTAL ALKALINITY.

## ALUM (Aluminum Sulfate) ( $Al_2(SO_4)_3$ ):

Aluminum sulfate, typically added to water to remove suspended particles either by causing them to sink to the bottom, or be filtered out.

An aluminum sulfate compound, use to cause suspended solids in the water to congeal into filterable masses (floculate).

A flocculating agent. Potassium and ammonium alum are the most common types used in the treatment of pool water. Aluminum sulphate is often used with gravity sand filters.

## ALUMINUM SULFATE

Alum; a floccing agent in older pool filters.

## ALUMINUM SULFATE:

See ALUM.

## AMMONIA ( $NH_3$ )

A Nitrogen containing compound that combines with free chlorine residual to form chloramines.

## AMMONIA [NH<sub>3</sub>]

A chemical compound of hydrogen and nitrogen that combines with free chlorine in pools to form chloramines, or combined chlorine.

## AMPS

Electrical power.

## APPURTENANCE

A subordinate part or adjunct; accessory object.

## ATMOSPHERIC PRESSURE

Sea level atmospheric pressure is approximately 14.7 PSI or  $14.7 \times 2.31 = 34$  feet of head. This means, at sea level, the surface of the water in a pool supports a weight of air equivalent in head to 34 feet of water.

## AUTOMATIC CHLORINATION

The feeding of a sanitizer to a pool or spa through a manual or electronic device.

## AUTOMATION

Electric equipment that senses water variables (primarily chlorine and pH) and controls feed systems to maintain desired levels.

## AVAILABLE CHLORINE

A term used in rating chlorine containing products as to their total oxidizing power. (See FREE AVAILABLE CHLORINE.)

## BACKWASH CYCLE

The time needed to backwash (clean) the filter and its components.

## BACKWASH

Reversing the flow of water through the filter to clean the elements and filter medium. Typical maintenance for sand filters and 'some' DE filters.

The process of cleaning a swimming pool filter by reversing the flow of water through it.

## BACKWASH RATE

The rate of flow of water through a filter during the backwash cycle, expressed in U.S. gallons per minute per square foot of effective filter area.

## BACKWASH

The process of thoroughly cleansing the filter medium and/or elements by the reverse flow of water through the filter.

## BACKWASH CYCLE

The time required to back wash thoroughly the filter medium and/or elements ~ the reverse flow of water through the filter.

## BACKWASH RATE

The rate of flow of water through a filter during the backwash cycle, normally expressed in U.S. gallons per minute per square foot of effective filter area.

## BACKWASH

The process of thoroughly cleansing the filter medium and/or elements by the reverse flow of water through the filter.

## BACKWASH PIPING

The pipe or hose going from the backwash outlet of a filter system to a disposal point.

## BACTERIA

Single-celled microscopic organisms. Pathogenic bacteria can cause infections, disease and bather irritation. Chlorinating and Brominating and biguanide products are used to kill bacteria in pool & spa water.

## BACTERIA

Single-celled microorganisms of various forms, some of which can cause infections or disease.

## BALANCE

In pools, used to refer to a condition of the water neither scaling nor aggressive! corrosive.

## BALANCED WATER

Pool or spa water that has a proper pH and the appropriate mineral content to prevent corrosion and scaling.

## BAND

See HOOP.

## BARRIER

A fence, a safety cover, a wall, a building wall or a combination thereof which completely surrounds or covers the swimming pool and obstructs access to the swimming pool.

## BASE

See Alkali

## BASIC

Opposite of acidic, a pH condition above 7.

## BATHER LOAD

The number of people in a pool or spa at a particular time or during a specific period of time.

## BATHER

In a Spa, a bather is anyone using a spa for a duration of 20 minutes at 102°F.

## BATHER

See USER.

## BATHER LOAD

See USER LOAD.

## BEGINNER'S AREA

Those water areas in pools which are three feet (3') or less in water depth.

## BIGUANIDE (PHMB)

Polyhexamethelyne biguanide hydrochloride. A long chain polymeric molecule with both bactericidal and algistatic characteristics. Must be used in pool maintenance with a supporting oxidizer (Hydrogen peroxide).

## BIOFILM

The accumulation and/or colonization of bacteria, algae, mold, fungus and other micro organisms on the surface of the pool/spa and the interior of plumbing lines.

## BLADDER

A loose, flexible membrane of rubber or similar material.

## BLEACH

Sodium hypochlorite, usually 12% strength, 'liquid chlorine' for pool use.

## BODY COAT (BODY FEED)

Diatomaceous earth continuously added to filter elements during the course of a filter run to help maintain filter efficacy.

## BREAKPOINT (CHLORINATION)

The point in a rising chlorine residual at which the concentration of available chlorine becomes great enough to oxidize completely all organic matter and ammonia compounds in a pool completely. Chlorine added thereafter will be in the uncombined, or free, state.

## BODY FEED

The continuous addition of small amounts of filter aid during the operation of a diatomaceous earth filter.

## BOOSTER PUMP SYSTEM

A system whereby one or more hydrotherapy jets is activated by the use of a pump which is completely independent of the filtration and heating system of a spa. Also, a device used to provide hydraulic support for certain types of equipment such as clean-

ing systems, gas chlorinators, and solar systems.

## BORATE

An elemental mineral used for conditioning water to provide clearer, more comfortable water. Also provides algistatic activity.

## BOTTOM RAIL

The lower portion of the pool frame that guides the aboveground pool wall in place.

## BREAKPOINT CHLORINATION

The application of a specific quantity of a chlorinating product based upon the quantity of a combined chlorine residual present and designed to destroy all chloramines present. The quantity of a chlorinating product introduced is based upon determining the quantity of chloramines present, then introducing 10 times that quantity of the free available chlorine residual.

## BREAKPOINT OXIDATION

The application of an oxidizer or a combination of oxidizers for the specific purpose of destroying undesirable compounds. If the oxidizer of choice is a chlorinating product, this becomes Breakpoint Chlorination (see definition below)

## BREAKPOINT

See SUPERCHLORINATION OR BREAKPOINT CHLORINATION.

## BROADCAST

A method of putting granular or powdered chemicals into a pool by spreading them widely over the surface of the water.

## BROMAMINES

Non-irritating bromine-ammonia compounds that have sanitizing capabilities similar to hypobromous acid (HOBr).

## BROMIDE

An inactive ion that can be activated to hypobromous acid by some means of oxidation, either with a chlorinating product, ozone, or oxidizing shock.

## BROMINATOR

A device to apply or to deliver a bromine disinfectant to water at a controlled rate.

## BROMINE (BR<sub>2</sub>)

A chemical used in various compound forms to kill bacteria in pool & spa water. Hypobromous Acid is the active killing agent that all brominating compounds form when dissolved in water.

An element which is sometimes used in pool water purification. A dark, heavy, reddish-brown liquid in its normal state. Closely related to chlorine.

A heavy dark-reddish-brown liquid in the same chemical family as chlorine gas. It is sometimes used as a bactericide in pools, usually in a solid-compound or salt form.

## BUFFER

Chemicals that serve to prevent fluctuations in pH. (See Alkalinity) Spa Sentry buffers the pH of spa water using a phosphate buffer system.

## CALCIFICATION

Formation of calcium carbonate on walls of pools or pipes, or in a filter or heater, due to precipitation of calcium carbonate.

## CALCIUM CARBONATE ( $\text{CaCO}_3$ )

Scale that forms from calcium compounds when pool water is too alkaline, calcium hardness is too high or total alkalinity is too high. These hard deposits accumulate on pool surfaces and equipment.

## CALCIUM HYPOCHLORITE $\text{Ca}(\text{OCl})_2$

A chlorinated compound using calcium as the carrying salt for application

## CALCIUM HARDNESS

The amount of dissolved calcium in pool water. Low levels of calcium hardness will promote deterioration in the pool surfaces and equipment. High will promote scale formation.

## CALCIUM CHLORIDE ( $\text{CaCl}_2$ )

A soluble salt added to pool water to raise the calcium hardness level.

## CALCIUM HYPOCHLORITE ( $\text{Ca}(\text{OCl})_2$ )

A solid white form of inorganic chlorine found in both granular and tablet forms, it has a pH of approximately 11 and is 65-70% available chlorine. See HYPOCHLORITE.

## CALCIUM CARBONATE ( $\text{CaCO}_3$ ):

See SCALE.

## CALIBRATE

Adjust the settings and ranges of an electronic controller or other device.

## CARBON DIOXIDE [ $\text{CO}_2$ ]

Common gas found in air, exhaled in human breath. Used to lower pH.

## CARTRIDGE

A porous, replaceable element in some filters. Particulates are removed when they penetrate into the medium. Surface type cartridges have a medium less than 3/4 inch thick. Particulates are retained on the surface of the cartridge for removal. Loose debris can be hosed off, oils must be chemically removed by soaking the cartridge.



## CARTRIDGE

A depth, pleated, or surface-type filter component with fixed dimensions and designed to remove suspended particles from water flowing through the filter.

Depth Type Cartridge - A filter cartridge with media relying on penetration of particles into the medium for removal and providing adequate holding capacity of such particles.

Surface Type Cartridge - A filter cartridge with a media relying on the retention of particles on the surface of the cartridge for removal.

## CARTRIDGE

A depth, pleated, or surface type filter component with fixed dimensions and designed to remove suspended particles from water flowing through the filter.

## CARTRIDGE FILTER

A filter that utilizes a porous element that acts as a filter medium. The cartridge is disposable.

## CASUAL CONTACT

Contact of any body part occurring by normal use modes.

## CAUSTIC

Sodium hydroxide, lye; used in pools, an extremely high pH alkalizer; referring generally to high pH.

## CAUSTIC SODA

Sodium hydroxide. A common water-treatment chemical; lye.

## CENTRIFUGAL PUMP

There are two types; straight centrifugal (non self priming) and self priming centrifugal. Centrifugal pumps incorporate an impeller which sling the water to create flow.

## CENTRIFUGAL

Outward force exhibited by anything in circular motion. Principle by which water pressure is increased and flow initiated through a circulation system, by a pump impeller.

## CHANNELIZATION

The undesirable process whereby filter sand is permeated by tubes or channels of calcified or oily material, allowing water to pass freely.

## CHELANT

A chemical compound that 'ties-up' iron, copper, or calcium to prevent staining and scaling. Also called a sequestering agent.

## CHEMICAL FEEDER

Any device to feed chemicals, but usually one feeding alum, acid, filter aid, algaecide, or soda ash. Included in this category are proportioning pumps, injector type feeders, pot type feeders, operating from a pressure differential, and dry type feeders.

## CHEMICAL FEEDER

A mechanical device for applying chemicals to pool or spa water.

## CHINE JOIST

A brace that provides support to the floor of a hot tub.

## CHINE

That portion of the stave of a hot tub below the bottom of the croze.

## CHLORAMINE

A compound formed when chlorine combines with nitrogen or ammonia which causes eye and skin irritation and has a strong, objectionable odor.

## CHLORAMINE

Compounds formed when chlorine combines with ammonia from urine, perspiration, etc. Causes eye & skin irritation, as well as unpleasant odors.

## CHLORAMINES

Substances formed when a chlorine residual combines with urine, sweat or other nitrogen containing compounds (ammonia), causing strong odor and irritation to skin and eyes. This compound has little sanitizing value compared to an active chlorine residual.

## CHLORINATED ISOCYANURATE

See Stabilized Chlorinating Product

## CHLORINATION

The act of adding chlorine.

## CHLORINATOR

A device to feed, regulate the flow, and measure the amount of chlorine gas introduced into the water being treated, typically at a controlled rate.

## CHLORINE RESIDUAL NEUTRALIZER

Sodium Thiosulfate or other similar compound used to neutralize excessive chlorine in a water sample in order to permit more accurate testing of the water balance factors. Sodium Sulfite or Sodium Thiosulfate is typically used in pools and spas to neutralize high levels of chlorine or bromine.

## CHLORINE (CL)

One of five members of the Halogen family of chemical elements. It is the most widely used bacteria-killing agent for recreational water treatment. Two forms of chlorinating products are used: (1) Organic chlorinating products its residual is less vulnerable to

the UV rays of the sun and therefore longer lasting. (2) Inorganic chlorinating products-susceptible to degradation by the UV rays of the sun and therefore less convenient for pool use. Also see Hypochlorite.

## CHLORINE RESIDUAL

The amount of a chlorinating product present in the water. This is the chlorinating product available to kill new bacteria entering the pool as well as oxidize compounds that enter the pool. It is the level of a chlorinating product present after the demand has been satisfied.

## CHLORINE GENERATOR

On-site equipment that generates its own supply of chlorine, hypochlorous acid or hypochlorite for water treatment. The chlorine is typically generated from Sodium Chloride (NaCl- salt) by exposing it to a low voltage (DC) electrical current.

## CHLORINE DEMAND

The amount of a chlorinating product required to be added to the water before a free chlorine residual can be maintained. Both dissolved and undissolved organic and inorganic debris can contribute to a chlorine demand.

## CHLORINE GAS

An element, normally a gas, which is liquefied under pressure and stored in steel cylinders. Used as a disinfectant and algicide when it is introduced in water solution into a pool or spa. Very dangerous if released or spilled.

## CHLORINE (Cl<sub>2</sub>)

A chemical element that exists as a gas in its elemental form or as a part of a chemical compound which is an oxidant and a biocidal agent used in pool or spa water disinfection. See also HYPOCHLORITE.

## CHLORINE DEMAND

Amount of chlorine necessary to oxidize all organic matter present in pool water at any given moment, or over a period of time.

## CHLORINE RESIDUAL

Amount of available chlorine remaining in pool water after the chlorine demand has been satisfied.

## CHLORINE GENERATOR

Equipment that generates chlorine, hypochlorous acid, or hypo-chlorite on site for disinfection and oxidation of water contaminants.

## CIRCULATION SYSTEM

An arrangement of mechanical equipment or components, connected by piping to a pool or spa in a closed circuit. The function of a circulation system is to direct water from the pool or spa, causing it to flow through the various system components for

purposes of clarifying, heating, purifying and returning the water back to the original body of water.

## CIRCULATION EQUIPMENT

The mechanical components which are a part of a circulation system on a pool or spa. Circulation equipment may be, but is not limited to categories of pumps, hair and lint strainers, filters, valves, gauges, meters, heaters, surface skimmers, inlet/outlet fittings, and chemical feeding devices. The components have separate functions, but when connected to each other by piping, perform as a coordinated system for purposes of maintaining pool or spa water in a clear, sanitary, and desirable condition for using.

## CIRCULATION

A term representing the flow of water through a hydraulic system.

## CIRCULATION SYSTEM

An arrangement of mechanical equipment or components, connected by piping to a pool or spa in a closed circuit. The function of a circulation system is to direct water from the pool or spa, causing it to flow through the various system components for purposes of clarifying, heating, purifying, and returning the water back to the original body of water.

## CLARIFIER

Also called COAGULANT or FLOCCULANT- A chemical that coagulates and neutralizes suspended particles in water. There are two types: inorganic salts of aluminum or iron, and water-soluble organic polyelectrolyte polymers.

## CLARITY

The degree of transparency of pool water, sometimes expressed as NTUs.

## COAGULANT

A polymeric chemical compound added to water to gather suspended particles together for filtration. SpaGuard® Water Clarifier and PolySheen® Blue are coagulants.

## COAGULATION

The neutralization of the charges of suspended colloidal matter resulting in clumping; sometimes also considered to be flocculation.

## COLD CRACK (Vinyl Liner)

Tested by the Masland Test Method. The vinyl specimen is folded in half, mounted on a test plate, and subjected to the test temperature for one hour. Then is impacted with a calibrated anvil.

## COMBINED CHLORINE

The Chlorine residual that is in combination with ammonia, nitrogen, or other organic compounds. See Chloramines.

## COMBINED CHLORINE

Chlorine that is combined with another substance, usually ammonia, to produce chloramines. Combined chlorine is much less effective than 'free' chlorine.

## CONTACT CONCENTRATION

The concentration of a chemical in a flow of water. This concentration depends on the rate of addition, the flow rate of the water, and the efficiency of the mixing. It is calculated using the equation (assumes complete mixing):

Amount of Chemical (grams/hour)/Water Flow Rate (gpm) X 4.41 = Contact Concentration (mg/L).

## CONTAMINATED

An impure condition indicating the presence of bacteria, algae or other undesirable matter in water.

## COPING

The cap on the pool or spa wall that provides a finishing edge around the pool or spa. Can be formed, cast in place or precast, or pre-fabricated from metal or plastic materials. It may be used as part of the system that secures a vinyl liner to the top of the pool wall.

## CORROSION

Etching, pitting and other destructive erosion of the pool or spa surfaces and equipment due to low pH or other chemical imbalance.

## COVE

The radius between the pool or spa wall and the pool or spa floor.

## COVERS

Something that covers, protects or shelters, or a combination thereof, a swimming pool, spa, or hot tub.

Hard top cover - a cover used on pools, spas or tubs that rests on the lip of the pool or spa deck, not a flotation cover, used as a barrier to users, for maintenance and thermal protection.

Winter cover - a cover that is secured around the perimeter of a pool or spa that provides a barrier to debris, when the pool or spa is closed for the season.

Solar cover - a cover that when placed on a pool or spa surface, increases the water temperature by solar activity, and reduces evaporation.

Thermal cover - an insulating cover used to help prevent evaporation and heat loss from pools or spas.

Safety cover - As defined by ASTM F 1346, Performance Specification for Safety Covers and Labeling Requirements for All Covers for Swimming Pools Spas and Hot Tubs ,

a barrier (intended to be completely removed before entry of users), for swimming pools, spas, hot tubs or wading pools, attendant appurtenances and/or anchoring mechanisms which will - when properly labeled, installed, used and maintained in accordance with the manufacturers' published instructions - reduce the risk of drowning of children under five years of age, by inhibiting their access to the contained body of water, and by providing for the removal of any substantially hazardous level of collected surface water. (These covers may be power or manual.)

## CROZE

The milled grooves in the stave of a wooden hot tub that accommodate the floor boards.

## CSI

Calcium Saturation Index - derived from the Langelier Index, for determining water's tendency to scale or leach (be aggressive).

## CYANURIC ACID (TRIAZINE TRIONE)

A chemical compound added to pool water to reduce the degradation of the chlorine residual by the UV rays of the sun. Chlorinated Isocyanurates are the group of chlorinated compounds that combine Chlorinating products and Cyanuric acid into a form for pool and spa sanitizing.

## CYANURIC ACID

2,4,6, trihydroxy-s-triazine, also known as stabilizer or conditioner. Slows destruction of chlorine in pool water by sunlight.

## CYANURIC ACID

Also called STABILIZER, ISOCYANURIC ACID, CONDITIONER, or TRIAZINETRIONE - A chemical that helps reduce the excess loss of chlorine in water due to the ultraviolet rays of the sun.

## CYANURIC ACID

A chemical used for chlorine stabilization.

## DECKS

Those areas immediately adjacent to or attached to a pool or spa that are specifically constructed or installed for use by users for sitting, standing, or walking.

Cantilever-type: A deck structure which relies on the pool structure for support.

Free Standing-type: A deck structure which does not rely on the pool structure for support.

## DEEP AREAS

Water depths of five feet (5') (1.42 m) or greater.

## DEPTH-TYPE CARTRIDGE

A filter cartridge with media relying on penetration of particles into the medium for removal and providing adequate holding capacity of such particles.

## DESIGN RATE OF FLOW (DESIGN FILTER RATE)

The average rate of flow in a system which is used for design calculation (usually the flow in gallons per minute divided by the effective filter area in square feet).

## DIAPHRAGM PUMP

Chemical feeder of the positive-displacement type using a flexible membrane to move liquid through the pump head.

## DIATOMACEOUS EARTH (DE)

A powdery filtering agent composed of the skeletal remains of a form of plankton (diatoms). Used in Diatomaceous Earth filters.

## DIATOMACEOUS EARTH FILTER

A filter that utilizes a thin coating of diatomaceous earth (DE) over a porous fabric as its filter medium that periodically must be replaced.

## DIATOMACEOUS EARTH

White powder composed of fossilized skeletons of one-celled organisms (diatoms). Used as a filter medium for swimming pools.

## DIATOMITE

The filtering medium of a diatomaceous earth filter composed of microscopic fossil skeletons of the 'diatom', a tiny freshwater marine plankton.

## DICHLOR

Sodium dichloro-s-triazine trione; stabilized form of granular chlorine.

## DISCHARGE HEAD

The total head, including static head and friction head, on the discharge side of the pump.

## DISINFECTANT

Energy or chemicals to kill undesirable or pathogenic (disease-causing) organisms, and having a measurable residual at a level adequate to make the desired kill.

## DISINFECTION

Process of destroying infection-causing organisms.

## DISSOLVED SOLIDS

See TDS (TOTAL DISSOLVED SOLIDS).

## DISTRIBUTOR (TOP OR BOTTOM)

The device in a filter designed to divert the incoming water to prevent erosion of the

filter media.

## DIVING EQUIPMENT, MANUFACTURED

Manufactured diving equipment shall include diving boards, jump boards, spring boards, and starting platforms. Architectural features such as decorative rocks and elevated bond beams are not considered to be manufactured diving equipment. (Not For Use on Aboveground/Onground Swimming Pools.)

## DIVING EQUIPMENT, COMPETITIVE

Competitive diving equipment shall include competitive diving boards and fulcrum-setting diving stands intended to provide adjustment for competitive diving. (Not For Use on Aboveground/Onground Swimming Pools.)

## DIVING BOARD

A recreational mechanism for entering a swimming pool, consisting of a semirigid board that derives its elasticity through the use of a fulcrum mounted below the board.

Jump Board - A recreational mechanism that has a coil spring, leaf spring or comparable device located beneath the board which is activated by the force exerted in jumping on the board.

Stationary Diving Platform - Stationary diving platforms are used for diving and are constructed or located on site. They may be natural or artificial rocks, pedestals, or other items constructed on site.

## DPD #1

A test reagent (typically a tablet) used to measure the amount of the Free Available Chlorine residual or Total Bromine residual in the water.

## DPD (DIETHYLPPHENYLENE DIAMINE)

A reagent and test method that specifically measures bromine or free available and total chlorine; produces a series of colors from pale pink to dark red.

## DRY ACID

Sodium Bisulfate, added to water to lower the pH or Total Alkalinity. Safer to handle than Muriatic Acid.

## DRY NICHE

A normal weatherproof fixture placed in an opening behind the pool wall which illuminates the pool through a watertight window in the pool wall.

## EDGE GUARDS

Shields designed to cover sharp edges in aboveground swimming pools.

## EFFECTIVE FILTER AREA

Total surface area through which designed flow rate will be maintained during filtration.



**Permanent Medium Type** - The effective filter area is the filter surface that is perpendicular to the flow direction.

**Cartridge Type** - The total effective filter area is the cartridge area that is exposed to the direct flow of water. This excludes cartridge ends, seals, supports and other areas where flow is impaired.

**Diatomaceous Earth (DE) Type** - The actual area of the element is the total effective area of the septum, less any area of a septum support member greater than one-fourth inch (1/4") wide contacting the septum during filtration.

**Sand Filtration Type** - The projected top surface area of the sand within the filter in square inches or square feet.

## EFFLUENT

The water that flows out of a filter, pump or other device.

## ELECTROLYSIS

Decomposition of metal due to flow of electrical current.

## EQUALIZER LINE

A line from below the pool surface to the body of a skimmer that prevents air from being drawn into the pump. Also a pipe between two pools to equalize levels.

## EQUIVALENT LENGTH OF PIPE

Friction loss in valves and fittings expressed in equivalent length of straight pipe in feet.

## EROSION FEEDER

A flow-through chemical feed device.

## EXPONENTIAL

Progressing at a non-linear rate, proportional to the square, cube or other 'exponent' of one of the variables.

## EYEBURN

Pool term describing irritation of the eyes due to rinsing off of the external eye fluid, or by chloramines.

## FACTOR OF SAFETY

The ultimate load divided by the safe load or the ultimate strength divided by the allowable stress.

## FEET OF HEAD

A basic measurement of resistance to flow in a hydraulic system, equivalent to the height of a column of water that would cause the same resistance/pressure.

A basis for indicating the resistance in a hydraulic system, equivalent to the height of a column of water that would cause the same resistance (100 feet of head = 43.3 PSI, 1 foot of head = .433 psi).

A basis for indicating the resistance in a hydraulic system, equivalent to the height of a column of water that would cause the same resistance (100 feet of head equals 43 pounds per square inch).

The TOTAL DYNAMIC HEAD is the sum of all resistance's in a complete operating system.

## FENCE, ABOVE GROUND SWIMMING POOLS

Intended to mark the boundary between the pool area and the outside, to deter unauthorized entry from outside, and it is not intended as a structural barrier to be sat, walked, or climbed on.

## FILTER CYCLE

The operating time between filter cleaning or backwash cycles. Long filter cycles are the most convenient.

## FILTER MEDIUM

Sand, Diatomaceous earth, or other finely graded material used to filter particles out of the water.

## FILTER SAND

Sharp silica or quartz particles graded for uniform size and used as a filter medium. #20 Silica Sand is the industry standard grade of filter sand.

## FILTER ELEMENT

A device (cartridge) within a filter tank designed to entrap solids and allow the flow of water through the filter back to the spa.

## FILTER

A device that removes undissolved particles from water through a porous filter medium (sand, cartridge, DE).

A device that removes undissolved particles from water by recirculating the water through a porous substance (a filter medium or element).

## FILTER CYCLE (FILTER RUN)

The time of filter operation between backwash procedures.

## FILTER MEDIA

Any fine-grain material that entraps suspended particles as water passes through.

## FILTER SEPTUM

That part of a filter on which diatomaceous earth or similar filter media is deposited,

consisting of cloth, wire screen, or other fine mesh material.

## FILTER CARTRIDGE

A pleated element, usually of fibrous material, used as a filter septum in some pool filters.

## FILTER ELEMENT

A filter cartridge, or that single part of a multiport diatomite filter, upon which the filter aid is deposited.

## FILTER AID

Usually refers to powder-like substances such as diatomaceous earth or volcanic ash used to coat a septum-type filter. Typically used to aid sand filters.

## FILTER ELEMENT

A device within a filter tank designed to entrap solids and conduct water to a manifold, collection header, pipe or similar conduit and return it to the pool or spa. A filter element usually consists of a septum and septum support, or a cartridge.

## FILTER AID

A type of finely divided media used to coat a septum type filter, usually diatomaceous earth or volcanic ash. (Note: Alum, as used on the bed of a sand filter, is also referred to as a filter aid.)

Usually refers to powder-like substances such as diatomaceous earth or volcanic ash used to coat a septum type filter. Can also be used as an aid to sand filters.

## FILTER AGITATION

The mechanical or manual movement to dislodge the filter aid and dirt from the filter element.

## FILTER CYCLE

The operating time between cleaning or backwash cycles.

## FILTER ELEMENT

A device within a filter tank designed to entrap solids and conduct water to a manifold, collection header, pipe, or similar conduit and return it to the pool or spa. A filter element usually consists of a septum and septum support, or a cartridge.

## FILTER MEDIUM

A finely graded material (such as sand, diatomaceous earth, polyester fabric, anthracite, etc.) that removes filterable particles from the water.

## FILTER

A device that removes undissolved particles from water by recirculating the water through a porous substance (a filter medium or element).

**Permanent Medium Filter** - A filter that utilizes a medium, e.g. sand, that under normal use will not have to be replaced.

**Diatomaceous Earth Filter** - A filter that utilizes a thin coating of diatomaceous earth (D.E.) over a porous fabric as its filter medium that periodically must be replaced.

**Cartridge Filter** - A filter that utilizes a porous element that acts as a filter medium. The cartridge is disposable.

**Vacuum filter** - A filter that operates under a vacuum from the suction of a pump.

## FILTRATION FLOW

The designed rate of flow, in volume per time (gpm, gph) through the filter system.

## FILTRATION RATE

The rate of filtration of water flowing through a filter during the filter cycle expressed in U.S. gallons per minute per square foot of effective filter area.

## FILTRATION FLOW

The design rate of flow, in volume per time (gpm, gph), through the filter system installed per manufacturer's instructions with a new, clean filter medium.

## FLOCCULATING AGENT

A chemical substance or compound that promotes the combination, agglomeration, or coagulation of suspended particles in water.

## FIREMAN SWITCH

A mechanism adapted to the time clock which will turn the heater off long enough for it to cool down before the time clock turns the pump off.

## FLOAT VALVE

A valve controlled by the level of a fluid.

## FLOC

A filterable gel that forms when alum combines with suspended particles in water.

## FLOCCULANT

Alum or other chemical compound added to water causing suspended particles to sink. Once on the bottom of the pool the once suspended particles can now be vacuumed to waste.

## FLOCCULATE

The process of agglomerating coagulated particles into settleable flocs, usually of a gelatinous nature.

## FLOCCULATING AGENT (FLOCCULANT)

A chemical substance or compound that promotes the combination, agglomeration, or

coagulation of suspended particles in water.

## FLOOR

Shall refer to the interior bottom surface of a pool or spa.

## FLOW METER

A measuring device that determines the gallons per minute of water flow through a pool recirculation system.

## FLOW RATE

The volume of liquid (water) flowing past a given point in a specific time period, expressed in gallons per minute.

## FLOW

The rate of the movement of water, typically in gallons per minute.

## FPS (written fps)

Feet per second.

## FRAME

That structure that defines and/or supports the outline or shape of the aboveground pool wall.

## FREE AVAILABLE CHLORINE RESIDUAL

Hypochlorous acid, the chlorine residual in pool water that is not combined with ammonia or nitrogen, and therefore available to kill bacteria entering the water.

## FREE CHLORINE

See FREE AVAILABLE CHLORINE.

## FREE AVAILABLE CHLORINE

That portion of the total chlorine remaining in chlorinated water that is not combined with ammonia or nitrogen compounds and will react chemically with undesirable or pathogenic organisms.

## FREEBOARD

The clear vertical distance between the top of the filter medium and the lowest outlet of the upper distribution system in a permanent medium filter.

The clear vertical distance between

## FRICITION LOSS

The friction or resistance between the inner surfaces of pipe and the water flowing through it.

## GAGE & BID WELL/DILUTION

A classic study of circulation and dilution.

## GALLONAGE

A specific quantity of fluid in terms of gallons.

## GALLONS PER MINUTE

Expressed as gpm, refers to a quantity of water moving in a given period of time.

## GAS

Highest energy state of an element or compound; gaseous chlorine.

## GELCOAT

The colored surface layer of a fiberglass pool or spa shell. This resin is applied to the mold during the manufacturing process, and is either of polyester or vinylester composition.

## GPM or gpm

Gallons per minute.

## GRAB RAIL

Tubular rails used to enter or leave a pool or spa, usually made of stainless steel or chrome-plated brass. See also HANDHOLD/HANDRAIL.

## GUNITE (SHOTCRETE)

A concrete and sand mixture sprayed into a reinforced steel form to create a pool shell. Plaster, paint, or some other form of cosmetic finish is applied on top of the gunite structural shell.

A dry mixture of cement and sand, sprayed onto contoured and supported surfaces to build a pool or spa. Water is added to the dry mixture at the nozzle.

## GUTTER

Water-level overflow trough in the perimeter wall of the pool.

## HALOGEN

A family of chemical elements containing Chlorine, Bromine, Fluorine, Iodine, and Astatine. With the exception of Astatine, the Halogen family is widely used for a variety of sanitizing situations.

## HANDHOLD / HANDRAIL

A device that can be gripped by a user for the purpose of resting and/or steadying him/herself. It is not limited to but may be located within or without the pool or spa or as part of a set of steps or deck-installed equipment.

## HARDNESS

The amount of calcium and magnesium dissolved in water; measured by a test kit and

expressed as parts per million (ppm) of equivalent calcium carbonate.

## HCl

Hydrochloric acid.

## HEAD

The resistance or pressure in a system, expressed in feet.

## HEAT PUMP

A refrigeration compressor usually electrically driven, that is operated in reverse. To obtain heat, the evaporator side (cooling coil) is exposed to water, air or ground. The coil takes the heat from this source and transfers it to the condenser coil where it discharges the heat to the pool or spa to be heated.

## HEAT EXCHANGER

A device with coils, tubes or plates that takes heat from any fluid, liquid or air, and transfers that heat to another fluid without intermixing the fluids.

## HEATER

A fossil-fueled, electric or solar device to heat the water of a pool or spa. Fossil-fueled heaters use natural, propane gas or fuel oil and utilize an open-flame to heat a heat exchanger. Electric heaters utilize a heating element immersed in water. Solar heaters utilize ultraviolet rays of the sun to heat the water. Other ways to categorize heaters include: Direct heaters heat the tubes in which water circulates. Indirect heaters circulate steam or hot water inside a heat exchanger through which water flows.

## HEXAMETAPHOSPHATE

Sequestering agent that keeps metals, minerals & salts in solution.

## HI-RATE PERMANENT MEDIA FILTER

A filter using high velocity flow made possible by uniform distribution and collection of incoming and outgoing water.

## HOOP CONNECTOR

A tightening and connecting device.

## HOOP

A circumferential constraint that prohibits the staves of a hot tub from separating. Also, device used to secure two halves of a filter together. See BAND.

## HORSEPOWER

A unit for expressing the power of motors or engines, equal to a rate of 33,000 foot pounds per minute.

## HOT TUB

A wooden vessel, containing hot moving water. First popularized on the west coast by cutting wine barrels in half, the hot tub market rose and fell in popularity with the advent of vacuum formed thermoplastic materials. Mass production of hot tubs has employed the use of varied types of wood from redwood, cypress, teak, and other exotic tropical hardwoods.

A common marketing term for Spas.

## HYDROCHLORIC ACID (HCl)

Also called muriatic acid when diluted. A very strong acid used in pools or spas for pH control and for certain specific cleaning needs. A by-product of the addition of chlorine gas to water. Use extreme caution in handling. See also MURIATIC ACID.

## HYDRAULICS

The study of liquids at rest and in motion.

## HYDROCHLORIC ACID [HCl]

Very strong acid used in pools for pH control and for certain specific cleaning needs, requiring care in handling. Also called MURIATIC ACID when diluted.

## HYDROGEN PEROXIDE (H<sub>2</sub>O<sub>2</sub>)

An oxidizing solution typically used as a liquid shock treatment and clarifier for biguanide pools.

## HYDROGEN ION (H<sup>+</sup>)

The positively charged nucleus of a hydrogen atom. Increasing levels of the hydrogen ion in the water will cause pH to be lowered.

## HYDROGEN PEROXIDE [H<sub>2</sub>O<sub>2</sub>]

A common disinfectant, sometimes used in pools.

## HYDROGEN-ION CONCENTRATION

Measure of positively charged hydronium ion [H<sub>3</sub>O<sup>+</sup>] in water solution to determine acidity.

## HYDROTHERAPY INLET FITTING

A special high velocity air entraining inlet fitting to produce a massage effect.

## HYDROTHERAPY JETS

A fitting that blends air and water creating a high-velocity, turbulent stream of air-enriched water.

## HYDROTHERAPY SPA

A unit that may have a therapeutic use but which is not drained, cleaned or refilled for each individual. It may include, but not be limited to, hydrotherapy jet circulation, hot



water, cold water mineral baths, air induction bubbles, or any combination thereof. Industry terminology for a spa includes, but is not limited to, 'therapeutic pool, hydrotherapy pool,' 'whirlpool,' 'hot spa,' etc. NSPI Standards exclude facilities used or under the direct supervision and control of licensed medical personnel.

A non-wooden vessel containing hot moving water for therapeutic use to ease stress, muscle strains and other physical problems. Popular construction types include thermo-plastic shells and gunite/plaster interiors.

## HYDROXYL ION (OH<sup>-</sup>)

The negatively charged particle of one oxygen and one hydrogen atom (also called Hydroxide). As OH<sup>-</sup> levels increase in the water the pH will tend to rise.

## HYPOBROMOUS ACID (HOBR)

The most effective form of a brominating product in water for sanitizing.

The most powerful disinfecting form of bromine in water.

## HYPOCHLORINATOR

A chemical feeder through which liquid solutions of chlorine-bearing chemicals are fed into the pool water at a controllable rate.

## HYPOCHLORITE

An inorganic (unstabilized) family of chlorine compounds used in various forms to provide a chlorine residual for water treatment. Includes calcium hypochlorite, lithium hypochlorite, and sodium hypochlorite.

## HYPOCHLORITE, SODIUM

A compound usually containing 5% to 16%, or more, available chlorine by weight, in a caustic soda solution, which releases chlorine when added to pool water.

## HYPOCHLORITE

A chemical compound commonly found in two forms for use with pools, spas and h

## HYPOCHLORITE, CALCIUM

A compound of chlorine and calcium used in powder or granulated form usually containing 70% to 80% available chlorine by weight which is released in water solution to act as a germicide or algacide.

## HYPOCHLORITE

A family of chemical compounds including CALCIUM HYPOCHLORITE, LITHIUM HYPOCHLORITE, SODIUM HYPOCHLORITE, etc., found in various forms for use as a chlorine carrier in pool and spa water.

## HYPOCHLOROUS ACID (HOCL)

The active sanitizing compound formed when any type of chlorinating products are put

in water.

## HYPOCHLOROUS ACID (HOCl)

The most powerful disinfecting form of chlorine in water.

## IMPELLER

The 'heart of the centrifugal spa pump. Rotating vanes create the suction flow of the water into the pump.

The rotating vanes of a centrifugal pump; its action creates the flow of the water.

Rotating disk with vanes in a centrifugal pump.

## INFLUENT

The water entering a pump, filter, heater, pipe, pool or spa.

Water flowing into a pool, a pump, a filter, a chemical feeder, or other space.

## INLET

The fitting through which passes the filtered water to the pool (filtered water inlet), or the fitting through which raw water passes to the pool (raw water inlet).

## INLET, RETURN

See RETURN INLET.

## INORGANIC CHLORINE (UNSTABILIZED CHLORINE)

A form of a chlorinating product that is vulnerable to degradation to the UV rays of the sun. See Hypochlorite for forms of unstabilized chlorinating products.

## IODINE

An element related to chlorine and bromine used as a disinfectant, both in its natural solid form and in iodide compounds. When iodides are used, chlorine is normally employed to free the elemental iodine.

## IODINE (I<sub>2</sub>)

A chemical element that exists as a grayish-black granule in its normal state, or as a part of a chemical compound, which is a biocidal agent used to disinfect pool and spa water.

The spa disinfectant is in the form of liquid iodine and in iodide compounds. Chlorine used with iodides releases elemental iodine.

## ION

A positively or negatively charged atom or molecule, usually in water.

## IONIZATION

The process whereby a compound, in solution, separates into charged ions (atoms or

radicals).

## ISOCYANURATES (ALSO ISOs)

Families of pool sanitizing products that are self stabilizing by containing cyanuric acid. Also called STABILIZED CHLORINE.

## JETS

See HYDROTHERAPY JETS.

## JOIST

See CHINE JOIST.

## JTU (JACKSON TURBIDITY UNIT)

A visual means of measuring water clarity based upon the amount of light passing through a tube of water.

## KILOWATTS

Abbreviated as kW 1,000 watts.

## LADDERS

'A-Frame' Ladder - An entry ladder that straddles an aboveground/onground pool wall and is either removable (Type A) or has a built-in entry limiting feature. (Type B) Double Access Ladder (Type A)- An 'A-Frame' ladder that straddles the pool wall of an aboveground pool and provides pool ingress and egress, and is intended to be removed when not in use.

Limited Access Ladder (Type B) - An 'A-Frame' ladder that straddles an aboveground/onground pool wall and is removable with a built-in entry limiting provision for making entry inaccessible when a pool or spa is not in use (i.e., swing-up, slide-up, 'pick off' or equivalent).

Staircase Ladder (Type C) - A 'ground to deck' staircase ladder that allows access to an aboveground pool deck and has a built-in entry limiting feature. A Type E 'in-pool' staircase ladder is located in the pool to provide a means of ingress and egress from the pool to the deck.

In-Pool or Spa Ladder (Type D) - An 'in-pool' ladder located in a pool or spa to provide ingress and egress from the deck.

Staircase Ladder (Type E) 'An in-pool' staircase ladder located in the pool to provide a means of ingress and egress from the pool to the deck.

## LAMINAR FLOW

Smooth parallel movement of water without turbulence.

## LEACHING

The process of extracting a mineral from plaster interiors or tannic acid from wooden hot tubs.

## LIFELINE

A rope line, often with floats, across a pool to designate a change in slope in the pool bottom or the beginning of deep water.

## LINER

See VINYL LINER.

## LIQUID CHLORINATING PRODUCT (BLEACH)

Sodium Hypochlorite (NaOCl) solutions added to water as a sanitizer. Characteristics include very low levels of available chlorine ~ 12-15%), high contribution to Total Dissolved Solids (3# of salt per gallon), and inconvenient to apply and handle. Should not be confused with Clorox® with even lower levels of available chlorine.

## LITHIUM HYPOCHLORITE (LiOCl)

A solid white granular form of inorganic chlorine that has a pH of approximately 9 and contains an Available Chlorine Content (ACC) of 35%.

A lithium-based dry chlorine product.

## LOWER DISTRIBUTION SYSTEM (UNDER-DRAIN)

Those devices used in the bottom of a permanent medium filter to collect the water during filtering and distribute the water during backwashing. MAIN DRAIN: A sump or fixture located at the bottom of a permanent medium filter to collect the water during filtering and distribute the water during back-washing.

## MAKE-UP WATER

Fresh water used to fill or refill the pool or spa. See also SOURCE WATER.

## MANUFACTURED DIVING EQUIPMENT

See DIVING EQUIPMENT, MANUFACTURED.

## MARCITE

See PLASTER.

## MILLIVOLT (Written mV)

One thousandth of a volt; unit of electromotive force, or difference of potential.

## MULTIPLE FILTER-CONTROL VALVE

A multiport valve having a number of control positions for various filter operations that combines in one unit the function of two or more single valves.

## MULTIPOINT VALVE

A valve having a number of control positions for various filter operations that combines

in one unit the function of two or more single valves.

## MURIATIC ACID (HYDROCHLORIC ACID) (HC1)

Used to lower pH and/or Total Alkalinity in pool and spa water.

## MURIATIC ACID

A dilute solution of hydrochloric acid.

A commercial name for hydrochloric acid. Used for lowering the pH and alkalinity of pool water.

## NEW POOL AND/ OR SPA CONSTRUCTION

The activity of building or installing a pool and/ or spa structure, and its component parts, where no such structure has previously existed.

## NITROGEN (N)

An element that when combined with a chlorine residual forms chloramines. Common in rainwater, Cosmetics, oils, perspiration, and urine.

## NON-SWIMMING AREA

Any portion of a pool where water depth, offset ledges, or similar irregularities would prevent normal swimming activities.

## NON-TOXIC

Meaning that a given substance has no adverse physiological effect on human beings or other living organisms.

## ORGANIC CHLORINE

A form of chlorinating product that contains carbon and hydrogen atoms by forming a compound to include Triazine trione. The most common forms of organic chlorinating products are sodium dichloro-s-Triazine trione and trichloro-striazinetrione.

## ORGANIC MATTER

Contaminants derived from living organisms. Including leaves, cosmetics, urine, perspiration, bugs, animals, and other bather/environmental debris. Organic compounds are any which contain carbon.

Perspiration, urine, saliva, suntan oil, cosmetics, lotions, dead skin, and similar debris introduced to water by users and the environment.

## ORIFICE

An opening, usually carefully calibrated in size, through which water flows.

## ORP

Oxidation-reduction-potential, expressed/measured in mV.

## ORP (Also called REDOX):

The OXIDATION REDUCTION POTENTIAL produced by strong oxidizing agents in a water solution. It is a measure of the oxidation level measured in millivolts by an ORP METER.

## ORTHOTOLIDINE (OTO)

A test reagent used to measure the amount of a Total Chlorine residual in pool water. In the presence of increasing levels of the chlorine residual it turns yellow to amber in color.

See OTO.

## OTO (ORTHOTOLIDINE)

A colorless reagent that reacts with chlorine or bromine to produce a series of yellow-to-orange colors which indicate the amount of chlorine or bromine in water. Effectively measures total chlorine.

## OUTLET, SUCTION

See SUCTION OUTLET.

## OVERDRAIN

Plumbing/fitting arrangement in a filter (top); usually with a central pipe and laterals similar to 'underdrains'.

## OVERFLOW GUTTER

The gutter around the top perimeter of the pool which is used to skim the surface of the water and to carry off the waste, or to collect it for return to the filters (sometimes incorrectly referred to as 'scum gutter' or 'spit trough').

## OVERFLOW SYSTEM

Refers to removal of poolspa surface water through the use of overflows, surface skimmers, and surface water collection systems of various design and manufacture.

## OXIDATION

A chemical process for removing (breaking down) undesirable organic compounds.

Chemical reaction in which an element or ion is increased in positive valence, losing electrons to an oxidizing agent; burning.

## OZONE (O<sub>3</sub>)

A gaseous molecule composed of three atoms of oxygen (O<sub>3</sub>). In a spa ozone is created in ozone generators for oxidation of water contaminants. Its instability and short life in the water require that it be used only to supplement the chlorine or bromine residual to control bacteria.

Unstable form of oxygen; tri-valent oxygen; the strongest oxidant available for water treatment.

## OZONE, LOW OUTPUT GENERATING EQUIPMENT (OZONATOR)

Refers to units which will produce ozone in air at a concentration less than 500 ppm. Usually this term will refer to ultraviolet (UV) generators.

## PASS THROUGH

Referring to opening between vertical pickets of a fence.

## PATHOGENS

Disease-producing microbes.

## PERISTALTIC

A type of chemical pump using a progressively pinched or 'rolled' length of tubing to propel the liquid.

## PERMANENT-MEDIUM FILTER

A filter that utilizes a medium, e.g. sand, that under normal use will not have to be replaced.

## PH

PH (ALWAYS WRITTEN pH) (potential Hydrogen) A measurement that indicates the acidic or basic nature of a solution. Measured on a scale from 0 to 14 the ideal pH should be 7.4 to 7.6. A pH of 7.0 is neutral. A pH below 7.0 is acidic. A pH above 7.0 is basic.

A value expressing the relative acidity or basicity of a substance, such as water, as indicated by the hydrogen ion concentration. pH is expressed as a number on the scale of 0 to 14, 0 being most acidic, 1 to 7 being acidic, 7 being neutral, 7 to 14 being basic and 14 being most basic.

An index describing the acid-versus-base balance of water.

A value expressing the relative acidity or alkalinity of a substance, such as water, as indicated by the hydrogen ion concentration.

## PHENOL RED

A reagent (dye) for measuring the pH of water in a range from 6.8 to 8.2. It changes color from yellow to purple in color as the pH goes from 6.8 to 8.2.

A dye that is used to measure pH.

## PINCHING HAZARD

Any configuration of components that would pinch or entrap the user.

## PLASTER

The interior finish of a gunite (concrete) spa. Composed of white marble dust and portland cement.

A type of interior finish (a mixture of white cement and aggregate, which can be tinted or colored) which is applied to a concrete pool or spa. Also called Marcite or Marblite.

## POINT OF OPERATION

Where the pump curve intersects the system head curve.

## POLYMER

A solution of long-chain molecules of electrostatically charged atoms used for flocculating.

## POOL UPRIGHT SUPPORT

That portion of the frame that is adjacent to the aboveground pool in a vertical position which supports the top rail and braces the wall.

## POTABLE WATER

Any water, such as an approved domestic water supply, which is bacteriologically safe and otherwise suitable for drinking.

## POOLS

Permanently Installed Swimming Pool - A pool that is constructed in the ground or in a building in such a manner that it cannot be readily disassembled for storage (refer to NSPI-1 Standard For Public Swimming Pools or NSPI-5 Standard For Residential Swimming Pools as applicable).

Aboveground Pool - Type 0 - A removable pool of any shape that has a minimum water depth of thirty-six inches (36") and maximum water depth of forty-eight inches (48") at the wall. The wall is located on the surrounding earth and may be, readily disassembled or stored and reassembled to its original integrity. Diving and the use of a water slide are prohibited. (Refer to NSPI-4 Standard For Aboveground Residential Swimming Pools.)

On-Ground Residential Swimming Pool - Type 0 — A removable pool package whose walls rest fully on the surrounding earth and has an excavated area below the ground level where diving and the use of a water slide are prohibited. (Refer to NSPI-4 Standard For Aboveground Swimming Pools.) The slope adjacent to the shallow area shall have a maximum slope of 3:1, and the slope adjacent to the side walls shall have a maximum slope of 1:1.

Inground Swimming Pool — Any pool whose sides rest in partial or full contact with the earth. (Refer to NSPI-5 Standard For Residential Swimming Pools or NSPI- 1 Standard For Public Swimming Pools, as applicable.)



**Residential Pool** — A residential pool shall be defined as any constructed pool, permanent or non-portable, that is intended for noncommercial use as a swimming pool by not more than three (3) owner families and their guests and that is over twenty-four inches (24") in depth, has a surface area exceeding 250 square feet and/or a volume over 3,250 gallons. (Refer to NSPI-5 Standard For Residential Swimming Pools.) Residential pools shall be further classified into types as an indication of the suitability of a pool for use with diving equipment.

**Type 0:** Any residential pool where the installation of diving equipment is prohibited.  
**Type I-V:** Residential pools suitable for the installation of diving equipment by type. Diving equipment classified at a higher type may not be used on a pool of lesser type (i.e., Type III equipment on a type II pool).

**Commercial/Public Pool** - Any pool, other than a residential pool, which is intended to be used for swimming or bathing and is operated by an owner, lessee, operator, licensee or concessionaire, regardless of whether a fee is charged for use. References within the standard to various types of public pools (refer to NSPI-1 Standard For Public Swimming Pools) are defined by the following categories:

**Class A: Competition Pool** - Any pool intended for use for accredited competitive aquatic events such as Federation Internationale De Natation Amateur (FINA), U.S. Swimming, U.S. Diving, National Collegiate Athletic Association (NCAA), National Federation of State High School

Associations (NFSHSA), etc. The pool may also be used for recreation.

**Class B: Public Pool** — Any pool intended for public recreational use.

**Class C: Semi-Public Pool** — Any pool operated solely for and in conjunction with lodgings such as hotels, motels, apartments, condominiums, etc.

**Class D: Other Pool** — Any pool operated for medical treatment, therapy, exercise, lap swimming, recreational play, and other special purposes, including, but not limited to, wave or surf action pools, activity pools, splash pools, kiddie pools and play areas. These pools are not intended to be covered within the scope of NSPI standards.

Public pools may be diving or non-diving. If diving, they shall be further classified into types as an indication of the suitability of a pool for use with diving equipment.

**Type VI-XI:** Public pools suitable for the installation of diving equipment by type. Diving equipment classified at a higher type may not be used on a pool of lesser type (i.e.,

Type VIII equipment on a Type VI pool).

**Type N:** A non-diving public pool (no diving allowed).

**Splasher (Wader) Pools** — A splasher pool shall have a minimum water depth of twenty four inches (24”) and a maximum water depth of thirty-six inches (36”).

**Wading Pool** - A pool that has a shallow depth used for wading. There are no requirements for residential wading pools. (Refer to NSPI-I Standard For Public Swimming Pools for public wading pools.)

## POSITIVE DISPLACEMENT

A pump characterized by its ability to displace a pre-determined amount of liquid per stroke.

## POTABLE WATER

Any water, such as an approved domestic water supply, which is bacteriology safe and otherwise suitable for drinking.

## POTASSIUM MONOPERSULFATE [KHSO<sub>5</sub>]

A non-chlorine oxidizer for swimming pools.

## POTENTIOMETRIC

Electronic technology designed to read sanitizer efficacy through voltage measurements.

## PPM (PARTS PER MILLION) (written ppm)

Parts Per Million, a unit of measurement used in measuring chemical application. It indicates the amount, by weight, of a chemical in relation to one million parts by weight of water.

Parts per million, a unit of quantity in a million such units.

Unit used for the measurement of the concentration of a chemical or other substance in the pool, spa or hot tub water, where this concentration is expressed in terms of ‘n’ molecules of substance per one million molecules of water.

An abbreviation for PARTS PER MILLION. The unit of measurement used in chemical testing which indicates the parts by weight in relation to one million parts by weight of water. It is essentially identical to the term milligrams per liter (mg/L).

## PRE-COAT FEEDER

A chemical feeder designed to inject diatomaceous earth into a filter in sufficient quantity to coat the filter septum at the start of a filter run.

## PRE-COAT

The coating of filter aid on the septum of a diatomaceous earth type filter at the beginning of each filter cycle.

## PRECIPITATE

A solid material which is forced out of a solution by some chemical reaction and which may settle out or remain as a haze in suspension (turbidity).

## PRECIPITATION

Appearance, in a solution, of an insoluble solid compound (such as calcium carbonate), as result of chemical action.

## PRECOAT

The coating of Diatomaceous Earth on the septum (grids) of a DE filter at the beginning of each filter cycle.

## PRECOAT (D.E. FILTERS)

Layer of diatomaceous earth deposited on the filter septa at the beginning of a filter run.

## PRESSURE TEST

A test for the rate of water flow: also a test for leaks.

## PRESSURE DIFFERENTIAL

The difference in pressure between two parts of a hydraulic system, such as the influent and effluent of a filter.

## PRESSURE CHECK

A test for the rate of water flow; also a test for leaks in a system.

## PRIMARY STRUCTURAL MEMBERS

Any part of the aboveground pool structure that carries or retains any static load or stress caused by water pressure, surge and/or natural forces, and for reasonable foreseeable use.

## PSEUDOMONAS

*Pseudomonas aeruginosa*; a tenacious bacterium capable of causing 'hot-tub itch'.

## PSI (written psi)

Pounds per square inch. The unit by which filter pressure is measured on a pressure gauge. Psi increases as the filter gets dirtier.

A abbreviation for pounds per square inch.

Pounds per square inch.

## PUMP

A motor powered mechanical device that creates pressure and water flow by spinning an impeller to provide circulation through the filter and heater. Some spas combine a pump for filtration/heating with an additional 'therapy pump.' Typically, a centrifugal pump design is used for pools and spas.

## PUMP CURVE

The measure of a pump to produce various flows verse various feet of head.

## PUNCTURE HAZARD

Any surface or protrusion that would puncture a user's skin under casual contact.

## PVC

Polyvinyl chloride; a white or gray plastic commonly used for pool plumbing and components.

## QUATERNARY AMMONIUM (QUATS)

High molecular weight compounds applied to water to kill algae. The surfactant characteristic of a quat is useful in pool maintenance because it provides a better ability of the water to penetrate fine cracks and pores in the pool surface.

A series of compounds of ammonia in solution used as algaecides and germicides which reduce the surface tension of the water.

Organic compounds of ammonia used as algaestat and germicide.

## RATE OF FLOW

The quantity of water flowing past a designated point within a specified time, such as the number of gallons flowing in one minute (gpm).

## RATED PRESSURE

That pressure that is equal to or less than the designated pressure and appears on the data plate of the equipment.

## REAGENT

A chemical used in water testing. Chemical testing compounds that are used to test for chlorine or bromine residual, pH, total alkalinity, calcium hardness, etc.

## REHABILITATION

The activity of restoring all or part of a pool or spa structure, and its component parts, back into good condition, including the rebuilding and/or replacing of worn and broken parts or components.

## REMOVABLE

Capable of being disassembled with the use of only simple tools such as a screwdriver, pliers, or wrench.

## RESIDUAL

Usually refers to chlorine residual, or the amount of measurable chlorine remaining after treating water with chlorine. Free residual differs from combined residual in that it is not combined with ammonia or other elements or compounds, and is a more effective disinfectant.

## RESISTANCE

A negative to flow.

## RETURN INLET

The aperture or fitting through which the water under positive pressure returns into a pool or spa.

## RETURN PIPING:

That piping which is referred to as effluent.

## RING BUOY

A ring-shaped floating buoy capable of supporting a user.

## ROPE AND FLOAT LINE

A continuous line not less than one-fourth inch (1/4") in diameter, which is supported by buoys and attached to opposite sides of a pool to separate the deep and shallow ends.

## SANITATION

Partial sterilization; disinfecting.

## SATURATION INDEX (SI)

A numeric value indicating whether water is scale forming or corrosive. It factors in pH, Total Alkalinity, Calcium Hardness, and water temperature. Ideal range is between -.3 and +.3.

NOTE: Spa water using SpaGuard® Spa Sentry is not intended to be balanced by the SI)

## SCALE

Mineral deposits that form on spa surfaces and equipment due to excessive calcium in the water. Scale is more likely to form in heated water, especially on the heater element or heat exchanger, if proper water balance is not maintained.

The precipitate that forms on surfaces in contact with water when the calcium hardness, pH, or Total Alkalinity levels are too high.

## SCHEDULE 20, 40, 80.

PVC grades (in pool piping), by weight or thickness, 80 being the heaviest. Schedule 40 PVC is the most common in the Aquatics Industry. Schedule 80 is less common but used mainly in Commercial Pools and on piping near Heaters. Schedule 20 is rarely if ever used.

## SECONDARY STRUCTURAL MEMBERS

Any part of the aboveground pool structure that is not subject to load caused by water pressure.

## SELF-PRIMING

The ability of a pump to handle (evacuate) air in a plumbing system.

## SEPTUM

That part of the filter element consisting of cloth, wire screen or other porous material on which the filter medium or aid is deposited.

## SEQUESTERING AGENT

Synonymous with CHELATING or METAL COMPLEXATION AGENT, a sequestering agent reacts with potential stain-producing metal ions (i.e., copper, iron, etc.) to reduce staining of pool/spa surfaces and associated colored water.

## SERVICE FACTOR

A factor indicating the degree to which an electric motor can be operated over a specified horsepower without danger of overload failure.

## SHALLOW AREAS

Portions of a pool or spa with water depths less than five feet (5').

## SHOCK TREATMENT

The addition of an oxidizing compound or a mixture of oxidizing compounds to the water to destroy chloramines and other undesirable compounds.

The practice of adding significant amounts of an oxidizing chemical to water to destroy ammonia and nitrogenous and organic contaminants in water.

## SHOTCRETE

A mixture of cement and sand, applied onto contoured and supported surfaces to build a pool or spa. Shotcrete is premixed and pumped wet to the construction site.

## SIGHT BARRIER

Available opening space in any given or total fence area.

## SKIMMER

A device in the pool or spa wall that continuously removes the surface water and floating debris to be taken away by the filter. A hand skimmer net can be used manually to 'dip' large floating debris from the water.

## SKIMMER (See also SURFACE SKIMMER)

A device installed in the wall of a pool or spa that permits the continuous removal of floating debris and surface water to the filter.

## SKIMMER WEIR

Part of a skimmer which adjusts automatically to small changes in water level to assure a continuous flow of water to the skimmer. See WEIR.

## SKIMMING SYSTEM

Thru-wall - a device installed in the wall of an inground pool or spa or aboveground/ onground pool that permits the continuous removal of floating debris and surface water to the filter.

Over-the-wall - a device installed over the wall of an aboveground/onground pool that allows for continuous removal of debris and surface water to the filter.

## SLIP RESISTANCE

A surface that has been so treated or constructed as to significantly reduce the chance of a user slipping. The surface should not be an abrasion hazard.

## SLOPE

An inclined surface.

## SLURRY FEEDER

A device to feed a variable amount of filter aid during the filter cycle.

## SLURRY

A suspension of diatomaceous earth in water used for body feeding in D.E. filters.

## SODA ASH (also SODIUM CARBONATE) ( $\text{Na}_2\text{CO}_3$ )

A white powder used to raise pH of the water.

Sodium carbonate; a common water treating chemical.

## SODIUM BICARBONATE ( $\text{NaHCO}_3$ )

Added to water to increase the Total Alkalinity. The water treatment grade of Sodium Bicarbonate is used in pool water. The baking grade (baking soda) is use for cooking. The two grades do not share the same physical characteristics, and should not be interchanged.

Commonly referred to as BAKING SODA) ( $\text{NaHCO}_3$ ), a white powder used to raise Total Alkalinity in water.

## SODIUM BISULFATE (also DRY ACID) ( $\text{NaHSO}_4$ )

A granule used to lower pH and or the Total Alkalinity in water.

## SODIUM BROMIDE [ $\text{NaBr}$ ]

Sodium salt similar to sodium chloride.

## SODIUM CARBONATE ( $\text{Na}_2\text{CO}_3$ )

Soda Ash, added to water to increase pH. A high-pH alkalizer. A dry chemical commonly used to raise pH in water.

See SODA ASH.

## SODIUM DICHLORO-S-TRIAZINE TRIONE $\text{NA}(\text{C}_3\text{N}_3\text{O}_3\text{C1}_2)$

A fast dissolving, granular, organic chlorinating product that contains 56 to 62% available chlorine.

Also known as SODIUM DICHLORO-STRIAZINETRIONE. An organic chlorine, granular in form, approximately 62% chlorine; in the dihydrate form, approximately 56% chlorine. It contains 58.7% stabilizer by weight and has a pH of 6.0. See also ORGANIC CHLORINE.

## SODIUM HYDROXIDE $[\text{NaOH}]$

Lye; a high-pH water treatment chemical.

## SODIUM HYPOCHLORITE $[\text{NaOCl}]$

A liquid containing 10 to 15% available chlorine; commonly used for chlorination. Produces hypochlorous acid when added to pool water.

A clear liquid form of an inorganic chlorine compound obtainable in concentrations of 5 to 16% available chlorine.

## SODIUM SULFITE $[\text{Na}_2\text{SO}_3]$

A chemical used for dechlorination, similar to sodium thiosulfate.

## SODIUM THIOSULFATE $[\text{Na}_2\text{S}_2\text{O}_3]$

A chemical used for dechlorination.

## SOFT WATER

Water that contains less than 100 ppm of calcium and magnesium.

## SOURCE WATER

Water used to fill or refill the pool or spa. (See MAKE UP WATER.)

## SPA

(See also HYDROTHERAPY SPA.) A hydrotherapy unit of irregular or geometric shell design.

Permanent Residential Spa - A spa in which the water heating and water circulating equipment is not an integral part of the product. The spa shall be intended as a permanent plumbing fixture and shall not be intended to be moved. (Refer to NSPI-3 Standard For Permanently Installed Residential Spas.)

Public Spa- Any spa other than a permanent residential spa or residential portable spa which is intended to be used for bathing and is operated by an owner, licensee, concessionaire, regardless of whether a fee is charged for use. (Refer to NSPI-2 Standard For Public Spas.)



Residential Portable Spa- either Self-Contained or Non-Self- Contained:  
Self-Contained Spa - A spa in which all control, water heating, and water circulating equipment is an integral part of the product. Self-contained spas may be permanently wired or cord connected.

Non-Self-Contained Spa - A spa in which the water heating and circulating equipment is not an integral part of the product. Non-self-contained spas may employ separate components such as an individual filter, pump, heater, and controls, or they may employ assembled combinations of various components. (Refer to NSPI-6 Standard For Residential Portable Spas.)

## STABILIZED CHLORINATING PRODUCT

An Organic (Stabilized) compound of chlorine and cyanuric acid. The two most common compounds are trichloro-s-Triazine trione and sodium dichloro-s-Triazine trione. Their popularity is due to the protection that cyanuric acid provides to prevent the residual's degradation due to exposure to the UV rays of the sun.

## STABILIZER (CYA)

See CYANURIC ACID.

Cyanuric acid; conditioner; isocyanurate; material which protects chlorine in pool water from dissipating due to sunlight.

## STEPS, RECESSED STEPS, LADDERS, AND RECESSED TREADS

Means of pool and spa ingress and egress that may be used in conjunction with one another.

Steps - A riser/tread or series of risers/treads extending down from the deck and terminating at the pool or spa floor. May be recessed so that all risers are located outside of user areas.

Ladders — A series of vertically separated treads or rungs connected by vertical rail members or independently fastened to an adjacent vertical pool wall (see LADDERS for definitions of particular ladder types).

Deck Ladder — A ladder for deck access from outside the pool or spa.

Recessed Treads — a series of vertically spaced cavities in the pool or spa wall creating tread areas for step-holes.

## SUCTION LIFT

The distance water must travel from pool level to the eye of the pump impeller, when the pump is above water level.

## SUCTION OUTLET

The aperture or fitting through which the water under negative pressure is drawn from the pool or spa.

## SUCTION PIPING

That piping which is referred to as influent.

## SUPERCHLORINATION

The application of large quantities of a chlorinated product (usually 3 to 5 times the normal shocking dosage) to kill bacteria, destroy ammonia and other oxidizable compounds and possibly kill algae.

## SUPERCHLORINATION

The elevating of chlorine in pool water, usually to reach breakpoint.

The practice of adding a sufficient amount of chlorinating compound to water to destroy chlorine demand compounds and any combined chlorine which may be present. Generally, the level of chlorine added is 10 times the level of combined chlorine in the water. (See BREAKPOINT CHLORINATION.)

## SURFACE SKIMMING SYSTEM

This term encompasses perimeter-type overflows, surface skimmers, and surface water collection systems of various design and manufacture. See SKIMMER.

## SURFACE-TYPE CARTRIDGE

A filter cartridge a media relying on the retention of particles on

## SURGE PIT

A tank to receive surge, exit water from a swimming pool.

## SURGE

Displacement of water in a pool - static and dynamic (wave action).

## SURGE CHAMBER

A storage chamber within the pool recirculating system used to absorb the water displaced by bathers.

## SURGE CAPACITY

The storage volume in a surge pit and gutter.

## SYSTEM HEAD CURVE

A curve produced by calculating the flow (gpm) verse the head loss in the circulating system.

## TAMPER PROOF

Meaning that tools are required to alter or remove portions of the equipment.

## TANNIN (TANNIC ACID)

A harmless organic chemical that is leached out of new redwood or cedar hot tubs and is present in some source water.

## TDS

Total dissolved solids, expressed in ppm.

## TEST KIT

A device used to monitor specific chemical residual or demands in pool or spa water. the top of the filter medium and the lowest outlet o the upper distribution system in a permanent medium filter. the surface of the cartridge for removal. CAVITATION: Occurs when atmospheric pressure is unable to push water to the pump as fast as the pump can discharge it.

## TIME CLOCK

A mechanical device that automatically controls the periods that a pump, filter, heater, blower and other electrical devices are on.

## TITRATION

A method of testing water to determine levels of calcium hardness and total alkalinity. The end point of the titration process is determined by a pH change, caused by the titration solution being added to the test sample. The changing pH triggers the reagent to change colors.

## TOP RAIL

That frame part located on top of or adjacent to the outer edges of the aboveground pool wall.

## TOTAL DISSOLVED SOLIDS (TDS)

A measure of the amount of dissolved matter in the water. High TDS (1500 ppm and higher) can interfere with the sanitizer's ability to combat bacteria growth.

## TOTAL ALKALINITY

A measure of the waters' ability to prevent pH change. It measures the amount of carbonates, bicarbonates, hydroxides, and borate's, in the water.

## TOTAL CHLORINE

The sum of both the free available and combined chlorines.

## TOTAL DISSOLVED SOLIDS (TDS)

A measure of the total amount of dissolved matter in water, e.g. calcium, magnesium, carbonates, bicarbonates, metallic compounds, etc.

## TOTAL DYNAMIC HEAD

See FEET OF HEAD. The sum total of the suction lift and discharge head within the plumbing system.

## TOXIC

Meaning that a given substance has an adverse physiological effect on human' beings or other living organisms.

## TREAD CONTACT SURFACE

Foot contact surfaces of a ladder, step, stair, or ramp.

## TRI-SODIUM-PHOSPHATE (TSP)

A commercial cleaner, often used for D.E. filter elements.

## TRICHLORO-ISO-CYANURATE

( $C_3N_3O_3Cl_3$ ): Also known as TRICHLORO-STRIAZINETRIONE. A form of organic chlorine, most common in compressed form (tablets or sticks), with 90% or more available chlorine, approximately 55.5% stabilizer by weight, and with an approximate pH of 2.9. See also ORGANIC CHLORINE and SODIUM DICHLORO-ISOCYANURATE.

## TRICHLORO-S-TRIAZINE TRIONE ( $C_3N_3O_3Cl_3$ )

An slow dissolving, organic chlorinating product that contains 90% available chlorine, typically compressed into sticks and tablets.

## TURBIDITY

Cloudy condition of water caused by finely divided microscopic material in suspension interfering with the passage of light.

## TURBIDITY

Cloudy condition of water due to the presence of extremely fine particulate materials in suspension that interfere with the passage of light.

Cloudiness in pool water caused by solid particles of microscopic size.

## TURBINE

Type of centrifugal pump/impeller arrangement creating high pressure.

## TURNOVER RATE

The period of time (hours) for pools, minutes for spas, required to circulate- through the pump & filter, a quantity of water equal to the spa or pool volume.

## ULTRAVIOLET (UV)

Light spectrum of higher frequency than visible; a radiant sanitizer.

## UNDERDRAIN

The distribution system at the bottom of the filter which collects the water uniformly during the filter cycle, and which distributes the backwash water uniformly during the cleaning operation. Normally applies to sand filters.

## UNDERWATER LIGHT

A fixture designed to illuminate a pool or spa from beneath the water surface.

Types:

**Wet Niche Light** - A watertight and water-cooled light unit placed in a submerged, wet niche in the pool or spa wall and accessible only from the pool or spa.

**Dry Niche Light** - A light unit placed behind a watertight window in the pool or spa wall.

## UPPER DISTRIBUTION SYSTEM

Those devices designed to distribute the water entering a permanent medium filter in a manner so as to prevent movement or migration of the filter medium. This system shall also properly collect water during fil backwashing unless other means are provided.

## UPRIGHT SUPPORT

That portion of the frame that is adjacent to the aboveground wall in a vertical position which supports the top rail and braces the wall.

## USER LOAD

The number of persons in the pool/spa area at any given moment, or during any stated period of time.

## USER

Any person using a pool or spa and adjoining deck area for the purpose of water sports, recreation therapy or related activities.

## VACUUM

The reduction of atmospheric pressure within a pipe, tank, pump, or other vessel. Vacuum is measured in inches of mercury. One inch of mercury is equivalent to 1.13 feet of Head. The practical maximum vacuum is 30 inches of mercury, or 33.9 feet of Head.

A negative pressure measured in 'HG' (inches of mercury).

## VACUUM FILTER

A filter that operates under a vacuum from the suction of a pump. Cartridge and D.E. are the most common.

## VALVE

Any device in a pipe that can partially or totally obstruct the flow of water (as in a ball, gate or globe valve) or permit flow in one direction only (as in a check or foot valve).

**Bleeder valve** — a device that allows air to be vented from a system.

**Multiport valve** - a device that allows for the multi-directional control of the passage or flow of water through a system.

**Push-pull valve** - a device that allows for the dual directional control or flow of water through a system.

## VELOCITY

The speed at which a liquid flows between two specified points, expressed in feet per second.

## VENTURI JET

See HYDROTHERAPY JETS.

## VERTICAL WALL

Shall refer to the wall up to a positive 110 angle towards the pool's interior from plumb.

## VINYL LINER

That plastic membrane constructed of vinyl or vinyl compounds that acts as a container for the water.

Expandable Liner — A liner that is constructed of a material that has the capability of stretching into a shape other than the original construction dimensions.

Hopper Liner - The liner that is used to obtain greater depth by geometrical pattern construction on the liner bottom or floor to fit a predetermined size and shape.

## VOLUME

Capacity; in pools as length times width times average depth.

## VOLUTE

Pump housing, containing the impeller.

## WALL CLOSURE

The fastening device(s) that connect the aboveground wall ends together.

## WALLS

The interior pool or spa wall surfaces consisting of surfaces from the plumb to a 45° slope.

## WASTE WATER DISPOSAL SYSTEM

All water disposal systems approved by (state or local) authority, such as a storm sewer, sanitary sewer, open pit, leach field, or irrigation system.

## WATERLINE

The waterline shall be defined in one of the following ways:

Skimmer System - The waterline shall be at the midpoint of the operating range of the skimmers when there are no users in the pool or spa.

Overflow System - The waterline shall be at the top of the overflow rim.

## WEIR

The device included with a skimmer that controls the amount of surface water (flow) drawn into the skimmer and filtration system.

The device included with a through-the-wall and over-the-wall skimmer that controls the amount of surface water (flow) drawn into the skimmer and filtration system. See SKIMMER WEIR.

## WET NICHE

See UNDERWATER LIGHT. A watertight and water cooled unit submerged and placed in a niche in the pool wall.

## WINTERIZED LINER

A plastic liner that is manufactured with sufficient plasticizers to withstand exposure to its rated lowest temperature of -20°F.

## WINTERIZING

The procedure for protecting pools and spas from winter weather. It includes physical protection of the equipment and chemical treatment of the water. Methods for providing a winterized pool vary from region to region depending on the typical weather and use habits of the pool or spa owner.