

Blanket Cover Facts

Bubble Swimming Pool Covers: Are generally produced using two ply's of polyethylene material with additives to colour, help strengthen and protect against, UV (Ultra Violet) light, the suns heat and pool chemicals. The bottom layer is generally formed into air cells that help insulate, support / float on the surface of the pool water. The flat top surface is normally co-extruded or laminated to the bottom layer to form a flat surface.

How Pools Loose Heat

Pools loose heat in a variety of ways, but evaporation through the pool surface area is by far the greatest source of energy loss for swimming pools. When compared to evaporation, all other losses are small.

The reason evaporation has such an impact is that evaporating water requires tremendous amounts of energy. According to information from the U.S. Department of Energy, it only takes 1 Btu to raise 1 pound of water 1°F, but each pound of 80 °F water that evaporates takes a very large 1048 Btu's of heat out of the pool. The metric equivalent means that it takes 0.001163 kilo watt hour of energy to raise one litre of water 1°C and each litre of water at 27°C that evaporates wastes 1.218 kWh of energy.

Why Sunlover Bubble Pool Covers

Since evaporation is the major source of heat loss for all swimming pools, to minimise evaporation one must cover the pool. Covering the pool with a Sunlover pool cover that suits "your needs", when it is not in use is the single most effective means of reducing:

- Energy consumption by over 50%
- Reduce chemical consumption by up to 60%
- Eliminate water evaporation by 98% +
- Increases pool temperature by up to 8 degrees C
- Inhibit algae growth
- Reflect/Absorb the sun's heat
- Reduce filtration/pump time by up to 50%
- Reduce debris contamination

Outdoor Pools

The chart below illustrates the impact of evaporation on the total energy consumption of the outdoor pool.

Energy Loss Characteristics

- Radiation to sky 20%
- Losses to the Ground & Other 10%
- Evaporation 70%

The evaporation rate from an outdoor pool varies depending on the temperature of the pool, the temperature and humidity of the air, and the wind speed at the pool surface. The higher the pool temperature and wind speed and the lower the humidity/ air temperature, the greater the evaporation rate. Sunlover Evaporation Prevention Report

Indoor Pools

The next chart illustrates the impact of evaporation on the total energy consumption of the indoor pool.

Energy Loss Characteristics

- Ventilation 27%
- Other 3%
- Evaporation 70%

When we compare outdoor and indoor energy loss characteristics, energy loss vehicles may change, but the percentage for evaporation remains high.

Indoor pools are not subject to the high fluctuations in day and night temperatures of outdoor pools. Neither do they radiate heat to the night sky, or have winds that carry heat away from the pool; but they do require room ventilation to control indoor humidity caused by the large amount of evaporation. Without a proper ventilation system, high indoor humidity levels will cause numerous problems, including condensation on cold surfaces and corrosion/ deterioration of structural components.

The energy required to run a ventilation system adds to the costs of operating an indoor pool. Also the ventilation air must be conditioned, which adds further to the costs.

When To Use A Pool Cover, Domestic Or Commercial

To gain the maximum benefit from your Sunlover bubble pool cover, the general rule of thumb is: a cover must be placed over the pool water surface area as soon as it is not used and enjoyed, and taken off just before you would like to enjoy and swim.

Environmental Benefits of your cover

By choosing the Sunlover cover that suits your needs, you can reduce the amount of energy needed to heat and filter your pool, eliminate water evaporation by 98%+, inhibit algae growth, increase solar energy, reduce chemical consumption and debris contamination you will greatly reduce your carbon footprint, and at the end of its life, a Sunlover cover is 100% recyclable.

Caring for your cover

A swimming pool cover will be an ongoing commitment and for ease of handling on and off the pool a good quality roller system should be used.

There are considerable benefits:

1. A Solar Bubble cover will heat the water (& retain that heat) by up to 8 degrees Celsius
2. A Solar & Heat Retention bubble cover will reduce chemical consumption by 30 - 60%
3. They also cut down cleaning time by keeping dirt and other debris out of the pool
4. It will conserve water by reducing evaporation by up to 98%+. Tests prove for an average sized pool 5m x 10m (16" x 32") around 45,000 litres (10,000 imp gallons) of water can be saved per year
5. EnergyGuard™ and CoolGuard™ bubble covers will reduce the filter/pump time by up to 50%

It is highly recommended that the first step in cutting pool energy loss, be the evaluation of the economics of using a Sunlover swimming pool bubble cover.

How long will it last?

With UV (Ultra Violet) and pool chemicals such as Chlorine a pool cover lives in a very harsh environment. The chlorine in the water is constantly attacking it, the UV rays produced by the sun attacks it and heat will also play its part in accelerating the effects of the chlorine and UV

Bubble covers have a limited life and will only last around 50 - 125% of their life span depending on the amount of care given by the owner.

1. The environment in a pool is created by:
2. The amount of UV rays produced by the sun. UV map
3. The volume of pool chemicals (such as chlorine) in the pool water
4. The chemistry parameters that balance the pool water (pH) Potens Hydrogen, (CH) Calcium Hardness, (TA) Total Alkalinity
5. The heat of the pool water (whilst the cover is on the pool)
6. The heat generated in the pool cover (whilst the cover is off the pool water)
7. A combination of all the above factors

To summarise: A swimming pool with a high volume of chlorine / unbalanced water, will reduce the life span of a bubble cover, and speed up the process of degradation.

How to increase the life span. Ensure the pool water is balanced

1. Potens Hydrogen (pH). Ideal 7.4 range: 7.2 to 7.8. If the pH is too low the water becomes very corrosive. If the pH is too high scaling will occur
2. Calcium Hardness (CH). Ideal 275 range: 150 - 400 ppm. If the CH is too low the water becomes corrosive. If the CH is too high scaling will occur
3. Total Alkalinity (TA). Ideal 100 range: 80 - 120 ppm. If the TA is too low the water becomes corrosive. If the TA is too high scaling will occur

Do not allow the FC (Free Chlorine) level to exceed 4.0 ppm (4 parts chlorine to 1 million parts water, which is 4 ml per litre) the ideal 2.0 ppm range is between 1.0-3.0 ppm. The ideal CC (Combined Chlorine) level is 0 ppm and should not exceed 0.2 ppm

These levels provide a guideline of recommended ranges for safe bathing. Consult your water treatment supplier for further information.

When a pool is "shock dosed" with shock chlorine, ensure the pool cover is completely removed from the water surface area and replaced only when the chlorine level is back to normal.

High chlorine levels and unbalanced pool water will increase the corrosive effect on the pool cover and lead to premature aging, bleaching, discolouration and crystallization of chemical residue on the top surface of the bubble cover.

Chlorine in its natural state is a gas, however, when it is added to the pool water (solid, liquid or gas) it automatically reverts back to its natural state (a gas) and rises through the water then dissipates into the atmosphere through evaporation. When a bubble cover is installed on a pool this evaporation does not occur, and the chlorine re-circulates through the water, a movement created by the pool pump and filtration equipment. This action sanitizes the water. The volume of chlorine in the pool will increase, when the cover is installed and the water will test higher. To avoid a higher concentration of chlorine the level and input of chlorine must be reduced, between 30 - 60 % Turn down the controls on your automatic dispenser or salt-water chlorinator, if physically adding, reduce the quantity to obtain the correct chlorine levels and water balance.

Ensure your pump and filtration system is operating during the hot part of the day 10.00 am to 4.00 pm whilst a solar or energy absorbing cover is installed on a pool. The sun heats the water penetrating through Sol+Guard™ cover or absorbs, heat through EnergyGuard™ cover, warmer water rises together with the chlorine gas, while the water beneath remains cool. We need to relieve the heat and get the chlorine moving throughout the water again. This will mix and circulate the concentrated level of chlorine, warmer and cooler water, and keep the build up of chlorine away from the cover.

Shrinkage of polyethylene bubble pool covers

Creases in the material formed by folding or rolling the cover when off the pool can affect the fit. Another phenomenon that has been observed is when the air in the bubbles expands and the pressure increases within the bubbles. The tension within the material will rise and a slight reduction in the cover size will occur. This "gassing up" phenomenon appears to be connected to water temperature and an imbalance of water treatment. Often in this situation close examination of the bubbles will reveal small amounts of moisture within the actual bubbles caused by condensation. The pool chemistry must be tested and brought back to within recommended parameters as quickly as possible to avoid permanent damage to the cover. Finally, if covers are left exposed to direct sunlight when off the pool, high temperatures can build up in the material. These temperatures can reach levels where permanent deformation will occur in the material, which will lead to further shrinkage usually seen as wrinkled strips across the pool cover. Our recommendation is that, when producing a pool cover, 2% of the pool dimensions is added to the cover size, to allow for possible shrinkage.

Always install and use a good quality reflective storage cover when the cover is off the pool.

The problem of collapsed bubbles in swimming pool covers

For many years the swimming pool bubble cover industry has experienced bubble deflation in a very small number of bubble covers. Tests carried out have confirmed this problem is linked to the build up of combined chlorine, and the accumulation of nitrogen trichloride gas directly under the bubble cover.

The most common sanitizer used in swimming pools is chlorine. When added to pool water chlorine carries out two main functions; primarily it destroys micro-organisms but it also acts as an oxidizer, destroying organic contaminants. One result of these chemical processes is to convert the active free chlorine into chloramine's and other chlorine compounds.

It is recognised within the pool industry that free chlorine levels of between 1 and 3 ppm along with combined chlorine levels kept well below 0.5 ppm is the ideal condition for well balanced and healthy pool water. However, if this ratio is allowed to reverse, and the chloramine's or combined chlorine levels climb above the levels of free chlorine, then nitrogen trichloride gas is produced. This is the cause of that familiar chlorine smell, along with irritation of the eyes of pool users.

When this problem occurs it is important to bring back the pool water to an acceptable balanced level of chlorination, either by shock dosing and burning out the high levels of combined chlorine, or carrying out a partial water change, before a replacement cover is introduced onto the pool water surface area.

When shock dosing the pool water it is essential to remove the bubble cover until an acceptable chlorine levels and water balance is reached.

If nitrogen trichloride gas is allowed to build up under the bubble cover, air will diffuse out of the bubbles, causing them to deflate. Once the bubbles have collapsed it is not possible to reverse the process and a new cover will be required.

De-lamination

De-lamination refers to the two layers separating. This is very rare, but can occur in certain cases.

A solar pool cover consist of two layers of material laminated together

Material de-lamination caused by faulty manufacture would mean the two layers of material separate completely, this is very rare.

De-lamination is caused by overheating If the pool cover is left on the roller without protection and exposed to full sunlight for even short periods of time - as little as 5 minutes when it's very hot - overheating can occur

You will see evidence of this by the top of the bubbles becoming convex - or bulging out - rather than being flat. In severe cases this can cause pockets of de-lamination. These look like big bubbles, eventually showing a pattern running across the width of the cover.

The de-lamination will typically occur in "patches" at the end of the cover farthest from the roller when on the pool. In severe cases there will be de-lamination lines across the cover parallel to the roller.

You will notice that when you wind the cover onto the roller that the de-lamination lines will line up on top of each other. This is because the sun's rays hit the top of the roller and pass through the first few layers of pool cover.

Pool cover can magnify the sun's rays as they pass through - generating enough energy to superheat sections of the cover to a similar temperature to that used to laminate the layers during manufacture.

The air inside the bubbles gets extremely hot and expands creating enough pressure to "pop" open the top and bottom layers.

De-lamination caused by overheating is not covered under warranty.

Solution - de-lamination by overheating is totally preventable. Always ensure that that when not on the pool protect your bubble cover with a Reflective Storage Cover.

De-lamination in no way affects the performance of the pool blanket.

Water condensation in the bubbles

The polyethylene plastic material used in the manufacture of pool covers is not impervious. This means it will allow small quantities of liquids or gases to go through it. Some water vapour will permeate the material and enter the bubbles. As the temperature outside the bubble drops below „dew point', the water vapour inside condenses, leaving a small quantity of water in the bubble. This condensation is perfectly normal and does not affect the cover's performance or life span in any way. As soon as the temperature inside the bubble increases again, the water will evaporate

This in no way affects the performance of the pool blanket.

Installing a bubble cover

Carefully un-pack the cover and lay on the water, bubble side down, smooth side facing upwards.

Trim the cover with a pair of scissors to fit around the pool wall allowing for shrinkage.

Remember not to cut off too much in one go, as it is possible to pull the cover away from the opposite wall while cutting thus ending up with a cover too small.

Cut around pool ladders ensuring radiused corners rather than square, as a right angle cut into the cover will produce a weak point that could tear. Alternatively fit ladder hinges that will lift the ladder away from the pool cover.

Handling the cover

The ideal way is to purchase a good quality pool roller that will allow you to handle the cover with ease, therefore gaining the most benefits of owning a pool cover.

If you have to physically handle the cover it is best to fan fold the cover at one end of the pool.

Always install and use a good quality reflective storage cover when the cover is off the pool.

Caring for the cover when it is off the pool

All covers must be stored in a shaded area out of direct sunlight. Never left out in direct sunlight whilst folded or wound onto a roller. The heat generated by the sun will be magnified many times, causing the degradation of the material, the results may not be immediate but they can be very serious.

The effects will be, very high heat concentrated inside the cover material, leading to the air in the bubbles expanding and forcing apart the laminated area's causing the bubbles to join making stripes of bigger bubbles. This in itself is not life threatening unless repeated constantly. The cover can also become so hot it becomes molten and will weld itself together, thus destroying itself, or lines of degraded wrinkled bubbles appear across the pool cover that will also cause the bubble cover to shrink.

Most fabricators and suppliers of pool covers supply or have available, light opaque coloured reflective storage covers that will help protect the bubble cover against the harmful rays and heat of the sun.

Cleaning and storage of cover

When the cover is installed on the pool, less dust and debris will be prone to settle into the pool most will be blown away by the wind. (Without the cover debris will get waterlogged and sink) Airborne dust and debris can be swept to one area of the cover then extracted, or with the pool filtration running, hose the debris towards the skimmer basket.

When the pool is not in use, during the closed season, The cover can be cleaned / hosed down with fresh tap water, covered with the solar protector sheet and stored in a shaded area ideally a garage or shed

Ideal healthy chemical levels

<u>Substance</u>	<u>Ideal Range</u>
Salt	2500-4000
Stabiliser	depends on chlorine demand
Free Chlorine	2.0-4.0ppm
Combined Chlorine	<0.2ppm
Total Chlorine	TC=FC+CC
Total bromine	4.0-6.0
Ph	7.2 -7.8ph
Total Alkalinity	80-120ppm
Calcium Hardness	150 -400ppm
Total Dissolved solids	<2000ppm
Phosphate	as little as possible
Heavy Metals	as little as possible