

PLASTIPACK LIMITED

Manufacturers of Energy and Resource Saving Products

How to select the right pool cover material?

Why use a pool cover?

In the past few years, pool covers have come into their own, due largely to the industry's educational campaigns and heightened awareness around the need to be more sustainable in our daily habits and choices. However, with such a wide variety of pool covers now available, it can be difficult to know exactly what material is right for your pool maintenance needs and swimming habits. It is important to understand that each type of material performs differently and varies in terms of UV stability, thicknesses, durability and lifespan. This document is designed to guide you through the different pool cover material types and show you how to match the material to the specific need.

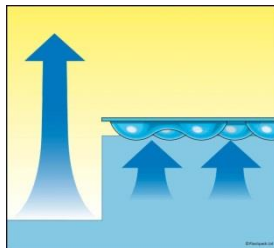
So what is the best material to put on your pool? It all depends on what you want the material to do!

All pool covers have common benefits, listed below however, the correct material will provide extra savings in terms of reducing running costs of the pool. Depending on which material is selected, you can reduce your heating costs, reduce your chemical consumption by 70%, reduce filtration times by 50% to save electricity, or keep pool water cooler in extremely hot climates.

General benefits of covering your pool

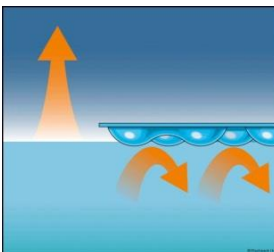
The following list details the benefits achieved with standard pool cover material. Performance may differ according to the material's opacity but you can generally expect a temperature increase of 3-4 degrees C. Cover lifespan will also vary with thickness or UV stabilisation but a quality base level material can be expected to last for two to three years.

- **Increase pool's temperature**
- **Available with GeoBubble™ technology**
- **Reduce chemical consumption**
- **Reduce debris contamination**
- **Eliminate water evaporation by 98% +**
- **Save money**
- **Reduce the carbon footprint of your pool**
- **Reduce energy consumption**



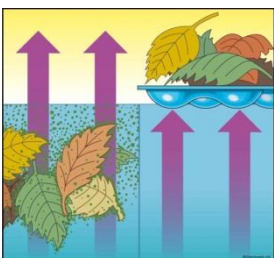
Prevents evaporative heat and water loss

By covering the pool, evaporation is prevented and pool top ups are no longer required. Furthermore, evaporation is the cause of 70% of heat loss in a pool. As water evaporates, it consumes energy, thus taking the heat out of the pool - a process called evaporative cooling. This is why an uncovered pool does not have the same heat retention properties as a covered pool. With water supply restrictions becoming more common and rising tariffs, a pool cover is a cost-effective solution that preserves a natural resource - water. With the added benefit of reducing heat pump requirements, a pool cover also offers a way to save on power, contributing to the overall shrinking of the pool's carbon and water footprints.



Insulates the pool against heat loss

Air has excellent insulation properties. By trapping air within and around the bubbles, the material becomes an insulating barrier to heat loss. This, combined with the ability to prevent evaporation, provides a 50% reduction in the energy required to heat the pool. Plastipack's own product testing shows that standard materials will increase the water temperature by approximately 2 to 3 degrees C, compared to an uncovered pool. This is why it is important to keep the cover on the pool when not in use.



Prevent debris collecting in the pool

10% of the chlorine added to a pool is used to sanitise the water. The other 90% is consumed in the process of oxidising leaves, dirt and other biological debris blown into or transferred to the water by swimmers. By covering the pool, chemical costs can be reduced without jeopardising water hygiene or appearance.

Selecting the right material for you?

What is the difference between foam and bubble covers?

A bubble cover, often referred to as a solar blanket, enables free sustainable energy to be transferred to the water via the cover, resulting in a rise in water temperature. Heating and running costs are lowered as a result.

A foam cover works as a insulating lid. The material is manufactured using foaming agents or by radiating the material to create small air bubbles within the material. This helps to retain the heat that is added to the pool via the heating system however no additional energy will be transferred to the water other than that generated by the heat pump.

The difference in performance between the two depends largely on the foam thickness. Looking only at the heat retention properties, a 5mm foam will provide a 60% saving in heating costs, whereas a bubble cover will provide a 50% saving. This is because both a bubble cover and a foam cover prevent evaporation which is the greatest cause of heat loss in the swimming pool and both use air to insulate the swimming pool surface. So both provide a similar heat saving.

Why choose a bubble cover?

A bubble cover is lighter and easier to remove from the pool.

A bubble cover is generally cheaper than a foam cover. With high performance Guard covers, the return on investment or payback period is one year.

Foam covers also insulate the pool from potential heat gains from solar energy.

Thickness / Material design:

Our swimming pool covers are made from LDPE (low density polyethylene). LDPE is used for its material properties, the material has a density of less than one, allowing it to float on the water, has a good chemical resistance to a large number of common chemicals and a good degree of clarity and tensile strength. The expected lifespan of the material is determined by two factors: the amount of UV (ultra violet) additives mixed with the material to prevent the degradation due to solar radiation exposure on the polymers, and the thickness to withstand the oxidising properties of the pool sanitizers.

The material's design is an important implication on the cover's lifespan and performance. The main purpose of the bubbles is to create a insulating air gap between the water and the cover, helping to retain heat within the pool, so because of this a large tall bubble is preferable. However there are other considerations when designing the bubble structure - sharp edges produce stress points and thinning on the material. This was the objective when designing GeoBubble™ - to eliminate these weaker areas to achieve a longer lasting bubble.

It is widely agreed throughout the industry that for a good cover that will last two to three years, the thickness should be a minimum of 400micron. For a longer lifespan, thicker grades are required to allow for enough UV protection and material to delay the oxidising effects of the chemicals within the swimming pool. We have found that 500micron offers a good thickness and is still light enough to be conveniently taken on or off the pool. This is why this thickness has been selected for our high performance products.

For the high performance covers, the 500µm has a specialised UV stabilisation package tailored to provide a expected lifespan of over five to six years. These materials are designed to pay back their investment within the first year of use and are developed to provide the optimum savings available for its specific application.

What effect does colour have?

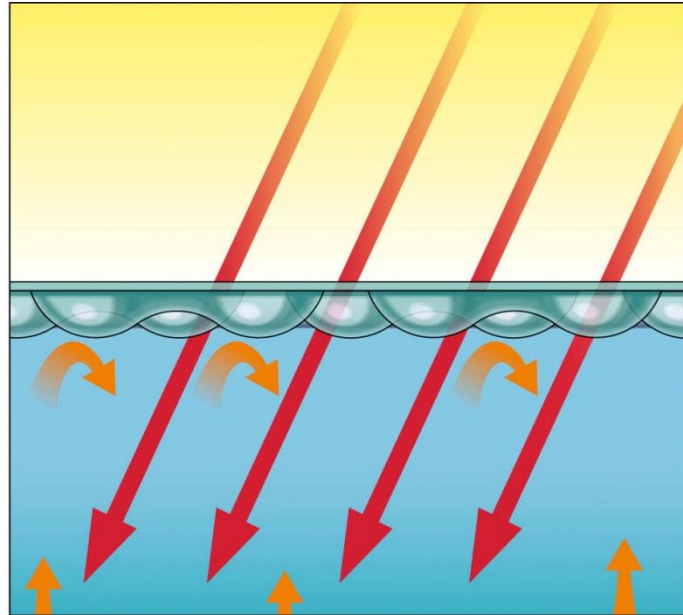
Opaque materials like EnergyGuard™ are ideal for reducing chemical consumption and preventing algae growth. This is because they block the light, preventing photosynthesis and photolysis which deactivates the active sanitizers in the pool. A small temperature increase is produced by the cover absorbing the sun's energy and heats the pool through radiation and conduction. This makes opaque covers a good choice for pools which are shut down regularly, allowing for chemical free hibernation and faster start up times. In very hot countries where pools require cooling or shading, an opaque material with a high reflective index like CoolGuard™ will help to keep the sun's energy out of the pool.

Transparent materials are best suited for adding heat to the pool and our tests have shown Sol+Guard™ to be the most efficient. The material works like a glass roof, providing a temperature increase throughout the water by harnessing all of the spectrum within the sun's atmospheric window. This temperature increase reduces the work required by the heating system to raise pool temperatures, reducing costs and, in warmer climates, can maintain a pool at a comfortable temperature without the need for a heating system.

A swimming pool is a high value investment in a sport or lifestyle. The aesthetic value is an important consideration too. Throughout the market there are rich colours that can provide an attractive look to the pool. If making the choice from an aesthetic view point, it is important to consider the sections above as the cover's ability to reduce the costs of maintaining the pool will be dependent on its characteristics. Most of the aesthetic colours tend to work as a intermediary between products like Sol+Guard™ and EnergyGuard™ providing some heat gain and some chemical savings but will not have the same lifespan or provide the high performance.

Why choose a laminated weave?

Again dependent on colour, the woven materials will work as a intermediary between a chemical saving cover (EnergyGuard™) and a solar heating cover (Sol+Guard™). The main benefit of laminating the woven film to the material is that the HDPE (high density polyethylene) strands have a higher molecular weight which simply means that the material is stronger. This makes the woven materials more durable to wear and tear.



Cover material that maximises solar gain to heat your swimming pool

- Increase pool temperature by up to 8°C
- GeoBubble technology
- Reduce chemical consumption by up to 40%
- Reduce energy consumption by up to 70%
- Eliminate water evaporation by 98% +
- Reduce debris contamination
- Save money
- 6 year + expected lifespan
- Reduce the carbon footprint of your pool

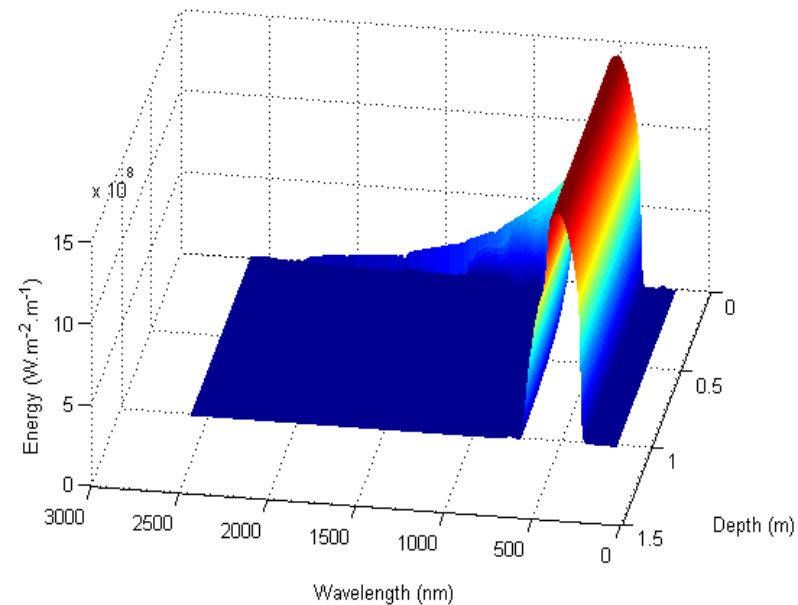
Transparent materials:

Suggested material for adding raising water temperatures.

How the cover works:

Adding energy to the pool:

The material has high transparency, allowing as much of the solar energy into the pool environment as possible. By using the sun's energy to heat the pool, the water is maintained up 6 to 8°C hotter than an uncovered pool. This greatly reduces the load on the heating system. has to use to keep the water at a comfortable temperature. The cover's transparency plays an important role in providing such a large temperature increase as the water absorbs different wavelengths of the sun's spectrum at different depths. By allowing nearly 80% of the sun's energy into the pool, an even temperature increase is generated throughout the body of water.



Graph 1: Depicts a FEA (finite element analysis) of the potential energy the Sol+Guard™ material lets through into the pool from the sun's atmospheric window and the absorption of this energy relative to the water depth.

Retaining Heat:

Air has excellent insulation properties. By trapping air within and around the bubbles, the material becomes an insulating barrier to heat loss. This, combined with the ability to prevent evaporation, provides a 50% reduction in the energy required to heat the pool. Plastipack's own product testing shows that standard materials will increase the water temperature by approximately 2 to 3 degrees C, compared to an uncovered pool. This is why it is important to keep the cover on the pool when not in use.

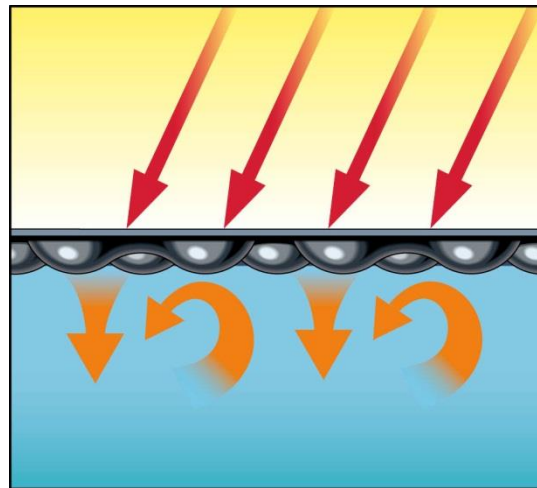
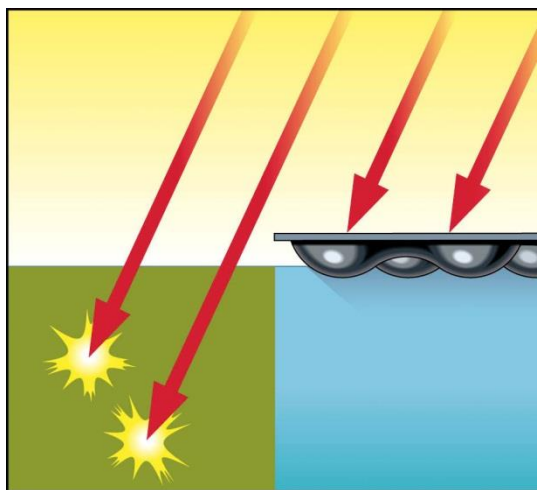
Longevity:

The material's longevity as discussed above is determined by three main factors: thickness, bubble design and UV stabilisation.

The Sol+Guard™ material is a 500µm material. This provides a durable material and, with the inclusion of the GeoBubble™ design, provides a evenly profiled bubble that offers good resistance against the pool sanitizer's oxidising effects. The material being a part of the Guard product range has a bespoke tailor-made UV stabilizer system at far higher levels than that of standard pool cover material. These three factors provide a material with the highest expected lifespan.

Opaque materials: Suggested material for saving energy and reducing chemical demand

Opaque materials always provide the best chemical savings. By blocking the light, chemical deactivation and biological growth can be minimised. With chemical consumption reduced, there is a reduction in the pool's filtration requirements. In areas where the pool is shut down or hibernated for long periods during the winter, these opaque materials ensure that, by blocking out light entry, the pool does not turn green due to algae growth. Without the need to filter out the foreign biological matter, chemical input and filtration times can be greatly reduced or cut out completely. On reopening the pool at the start of the swimming season, the water is clear therefore the start up is quick and the pool requires very little effort to make it swim-ready again. The further benefits of an opaque cover during summer / swimming seasons are detailed below.



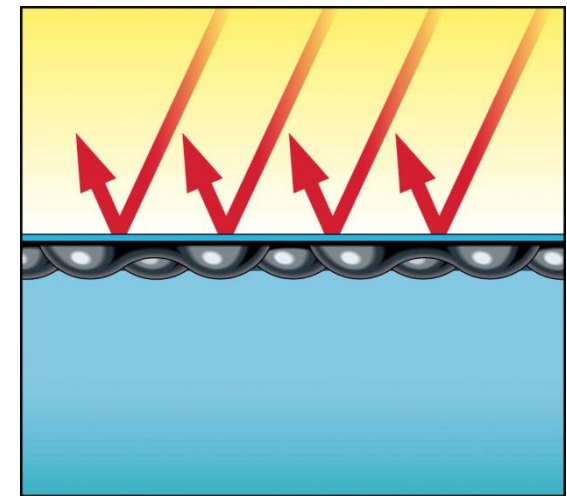
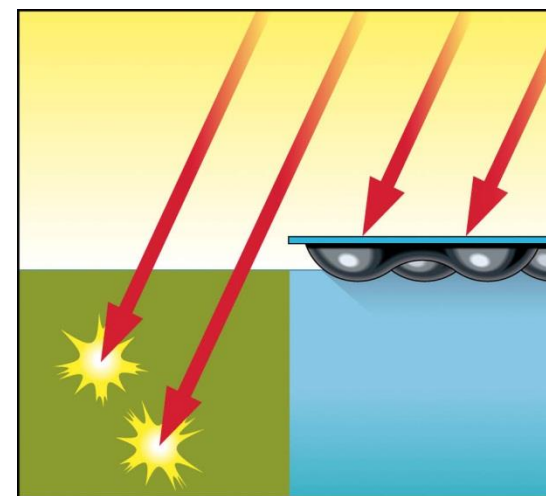
Cover material that beats swimming pool algae

- Algae growth is inhibited
- GeoBubble Technology
- Save money
- Reduce Pump/Filtration time by up to 50%
- Chemical consumption is reduced by over 70%
- Energy Consumption is reduced by over 60%
- Eliminate water evaporation by 98% +
- Absorbs the sun's energy and increases the pool temperature by up to 4 degrees C
- Reduce debris contamination
- Can be used as a winter pool cover
- 6 year + expected lifespan
- Reduce the carbon footprint of your pool

Absorbing energy:

The EnergyGuard™ material's dark grey pigmentation absorbs the sun's energy and transfers this energy to the pool, heating the surface of the pool water. This increases the pool's temperature by up to 4°C compared to a pool left uncovered.

The combination of adding heat, reducing chemical demand and blocking light makes EnergyGuard™ a good choice for pools in sporadic use such as pools in holiday homes or countries where the pool will be shut down for the colder periods. By providing chemical and filtration savings during the winter and allowing for fast pool start ups and temperature regulation during the summer, you are able to save money and energy while still getting the most out of your swimming pool.



Cover material that beats algae and keeps your swimming pool cool

- Reduce water temperature by up to 15%
- GeoBubble technology
- Inhibit algae growth
- Reduce filtration/pump time by up to 50%
- Reduce chemical consumption by up to 70%
- Reduce energy consumption by over 50%
- Eliminate water evaporation by 98% +
- Save money
- Reduce debris contamination
- Can be used as a winter pool cover
- 6 year + expected lifespan
- Reduce the carbon footprint of your pool

Reflecting energy:

In warm climates, rather than heating your pool the objective is to keep the water cool enough to still be a refreshing and comfortable temperature for swimming. In these hotter countries, many pools require shading or active cooling of the water. Cooling the water via a heat pump can be costly. The CoolGuard™ material has a light blue top surface made out of a highly reflective pigment, preventing the sun's energy entering the pool and therefore keeping the water cool. Algae growth is also prevented and chemical demand is minimised. If heating is required later in the year/cooler months, the material's insulating properties and evaporation control will help..

Questions and suggestions

Questions to ask before you buy:

- Where are the highest savings to be made on my pool?
- Can I downgrade my heating system?
- Can I reduce my chemical requirements?
- Is the pool used all year round?
- Which material will best help to reduce the desired cost savings?
- What is the material's expected lifespan?
- Does the material come with a warranty?
- Does the material have the GeoBubble™ technology bubble design?

Suggestions:

- Research the different material options on www.GeoBubble.co.uk and review the Testimonials too. This is a non-commercial educational website with easy to follow explanations on different material types.
- Enquire about the GeoBubble™ and Guard materials in your local pool shop. We supply fabricators globally so there should be availability in your area. Drop us a line for a list of our distributors if you are struggling to find one. Alternatively, find a distributor who takes online orders and will deliver to your area.



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Thank you

Manufacturer

www.plastipack.co.uk

Product Information

www.geobubble.co.uk

Water Storage

www.vapourguard.com

Wainwright House, 4 Wainwright Close, Churchfields Industrial Estate, St Leonards-on-sea,
TN38 9PP UK

t: +44 (0) 1424 851 659

f: +44 (0) 1424 853 909

e:info@plastipack.co.uk