

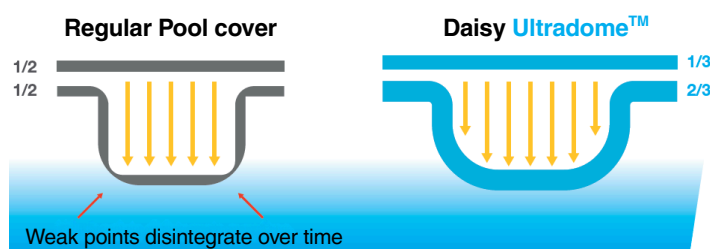
All solar pool covers have a finite useful life and will eventually deteriorate due to the effects of exposure to sunlight and highly corrosive pool chemicals.

Daisy Pool Covers have made a considerable investment in Research and Development in order to develop pool covers that combine maximum durability, heating and heat-retention performance and value-for-money.

This Fact Sheet explains how Daisy's exclusive UltraDome™ bubble technology produces a stronger and longer-lasting pool cover. It also outlines how UltraDome™ technology contributes to Daisy Pool Covers' insulating efficiency.

What makes the UltraDome™ bubble different?

The first thing is the unique Daisy UltraDome™ bubble shape.



A superior moulding technique used in the manufacture of UltraDome™ bubble material enables the low density polyethylene (LDPE) bubble layer to be formed in a profile of consistent thickness with 2/3rds of the total material in the bubble layer - as the diagram above illustrates.

This process eliminates 'stretching' at the 'corners' of bubble material with a squarer profile - as also illustrated above. Stretching leads to weak points that are more susceptible to physical damage during normal use of the cover.

As the stretched areas are thinner, there is also less LDPE material to physically resist degradation by sunlight and pool chemicals.

Why is an UltraDome™ cover stronger?

Four different bubble shapes and sizes have been field tested. The results of these tests have produced our present bubble shape and size.

All indications are that it is the optimum shape for a solar pool cover. It affords maximum flotation, solar transfer, and is abrasion resistant.

The Daisy UltraDome™ bubble profile produces a 'bubble' layer of consistent thickness and without weak points. This bubble layer is bonded during manufacture to a second layer of LDPE.

It is the bubble layer which is in contact with the pool water and corrosive chemicals whenever the cover is in use.

UltraDome™ profile ensures that a full two-thirds of the total LDPE material is contained in the lower layer. This profile creates a more durable cover.

The upper cover film layer must resist degradation by UV radiation from the sun, and some contact with pool water and chemicals. However, the underside bubble layer is subject to both UV radiation and constant exposure to pool chemicals while the cover is in use.

A thicker bottom layer will simply resist degradation for longer. This fact has been independently confirmed by tests on a range of polyethylene, polyvinyl chloride (PVC) and polyethylene foam/PVC covers conducted by JLA Francey and BP Gleisner of the Monash University Physics Department.

Why is strength so important?

An outdoor swimming pool lives in an extremely harsh environment. Most pools are unshaded, to take advantage of solar heating of the water and maximise their use.

However, this means that most outdoor pools, their surrounds and equipment - particularly pool covers - are exposed to damaging UV radiation from the sun for a large part of the year.

The impact of Chlorine

Pool chemicals - although essential for sanitation - are highly corrosive. Whether you have a salt water pool or not - any pool that is chemically sanitised uses Chlorine as the disinfectant. For more information, please see: Facts about Chlorine section later in this Fact Sheet.

Molecular Chlorine (Cl_2) is a highly corrosive greenish-yellow gas with an irritating odour.

In whatever form Chlorine is added to the water, or produced by a salt water chlorinator - it eventually returns to its natural state as a gas and escapes. However, when a pool cover is in use it cannot simply disperse into the atmosphere.

It is trapped immediately below the cover. This area is also heated most by the sun - increasing Chlorine transfer from the water - at a high temperature. These factors combine to create extreme conditions that are likely to increase cover degradation.

Daisy UltraDome™ Solar Pool Covers combat potential degradation in the following ways:

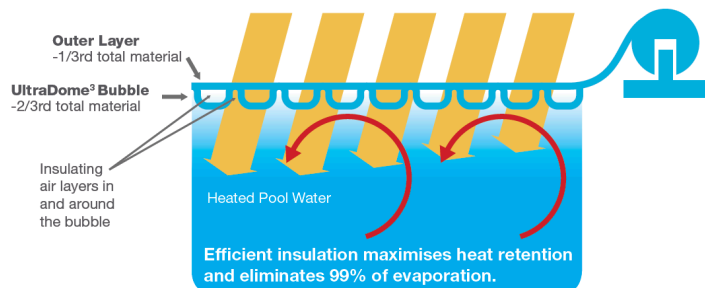
- UltraDome™ bubble profile creates an even, thicker bottom layer with no weak points
- UltraDome™ material contains maximum UV absorbers, quenchers and stabilisers
- UltraDome™ material also contains tougheners to minimise the effect of solar and chemical degradation

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Ultradome™ Profile

How do Daisy Ultradome™ pool covers insulate against heat loss?

The Ultradome™ bubble profile results in a total insulating airtight layer to almost the entire bubble depth.



As the above illustration demonstrates, the air in the bubbles, and the air trapped between the top layer of the cover and the water - between the bubbles - effectively form a thick layer of insulation across the entire cover area. Thermal resistance (R) is a measure of insulation effectiveness. In testing carried out to Australian Standards by Curtin University, Western Australia - the Daisy 525 micron Pool Cover achieved the very high rating of 0.1 m²/K.

It is important to remember that the US National Renewable Energy Laboratory says that the vast majority of heat loss from pools is due to evaporation.

A Daisy Pool Cover will effectively eliminate evaporation and through effective insulation will help substantially reduce the remaining small heat loss from convection and radiation. For further information, please see our Fact Sheets No 1: Evaporation and No 2: Heating Capabilities.

Why do the covers come in a range of thicknesses?

As we said earlier, the thickness of LDPE material used to manufacture a solar pool cover is the primary factor in its durability. This is basically common sense and affects both resistance to normal operating 'wear and tear' and to degradation by UV radiation and corrosive pool chemicals.

In order to offer pool cover alternatives that balance initial cost with useful lifespan, Daisy manufactures its Ultradome™ Solar Pool Covers in a range of thicknesses.

Daisy Solar Pool Cover	Cover Thickness	Pro-Rata Warranty
Ultradome™ 250B 3 - 4 year life expectancy	250 micron	3 years
Ultradome™ 350i 4 - 5 year life expectancy	350 micron	5 years
Ultradome™ 400B 5 - 6 year life expectancy	400 micron	5 years
Ultradome™ 525 Range 8 - 10 year life expectancy	525 micron	10 years

PLEASE NOTE: 'Micron' is an abbreviation of micrometre - one millionth of a metre. To put it into perspective, a human hair is around 100 microns in diameter.

Cover thickness also determines the weight of the pool cover. Although it is quite feasible to manufacture a cover from LDPE material thicker than 525 micron, it proves too heavy and rigid in larger pool sizes for convenient domestic use.

And of course, a solar pool cover that is not relatively light to handle and easy to use is less likely to be used frequently and correctly - therefore lessening the potential benefits gained.

Facts about Chlorine

All Chlorine in Australia is produced from salt - Sodium Chloride. If you have a salt water pool chlorinator, this produces Chlorine in the same basic way as it is manufactured commercially.

An electrolytic process in the salt water chlorinator converts salt water to Chlorine gas, Hydrogen gas and hydroxyl ions. These gases react with the water to give hydrochlorous acid and hypochlorite ions - the primary disinfectants produced by the process.

If you add liquid chlorine to your pool - Pool Chlorine - this is actually a solution of Sodium Hypochlorite and water. Granular chlorine and chlorine tablets are Calcium Hypochlorite. When these compounds are added to water, they also produce hydrochlorous acid - a powerful disinfectant. Whenever Chlorine is added to the water, or produced - it eventually comes out of solution as a gas and escapes.

Every pool needs a Daisy Pool Cover

A Daisy Pool Cover can increase the months you can swim each year in a warmer pool, reduce cleaning time and chemical costs and almost eliminate evaporation - saving a vast amount of water.

The unique Daisy Ultradome™ bubble profile creates a stronger pool cover - that will last longer.

It also makes Daisy Ultradome™ covers highly efficient insulators against heat loss by radiation and convection. Australian local, State and Federal Governments and all Water Authorities advocate pool cover use, and an increasing number are providing rebates or subsidies for their installation.

References

Sealed Air Corporation, Solar Pool Blanket, John F Zaccaro & Associates
Francey, J L A; Gleisner. B P (1988) Plastics and Rubber Processing Applications, Vol 10 No 3 Department of Physics, Monash University, Calyton, Victoria
"Guarded Hotplate" Testing (2003), Curtin University, Western Australia