
# Comments on WaterSense® Notice of Intent (NOI) to Develop a Draft Specification for Pool Covers

May 16, 2019

# Table of Contents

**Commenter:** Alan Korn, Scott and Katey Taylor
**Affiliation:** Abbey's Hope Charitable Foundation
**Comment Date:** February 13, 2019

***Email Text:***

Dear Ms Tanner,

Attached above is the comment letter from Abbey's Hope Charitable Foundation regarding the pending WaterSense Program.

Alan Korn
Executive Director
Abbey's Hope Charitable Foundation
202-680-8876

***Email Attachment:***

See pages 3 and 4.

abbey's HOPE
SAFER POOLS. SAFER KIDS.

February 12, 2019

Ms. Stephanie Tanner
Environmental Protection Agency
EPA Water Sense Program
1200 Pennsylvania Avenue, NW
Washington, DC 20460

**Re: WaterSense Notice of Intent**

Dear Ms. Tanner,

Please accept this letter as Abbey's Hope Charitable Foundation's general support for the establishment of a WaterSense Specification for residential pool and spa covers. Abbey's Hope Charitable Foundation, does not have the technical expertise to comment specifically on all the detailed potential energy saving requirements and benefits of the program. We are, however, very interested in making sure safety is considered when crafting the program and in determining which pool and spa covers ultimately get ultimate WaterSense label.

As you may know, each year in the United States, approximately 800 children ages 14 and under die from drowning-related incidents. In addition, as many as 20 percent of near-drowning survivors suffer severe, permanent neurological disability. The statistics related to entrapment deaths and injuries, although not as large, are just as alarming. The Consumer Product Safety Commission has reported that over the past 15 years there have been at least 85 reported entrapment incidents that resulted in 12 deaths. Each one of these deaths and injuries was (and is) preventable if adults watch children when they are swimming and the pools and spas themselves are compliant with good safety practices.

We unfortunately know that these statistics are not just faceless numbers. In June of 2007, our six-year old daughter Abigail suffered a horrific injury while swimming in a public pool. That injury ultimately took her life. Abbey was playing in a wading pool when she unknowingly sat on a drain that was poorly maintained and unequipped with the appropriate safety devices. The powerful suction of the pool eviscerated Abbey. Her small intestine was ripped from her body. The serious injury was followed by 9 months of medical care, including 16 different surgeries, a triple organ transplant, several infections and most of her sixth year of life in a hospital bed. Despite the best medical care and attention and our constant vigilance and prayers, Abbey died March 20, 2008.

Our daughter Abbey's hope was that no child should ever suffer like she did as a result of an improperly maintained pool. In her memory, we established our Foundation. One of our greatest achievements, to date, was helping the United States Congress pass *The Virginia Graeme Baker Pool Safety Act* (VGB Act) which requires entrapment safety devices on all public pools. The law was signed by President Bush in 2007.

This landmark legislation is not, however, a complete solution. The VGB Act does not require the use of barriers like pool and spa covers to be used to protect against unfettered access. To that end, we work every day with

www abbeyshope.org phone (952) 303.5421 e-mail info@abbeyshope.org mail 5021 Vernon Ave. Suite 164 Edina, Minnesota 55436

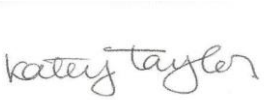
state legislatures and code officials around the country to promote these extra layers of protection. So anything that helps in that promotion is, in our view, a worthwhile effort. A well-planned, well-crafted and well-implemented WaterSense label will most certainly support that goal. Pool and spa covers, when properly deployed, can prevent accidental drownings and entrapments and can provide homeowners with the peace of mind that their pool or spa will not pose a risk to family members and unknown visitors.

We do believe, however, that the WaterSense moniker should be reserved (or at least preference given to) pool and spa covers that meet the specifications of ASTM F1346-91. Covers that meet this standard have to pass many tests that help ensure the product is safe. Tests like a *static load test* (to make sure the cover can support the weight of a child), *a perimeter deflection test* (to make sure there are no large openings around the cover that can provide access to a child) and a *surface drainage test* (that safe guards against dangerous amounts of water collecting on the cover's surface). The ASTM standard also requires appropriate consumer labeling and consumer education about safe use and potential dangers.

An unsafe cover, on the other hand, is an ineffective cover. The EPA should want the ultimate WaterSense label to be used only on the safest products.

We stand ready, willing and able to help the EPA in any fashion as this important program is developed. If you have any questions or need additional assistance, please feel free to contact our Executive Director Alan Korn by phone at 202-680-8876 or by e-mail at alankorn@msn.com.

Sincerely,



Scott Taylor
Chairman & Founder

Katey Taylor
President & Founder

Cc: Alan Korn, Executive Director

**Commenter:** Dan Hinrichs
**Affiliation:** Clise Properties
**Comment Date:** February 15, 2019

***Email Text:***

The only equipment we have is a hot tub that is enclosed. I have however managed properties in the past that had them. They are very efficient in saving energy by keeping the heat in the water and not in the air.

Dan Hinrichs
Director of Engineering
Clise Properties/Hotel Division
Best Western Executive Inn
Loyal Inn
La Quinta Inn & Suites
206-459-3945
dhinrichs@clisehotels.com

**Commenter:** Michael J. Shebek
**Affiliation:** Automatic Pool Covers, Inc.
**Comment Date:** March 5, 2019

***Email Text:***

Here is my letter for WaterSense.

All the best,
Michael

**Michael Shebek** | President
**Automatic Pool Covers, Inc.**
17397 Oak Ridge Rd. #100
Westfield, IN 46074
(800) 878-5789 Headquarters
Website: APC-Mfg.com

***Email Attachment:***

March 4, 2019

To: Stephanie Tanner, CEM, LEED AP BD+C
Lead Engineer
WaterSense Program
Environmental Protection Agency
Washington, DC
Via electronic mail

An automatic pool cover (APC) is a motorized pool cover that operates with a touchpad and/or a key. APC's must meet standard ASTM 1346-91 (2018). This standard is a performance specification for safety covers and labeling requirements for all covers for swimming pools, spas and hot tubs." In general, an APC takes about 45 seconds to open and close, and when closed the pool is inaccessible and the cover must support a minimum of 485 pounds. When the pool and the APC are properly installed it can, and does, hold as much as 10 times that weight.

Frequently, I am asked about the lifespan of automatic pool cover vinyl. In my 40 years of being involved in both an installation and service company and now as owner of a manufacturer of APC covers, I have seen the life of the automatic pool cover to be fairly predictable. The expected life of APC vinyl throughout the industry's nearly 60-year history has been between 6-8 years.

There are two (2) main factors affecting a cover's lifespan:

— The ingredients included in each manufacturer's vinyl recipe.

— The pool's region within the US, and whether that region has high or low level Ultraviolet (UV) radiation rays.

Finally, my company is Automatic Pool Covers, Inc. and we started in 1979 as an installation and service company in Indiana. After 24 years of installing covers, in 2003 with 30 employees, we began manufacturing our own cover systems as well as installing them in Indiana. Then in 2014, the company separated its installation and service employees into a separate company. Today, Automatic Pool Covers, Inc. employs 100 employees, and the service company also now employs over 100 employees.

In conclusion, I'd personally like to thank the WaterSense® team for their time and effort to consider the effectiveness of automatic pool covers as a water, energy and child saving device.

Sincerely,
Michael J. Shebek
CEO and Owner
Automatic Pool Covers, Inc.

**Commenter:** Tom Dankel
**Affiliation:** Aquamatic Cover Systems
**Comment Date:** March 13, 2019

***Email Text:***

Here it is in pdf.

Tom Dankel
Aquamatic Cover Systems
200 Mayock Rd
Gilroy CA 95020
p. 800.262.4044 x205
f. 408.846.1060

www.aquamatic.com

***Email Attachment:***

See pages 9 and 10.

Stephanie Tanner, CEM, LEED AP BD+C 11 March 2019

Lead Engineer

WaterSense Program

Environmental Protection Agency

Washington DC

via electronic mail

Re: Regarding reasonable ways to mark products

Dear Ms. Tanner,

We are pleased that the NOI is moving forward, and the positive feedback received so far.

We would like to address the questions regarding "marking" the products, and information of same.

As everyone recognizes the EnergyStar logo, we are seeing this consumer awareness with the WaterSense logo, therefore, we think that the logo be added to the existing label that all ASTM F1346-91 covers already have.

Additionally, I would suggest adding the logo to the motors/drive units, and at the control switch.

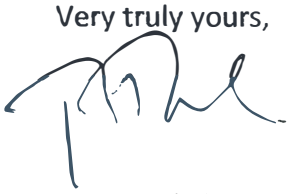
This would mean the logo would be visible on three places of the automatic pool cover.

At point of sale, we would also add to all brochures (printed and electronic), website, and social media campaigns the WaterSense logo. We would support this with a fact sheet to further educate the consumer and water districts.

Aquamatic is a family business that is now heading into our 40th year, and located in the greater San Francisco Bay Area community of Gilroy. We have just added on 10,000 sq ft, and employ just over 60 people. We have representation in every state in the union through our vast dealer network. While safety was the early driver, the pendulum has swung to consumers regarding environmental responsibility, and with the data we have, the consumer can easily realize the ROI that a covered pool has versus and uncovered pool. This is what is now driving sales and where we see the most growth, based on our direct feedback from consumers, and dealers alike, from not only our domestic market, but worldwide as well.

I personally have gotten to know and work with many of your fine staff and the EPA, and would like to thank you and your team for your/their time and resources as we push to achieve a goal that is so very significant.

Very truly yours,



Tom Dankel VP

Aquamatic Cover Systems

**Commenter:** Jeffrey Hughes, Mary Ann Dickinson
**Affiliation:** Alliance for Water Efficiency
**Comment Date:** March 13, 2019

***Email Text:***

Hello,

Please accept the attached as public comment on the WaterSense® *Notice of Intent to Develop a Draft Specification for Pool Covers.* Thank you for the opportunity.

Best,
~Jeffrey
==========
**Jeffrey A. Hughes**
Director of Operations
Alliance for Water Efficiency
Chicago, Illinois
AllianceforWaterEfficiency.org
FinancingSustainableWater.org
Home-Water-Works.org

2018, 2017, and 2012 EPA WaterSense
*Excellence Award Winner*
for Strategic Collaboration

*If you are interested in learning more about the Alliance, I encourage you to sign up for our email list. You will get a monthly email with efficiency news and resources, plus a series of emails that provide additional content and tell you a bit more about what being an AWE member means.*

***Email Attachment:***

See pages 12 through 14.

# Public Comment Submission on WaterSense® Notice of Intent (NOI) to Develop a Draft Specification for Pool Covers

**Commenter Name:** Mary Ann Dickinson **Commenter Affiliation:** Alliance for Water Efficiency

**Date of Comment Submission:** March 13, 2019 **Submitted via:** watersense-products@erg.com

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The Alliance for Water Efficiency (AWE) is supportive of WaterSense® seeking to increase the water efficiency of swimming pools. A WaterSense label could indeed be an important distinguishing factor when pool cover purchasing decisions are made.

While AWE supports the broader intentions of the effort, AWE is skeptical that labeling this product alone will achieve meaningful water savings. Swimming pools remind us a lot of irrigation systems in that they are frequently complex systems involving many parts, including filters, pumps, fountains, chemicals, and more. When WaterSense chose to address irrigation systems, it understood the complexity inherent in them, and paired product labeling with certification of irrigation professionals to raise the bar of knowledge and understanding in the industry.

AWE believes a similar systems approach will be required to make real progress on swimming pool water efficiency, an approach that includes maintenance professionals along with labeled products. AWE would like to see WaterSense develop a strategy to fully address swimming pool management from a water efficiency perspective, and in that approach applying the label to pool covers will be an important component.

With these general thoughts in mind, AWE offers the following specific comments.

**II. Technical Background**

AWE is not aware of any additional codes or standards or test methods relating to pool covers and water efficiency. The information that we see comes from the utility experience of managing pool cover rebate programs. The Southern Nevada Water Authority (SNWA) has managed a pool cover rebate program for a number of years, and notes that some low-cost bubble covers (which could qualify for the WaterSense label based on the data presented), have an expected life of only 2 – 3 years in the Nevada climate. Given the quantity of plastic involved with this product category, increased longevity could be a “performance” consideration for WaterSense.

AWE also recommends that manufacturers offer a 5 – 8 year (minimum) warranty for their product in order to qualify for any WaterSense label.

## III. Existing Studies on Water Efficiency of Pool Covers

AWE believes that there have been presentations on the impact of pool covers at the WaterSmart Innovations Conference and Exposition starting in 2014, mostly based on research conducted in Southern Nevada. AWE encourages WaterSense staff to go through the 2014 – 2017 conference proceedings to find these presentations, which include information on the frequency of use of pool covers and expected savings. E.g. *The Southern Nevada Water Authority's Pool Evaporation Assessment: An Assessment of Evaporative Rates from Single Family Residential Swimming Pools*, 2013 [PDF]

Beyond this research, AWE is not aware of any studies on the impact of pool covers, and believes that additional research may be warranted before a WaterSense specification is developed.

## IV. Product Market

The cost of pool covers that might qualify for the WaterSense label range from $300 - $10,000 or more. If only the most expensive covers are included in the specification, then WaterSense-labeled covers may never find their way into above-ground backyard pools – which might just be the true "underserved" segment of this market.

AWE is concerned that neither the pool cover makers nor the pool industry itself is self-aware enough to respond to a WaterSense label. Awareness about the increased importance of water efficiency in the operation and management of swimming pools is needed. This relates to the need to address pool efficiency from a systems-approach.

There is the also issue of making pools themselves "cover ready" and "cover friendly". Many pools are simply not designed with a cover in mind, and that needs to change as part of the market transformation WaterSense is working towards.

## V. Scope

AWE believes WaterSense has an acceptable definition of pool covers, and is not aware of any companion products worthy of inclusion.

## VI. Water Efficiency

AWE believes the 80% evaporation reduction is a reasonable criterion for WaterSense to adopt. The issue of water features (fountains, waterfalls, water slides, and other decorative features) that are integrated into pool systems and the surface area they represent must be considered.

## VII. Performance and Product Testing

AWE believes that safety and product longevity must be considered. ASTM F1346-91 may be a venue to incorporate this consideration.

Consideration for safety should also be made, if that is an appropriate item to include in the specification.

**VIII. Product Marking, Documentation, and Marketing**

AWE believes this product could be labeled on the packaging, on the product itself, and in promotional materials related to the product. WaterSense should have detailed information supporting the label on its own website.

**IX. Stakeholder Engagement**

To be successful, AWE believes that WaterSense needs to engage the broader swimming pool industry in the effort to develop water-efficient swimming pools. Simply labeling pool covers will not be enough.

**X. Additional Considerations for Promoting Water-Efficient Pool Design and Operation**

Swimming pools are similar to irrigation systems in that they are frequently complex systems involving many parts, including filters, pumps, fountains, chemicals, and more. When WaterSense chose to address irrigation systems it understood the complexity inherent in these systems, and paired product labeling with certification of irrigation professionals to raise the bar of knowledge and understanding in the industry.

AWE believes a similar systems approach will be required to make real progress on swimming pool water efficiency, an approach that includes maintenance professionals along with labeled products. AWE would like to see WaterSense develop a strategy to fully address swimming pool management from a water efficiency perspective, and creating a WaterSense label for pool covers will be an important component.

**XI. Final Comments**

AWE encourages WaterSense staff to speak directly with Toby Bickmore of the Southern Nevada Water Authority and Gary Tilkian of the Metropolitan Water District of Southern California about their program management experiences with pools covers and related products.

**Commenter:** Bruce Grogg, Scott Rajeski, Matt Rowe
**Affiliation:** Latham Pool Products, Inc
**Comment Date:** March 20, 2019

***Email Text:***

Please see the attached letter being submitted by the Latham team for the EPA.

Thanks

Bruce

Bruce Grogg
President
Stone Edge Surfaces
A Division of Turley International resources, LLC.
4322 South 80th Street
Mesa, AZ 85212
P: 844-786-6333 (844-STONEEDGE)
C & T: 801-891-9131
E: Bruce@stoneedgesurfaces.com


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***Email Attachment:***

See pages 16 and 17.

Date 3/15/19

As the former CEO of Pool Cover Specialists, and current Consultant for Latham Pool Products, pool water evaporation is an issue we've been continually confronted with.

On average, through evaporation, swimming pools can lose approximately ¼ to ½ inches of water each day. These numbers are variable and depend on factors such as, but not limited to, wind intensity across the surface of the water, humidity, the time of year, and sunlight. The sum of the daily loss of water to evaporation equates to an estimated 2 to 4 inches of water loss per week for average sized pools, or about 10,000 to 25,000+ gallons of lost water per year per pool. Evaporation can be so extreme in some areas that many pool owners think they have a leak and will invest in leak detection services or reach out to the pool builder, repair services, and even the manufacturer for help.

Evaporation is the source of the greatest loss of water for almost every swimming pool in the US. Luckily, there is a simple and straightforward solution. The addition of a pool cover will reduce, immediately, evaporation by 30% to 50% (as per the DOE) or up to 90% (as per the 2016 Cal Poly Study). Logically, use of the pool cover is the key component in the reduction of evaporation. The ability to easily remove and replace a cover over a pool, or the "Convenience Factor," has been shown to be a strong indicator and has been closely correlated with pool owners' utilization of a pool cover.

Understanding the consequence evaporation has on the loss of pool water begins to shed light on the gravity of the situation. Following these simple steps, pool owners can determine how significant their water loss is:

- Identify and make note of a specific location around the pool
- Measure the distance from the underside of the pool coping to the surface of the water
- Make note of the date and time the measurement was taken
- Avoid the addition of any water or use of the pool for a one-week period
- At the conclusion of the week, and at the same location as the initial measurement, measure the distance from the underside of the pool coping to the surface of the water

The results can be converted into gallons lost per week.

Employing a hypothetical situation, a 20' wide x 40' long pool, with a surface area of 800 sq. ft. (surface area is L x W) is considered. Measurements, taken from the underside of the pool coping to the water surface, were 9", the second measurement taken a week later at 11".

- Assuming the level dropped 2" (11"-9"=2") or 2/12 = .166 ft.
- VOLUME OF WATER LOST: 20' x 40' x .166' = 133.33 cubic feet
- There is 7.48 gallons of water per cu ft.

AMOUNT OF WATER LOST: 133.33 cubic feet x 7.48 gallons per cubic feet = 997.3 gallons per week

Based on studies performed by the Department of Energy and Cal Poly, given the example above, taking advantage of a pool cover could potentially save between 300 to 897 gallons of evaporated water per week. To better put these numbers in perspective, a pool cover could ultimately prevent 15,600 to 46,644 gallons of water from vaporizing into thin air each year.

Surprisingly, a significant number of automatic pool cover sales come from individuals who have existing covers for their pools. While well intentioned, the existing covers were too cumbersome and inconvenient to utilize on a regular basis. Without the level of convenience afforded by an auto cover (push-button operation that permits a pool owner to extend or retract a cover in seconds), it was just not feasible for the pool owners' other cover to be used on a daily basis as a water saving, energy saving, or life saving device. Despite wanting to be environmentally-responsible pool owners, most found that removing and replacing a manual style cover requires more than 1 person and "time" they didn't have.

Ultimately, there is simply no other way to save water on a swimming pool without installing and employing a pool cover. Manual covers will never provide the convenience of an automatic pool cover, and consequently manual covers will never be exploited to their full potential. As a result, concerning pools, when preserving water, energy, and lives are at the forefront of importance we are sincere advocates for automatic covers over manual covers (i.e., tie-down covers, solar blankets, bubble covers, etc.) receiving a WaterSence designation.

Thank you for your time and consideration in this matter.

Sincerely

| *Bruce Grogg* | *Scott Rajeski* | *Matt Rowe* |
|---|---|---|
| Bruce Grogg | Scott Rajeski | Matt Rowe |
| Consultant for: | CEO | VP, Auto Covers Operations/EHS |
| Latham Pool Products, Inc. | Latham Pool Products, Inc. | Latham Pool Products, Inc. |

**Commenter:** LaMont Drechsel
**Affiliation:** Cover-Pools Inc., A Fluidra Company
**Comment Date:** March 22, 2019

***Email Attachment:***

3/20/2019

Dear EPA WaterSense program management:

We are writing concerning the draft specification NOI released September 20th, 2018 for Pool Covers. In the NOI, EPA proposes the question about WaterSense requiring safety standards such as ASTM F1346-91 as a safety performance criteria for the specification.

As a manufacturer in the pool cover industry, who is committed to ensuring that we provide quality products for our users, as well as products that help maintain a safe, enjoyable recreational bathing environment for them, we unequivocally say “YES, safety standards should be considered when promoting a product for recreational pool use that also helps save water, like a pool cover does.”

Most localities/jurisdictions enforce installation codes which require pool covers to be certified as complying with the requirements of standards such as ASTM 1346-91. This is often enforced in order to comply with many local pool permitting and construction requirements. Local Authorities Having Jurisdiction (AHJs) generally require documented proof to demonstrate that the cover manufacturer has taken the necessary steps to ensure that their pool cover is designed, manufactured and certified as being in compliance with the applicable requirements of relevant standards, such as ASTM F1346- 91.

Generally, the AHJs and the pool construction and installation codes which they are required to enforce, are looking for layers of redundant protection for the user. A pool cover which has been certified by a Nationally Recognized Testing Laboratory (NRTL), such as Underwriters Laboratories (UL) or Intertek (ETL), as meeting the applicable requirements of the ASTM F346-91 standard, along with some other device, such as a fence to prevent unauthorized access to the swimming pool area, helps to ensure a compliant construction. This approach has been shown to be a proven method to prevent drowning and save lives. If these current requirements to comply with relevant safety standards such as ASTM F1346-91 were relaxed or removed, it would be a step backwards for the safety of the user and could contribute towards an increase in entrapment and drowning incidents, something which we all have worked very hard to decrease and eliminate.

Safety is of the upmost importance to the automatic pool cover industry and we thank you for your time and consideration.

Sincerely,

LaMont Drechsel
VP, General Manager
Cover-Pools Inc.
A Fluidra Company.

**Commenter:** Tim Fielder
**Affiliation:** Latham Pool Products, Inc
**Comment Date:** April 10, 2019

***Email Text:***

Hello

My name is Tim Fielder. I am the Product Development Manager at Plastipack Ltd. I wanted to contact in regards to your considerations to building a Swimming pool cover specification for the preservation of water resources. I noticed in the minutes of your meeting you mention a gap in your data on how to access the performance of pool covers. The pool industry has little testing, but we believe it is a useful and important education tool for pool owners. This is an area that Plastipack as a company have a wealth of experience and were wondering if our information and involvement would be a use to you in this endeavour?

First, allow me to introduce ourselves:
Plastipack Ltd are a manufacturer of energy and resource saving products. Focused on the preservation of water resources, reduction of energy and chemical consumption through sustainable solutions. Providing high quality performance materials to specialist fabricators we operate as a niche manufacturer of sustainable floating solutions for the swimming pool, industrial and agricultural markets. The company service our fabricators through the bulk supply of roll form materials to be welded and shaped into covering solutions for the end users. Supplying a global market, 90% of our materials are exported with the majority sold into mainland Europe. Plastipack devote our time to the support of a global network of niche businesses, the ongoing improvement of our products, processes and educating both fabricators and end users on the importance of persevering resources and reducing the environmental and economic impacts of their applications.

Our materials are designed to:

- Preserve vital water resources through evaporation control.
- Reduce energy and chemical consumption.
- Provide the longest possible functional life.
- Return the cost of investment in the savings provided within the lifespan of the material.
- To be recycled at the end of their useful life.

This includes products designed specifically for the pool market for:

- Providing the optimal solar heating possible.
- Inhibiting algae growth without losses to solar performance.
- Maintain a cool swimming temperature in hot areas without the use of evaporative fountains.

For the industrial/ Agricultural markets:

- Evaporation control
- Heat retention

- Heat reflection
- Water Clarification

As a global supplier we are familiar with standard requirements such as the Australian SMART water mark and have a great deal of experience testing pool cover performance to develop such materials to their full potential. This includes a $130,000 investment in the development of a bespoke swimming pool cover testing facility developed in partnership with the University of Surreys Advanced technology Institute for the evaluation of temperature, chemical, algae inhibition and of course evaporation control. The facility was designed to monitor the pool environmental and the solar and environmental conditions that impact performance. This has led to the development of covering technologies that have been recognised by the institute of physics for their performance and service they provide. I have attached some images and a case study example of our testing for your interest.

As part of our company's goal to educate pool users on the importance of preserving the resources consumed in the use and maintenance of a pool and as the leading industry innovators in energy and resource saving materials for the pool industry. We would be very interested in assisting in any way we can in the development of standards and best practices for the Water Sense goal of reducing consumption within the pool industry.

I hope this will be of interest to you and look forward to hearing from you.

Kind regards
Tim Fielder

PLASTIPACK LIMITED

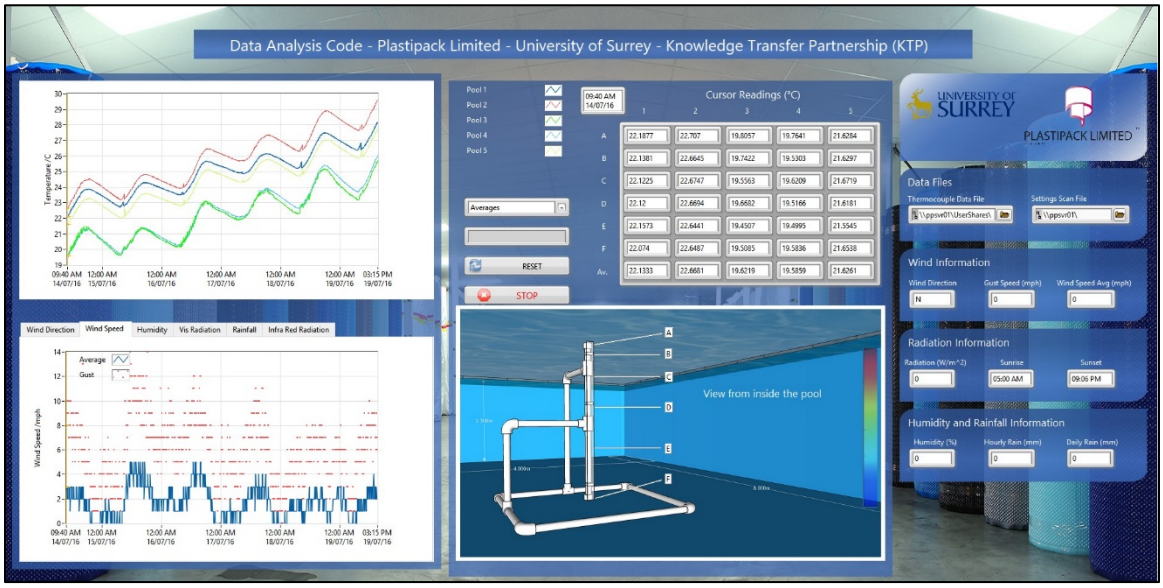
**Tim Fielder**
Product Development Manager, Plastipack Ltd
T: +44 (0) 1424 851659 | F: +44 (0) 1424 853 909 |
E: tim.fielder@plastipack.co.uk
www.plastipack.co.uk | www.geobubble.co.uk | www.vapourguard.com


***Email Attachment (Photos):***

See page 21.

***Email Attachment (Case Study):***

See pages 22 through 25.


Data Analysis Code - Plastipack Limited - University of Surrey - Knowledge Transfer Partnership (KTP)
Cursor Readings (°C)
UNIVERSITY OF SURREY
PLASTIPACK LIMITED
Data Files
Wind Information
Radiation Information
Humidity and Rainfall Information
RESET
STOP
View from inside the pool

# new EnergyGuard™



## Selective Transmission

### EnergyGuard™ Specific benefits:

- Increases water temperature by up to 7°C
- Algae growth is inhibited
- Reduces filtration times by up to 50%
- Reduces chemical consumption by up to 60%
- Reduces energy consumption by up to 60%
- Can be used as a winter cover

### General cover benefits:

- Available with GeoBubble™ technology
- Eliminates water evaporation by 98% +
- Reduces debris contamination
- Saves money and shrinks your carbon footprint
- 6 year pro rata manufacturer's warranty

The new EnergyGuard™ selective transmission patent applied for* swimming pool material presents the highest possible savings in respect of reduced maintenance costs and offers solar gains without the threat of algae, all from a single pool cover, making it the most advanced and blanket/cover yet.

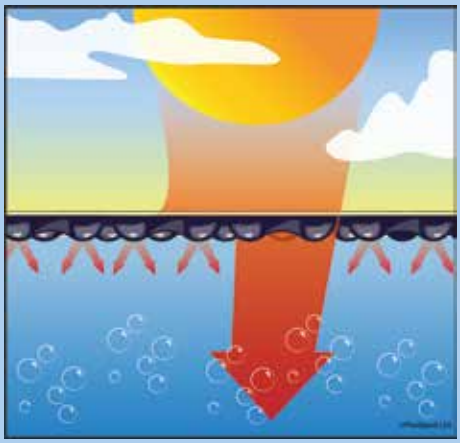
Swimming pool cover materials can be traditionally divided into three categories, each with different solar performance and benefits:

- Opaque materials absorb solar energy, blocking out light inhibiting algae growth and transferring this energy into the top surface of the pool water where it heats the water through conduction.

- High transmission materials allow the maximum amount of the sun's energy to penetrate, directly heating the water itself.

- Reflective materials redirect solar radiation away from the water to produce a cooling effect.

The midnight-blue colour of the New EnergyGuard™ selective transmission material absorbs the wavelengths that ordinarily promote algae's photosynthesis, instead converting these wavelengths into heat through conduction. The cover also directly transmits other wavelengths into the pool water where they heat the water directly. This means that all available wavelengths of solar energy are efficiently harnessed to heat the pool while keeping the pool algae free at the same time. This remarkable technical innovation creates a high performance material capable of raising water temperatures naturally by up to 5˚C in the UK and an estimated 7˚C in warmer climates, reducing both chemical consumption by 60% and energy consumption by 60%, all in an algae-free environment. As such, the new EnergyGuard™ selective transmission material marks a significant breakthrough and a new era in thermal pool covers / solar blankets.

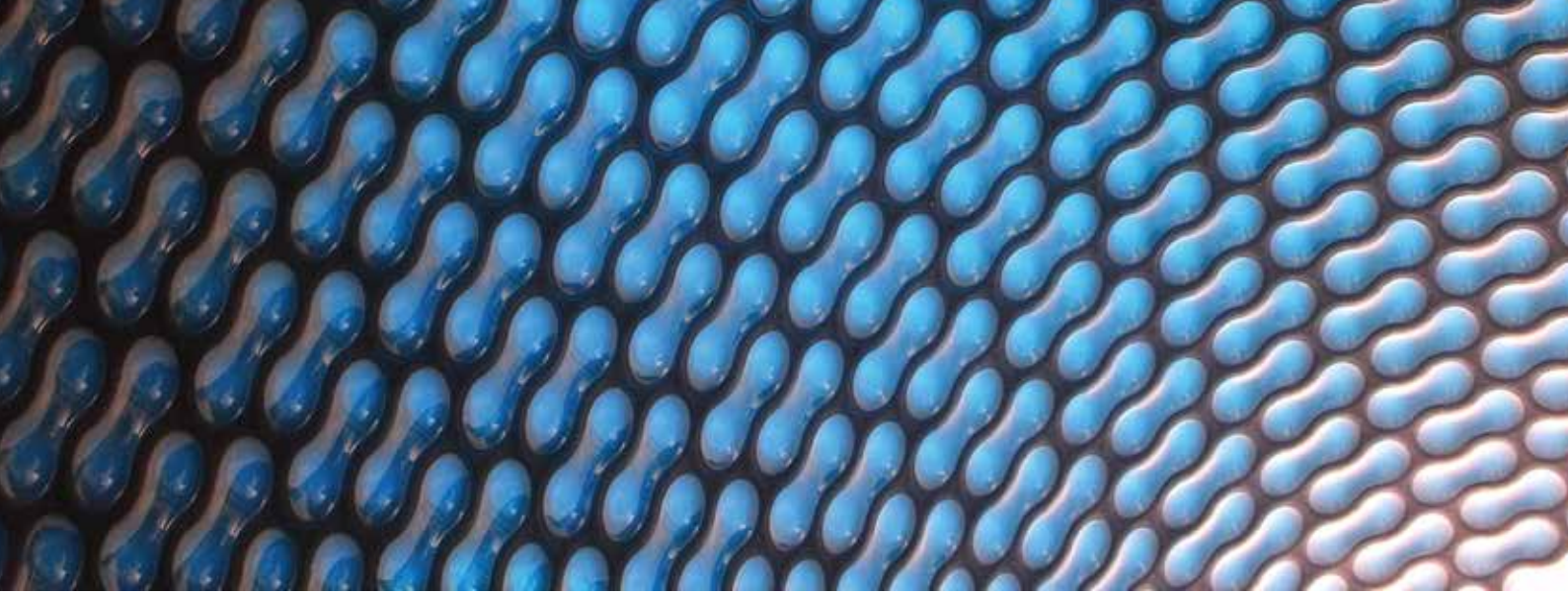


What is GeoBubble™ technology?

The GeoBubble™ material has a geometric bubble shape developed specifically for swimming pool covers, increasing the material's longevity and boosting overall performance.
Traditional bubble designs exhibit excessive thinning at the corners resulting in a far more vulnerable mateiral susceptible to premature degradation.
The smoother shape of the patented* GeoBubble™ technology eliminates these weak points with a material 50% thicker at its thinnest point than those using the traditional bubble designs. With the inclusion of a larger air cell profile and addition of a structural arch to withstand air expansion and prevent bubble collapse, combined with Plastipack's UV anti-oxidising additive packages, the material's lifespan has been increased by over 25%

*Patent applied for No: GB1509903.9

*Patent No: PCT/2010/001851



In July 2013, a pool covered with the new EnergyGuard™ selective transmission material was compared simultaneously with:

1. an uncovered control pool
2. a pool covered with Plastipack's high transmission Sol+Guard™ material
3. a pool covered with the previous iteration of the opaque high absorption EnergyGuard™ swimming pool cover material.

The four test pools were unheated outdoor pools, all 3.66m in diameter with a water depth of 0.565m, situated in the South East of the United Kingdom.

## Temperature gain

The purpose of the test was to record temperature variances in each pool, from the build-up to the point at which the temperature differences were constant. Figure 1 below represents a day to night reading at the midpoint of testing.

Figure 1 shows that the new EnergyGuard™ selective transmission cover had a dramatically increased heating performance compared to the test pool covered with the previous iteration of the EnergyGuard™ material. These increase of heating efficiency reaches levels close to that of the high transmission Sol+Guard™ material, a translucent material designed for maximum heat gain.

The new EnergyGuard™ increased performance can be explained by the selective transmission properties of the material filtering light to heat the water. By absorbing the wavelengths responsible for photosynthesis, both the new and previous iteration of the EnergyGuard™ material pass the associated heat to the rest of the pool. However the new EnergyGuard™ material has the further ability to transmit infrared wavelengths non-essential to photosynthesis and very efficiently absorbed by the water to contribute to a direct heat gain.

**Figure 1. Average pool temperatures 09/07/2013 to 10/07/2013**

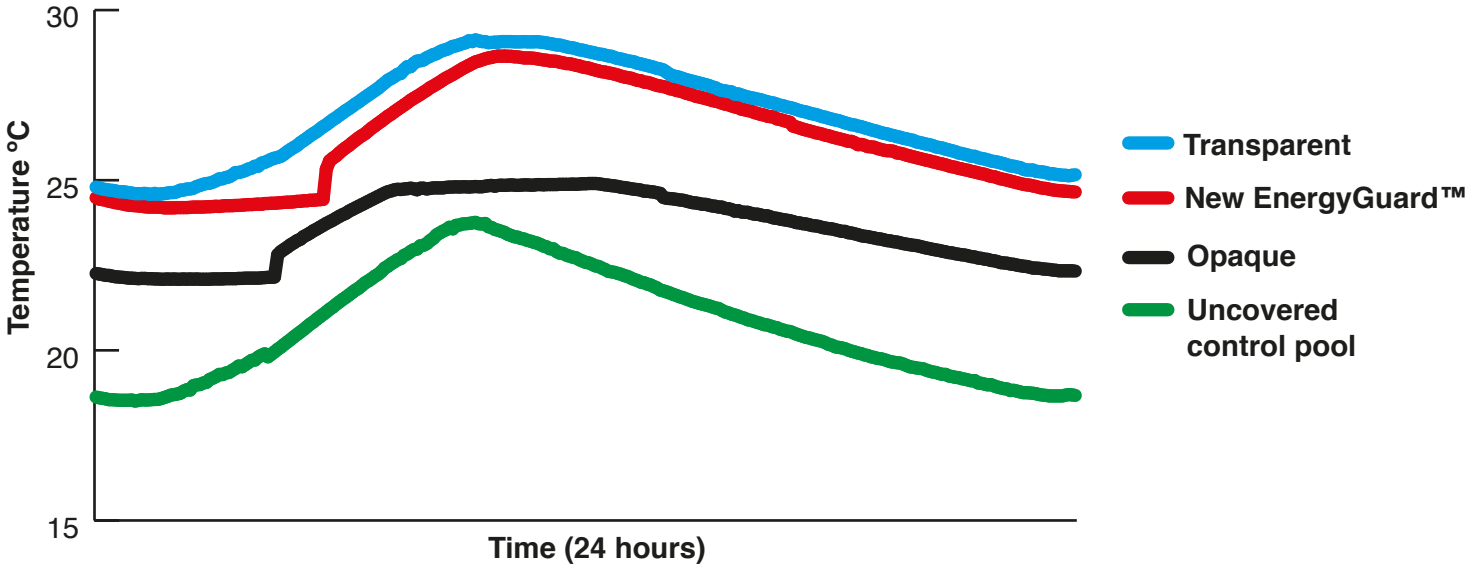
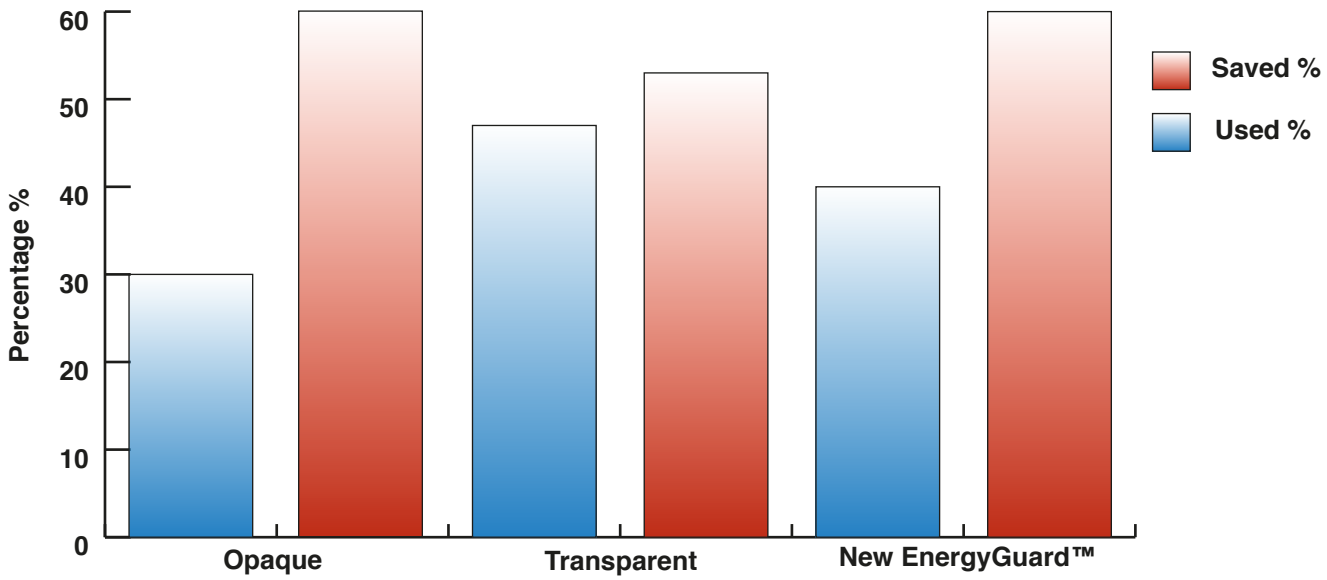


**Figure 2: Chemical usage compared as a percentage to an uncovered pool**




## Chlorine consumption

Using the same four test pools described above, chlorine consumption tests were also conducted, taking daily water samples and adjusting chlorine balance to within industry standards i.e. between 2-4 parts per million (ppm) of free chlorine. The chemical consumption was monitored by the number of grams of chlorine each individual pool required to remain within the required range.

Figure 2 shows the chlorine consumption savings compared to the uncovered pool. All covers allow for at least 50% saving on chlorine consumption.

The test pool covered with the new EnergyGuard™ selective transmission material demonstrates a chemical saving of nearly 60% slightly lower than the previous iteration of the opaque high absorption EnergyGuard™ material, but still clearly outperforming the high transmission Sol+Guard™ material.

The difference observed between the Sol+Guard™ material and the new EnergyGuard™ selective transmission material can be explained by the latter's ability to inhibit biological growth by absorbing the wavelengths responsible for photosynthesis, whereas the reduction in chemical savings seen from the previous iteration of the EnergyGuard™ is most likely the result of the higher temperature that increases the chlorine's photolysis kinetics.

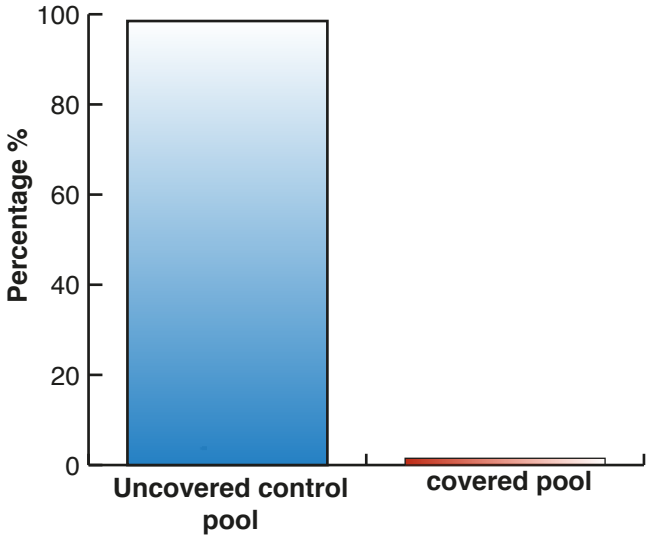
## Evaporation prevention

To test a pool cover's ability to curb evaporation, Plastipack conducted tests using two unheated outdoor tanks each measuring 1 x 1.5 x 0.435m. One tank was covered, the other left uncovered. This test was done in July 2009 in the South East of the United Kingdom.

The covered tank showed a 98% reduction in water losses. This equates to a saving of approximately 32,000 litres per year for an average sized pool of 4m x 8m. This saving would be considerably higher in hotter climates and in areas subject to high winds.

A swimming pool cover or solar blanket eliminates almost all water evaporation, saving water resources and enabling a more sustainable pool with a lighter water footprint. Without the natural cooling effect that occurs when water is converted to vapour and released into the atmosphere, higher and more stable water temperatures are achieved.

**Figure 3. Evaporative water losses**

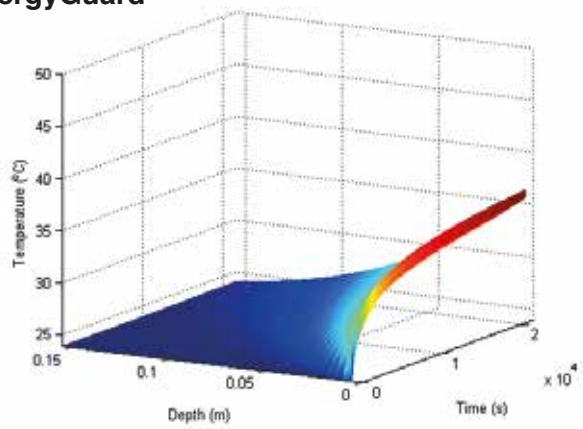


## Laboratory testing and development

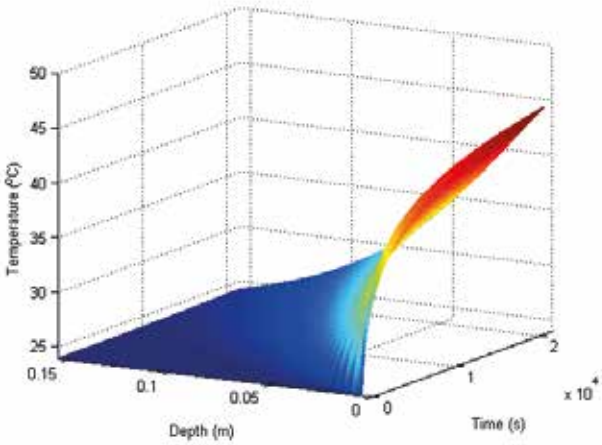
Plastipack produced sample films with different pigments, exhibiting unique optical properties absorbing the light required for photosynthesis but transmitting the wavelengths key to heating water. The heating potential of the covers were then investigated through FEA (finite element analysis) as shown in figure 4, laboratory experiments using a solar simulator and product field testing as shown on figure 1.

**Figure 4. Finite element anaylsis of swimming pool cover material**

**Old EnergyGuard™**




**New EnergyGuard™ Selective Transmission**




## Algae inhibition

Plastipack tested the films on their ability to inhibit algae growth. Beakers containing gelatine balls of algae (Chlorophyta Scenedesmus Quadruicauda) were covered with the sample materials and exposed to a controlled light source. The algae's respiration was then monitored by analysing the pH of the water in which they were suspended.
The material's ability to inhibit algae growth was later confirmed at field test facility where the controls were repeated and the water was tested in a natural environment during the UK's spring season.

**Increases pool temperatures**

**Inhibits algae growth**

**Retains heat**

**Prevents evaporation**

**Commenter:** Doug Bennett
**Affiliation:** Southern Nevada Water Authority (SNWA)
**Comment Date:** April 18, 2019

***Email Text:***

Dear WaterSense,

On behalf of the Southern Nevada Water Authority (SNWA) and our member agencies, we would like to submit comment on the Notice of Intent to label pool covers. SNWA is the regional wholesaler to the Las Vegas, Nevada metropolitan region. Our member agencies serve approximately 2.3 million people.

The SNWA has offered a rebate on swimming pool covers since 2005. During that period, we have incentivized purchase of more than 44,000 products and issued more than $2 million in rebates.

The research cited in the NOI, as well as research conducted by SNWA have demonstrated meaningful savings in both water and energy for this class of products. At this time, SNWA does not require pool covers to meet specific technical thresholds. For example, there are no requirements for UV resistance, chemical resistance, material thickness, or other characteristics that may influence the durability and longevity of the cover. The program design, however, has an expectation that the product should last approximately three years. We suspect consumers also have limited knowledge to allow them to determine the quality, effectiveness and longevity of various pool covers.

Whereas longevity of the product is a major consideration in its ability to conserve water, we believe this criterion must be included in any labeling scheme. Some rebate recipients report their product has functionally failed after a single season, while other consumers can manager to keep a floating cover for up to three seasons.

We believe this class of products is appropriate for WaterSense labeling and encourage the development of minimum standards.

Sincerely,

Doug Bennett
Conservation Manager
Southern Nevada Water Authority

702-862-3777

**Commenter:** Regan Ratliff
**Affiliation:** Pool & Hot Tub Alliance
**Comment Date:** April 29, 2019

***Email Text:***

Good morning,

I would like to submit the attached comment in regards to the EPA WaterSense NOI.

Please reach out with any questions or concerns.

Thank you,

Regan Ratliff
Government Relations Associate
rratliff@phta.org | 703.838.0083 ext. 165
www.APSP.org

**Pool & Hot Tub Alliance**
2111 Eisenhower Ave., Ste. 500 Alexandria, VA 22314
4775 Granby Circle Colorado Springs, CO 80919

*Formerly The Association of Pool & Spa Professionals/National Swimming Pool Foundation*

***Email Attachment:***

See pages 28 through 30.

POOL & HOT TUB ALLIANCE
2111 Eisenhower Ave., Ste 500
Alexandria, VA 22314

April 29, 2019

Submitted Via Email To: Tanner.Stephanie@epa.gov

Stephanie Tanner, CEM, LEED, AP BD+C
Lead Engineer
WaterSense Program
Environmental Protection Agency
Washington, DC

**Re: WaterSense NOI to Develop a Draft Specification for Pool Covers**

Dear Ms. Tanner,

On behalf of the Pool and Hot Tub Alliance (PHTA), formerly the Association of Pool and Spa Professionals (APSP) and the National Swimming Pool Foundation (NSPF), we would like to submit the following public comment in response to the EPA WaterSense Notice of Intent published on September 20, 2018.

PHTA strongly supports a WaterSense specification for automatic pool covers that meet the ASTM F1346-91 *Standard Performance Specification for Safety Covers and Labeling Requirements for All Covers for Swimming Pools, Spas and Hot Tubs*.

In 2012 the PHTA partnered with the International Code Council (ICC) to create the first ever national code for swimming pools and spas, the International Swimming Pool and Spa Code (ISPSC). The ISPSC is a comprehensive pool and spa code that is the only code to address all aspects of pool & spa design and construction addressing quality, safety and energy and conservation. The ISPSC has been developed and is updated under the rigorous ICC government consensus process; to date the ISPSC has been adopted in 20 states and over 170 local jurisdictions (see Addendum A).

Through the adoption of the ISPSC, states and localities require standards for pool barrier safety (Section 305). Section 305.1 of the ISPSC provides for ASTM F1346-91 pool safety covers as a means of meeting barrier protection provisions. ASTM certified covers are required to have a locking mechanism (key or key pad), which prevents unauthorized entry into the pool. Leaving aside the dramatic water and energy savings for a moment; having a pool cover, which meets ASTM standards, should be promoted as a Federal priority to all current and future home owners.

The ISPSC also touches on energy conservation requirements; this includes section 303.1.3, which requires a pool or spa vapor retardant cover be provided if certain types of pool or spa

heating are installed. This is required to control and reduce energy consumption, but an additional benefit is minimizing water evaporation loss. However, whereas the pool barrier requirements are more permanent and require a final inspection to ensure they are in place, the vapor retardant requirement is much more difficult to enforce. By creating a WaterSense specification for automatic pool covers there is more incentive for the consumer to use them as a means for energy conservation and safety.

As stated in Energy Saver, a Department of Energy consumer resource on saving energy and using renewable energy technologies at home, pool covers minimize evaporation from both indoor and outdoor pools and conserve water by reducing the amount of make-up water needed by 30-50%.

We understand that if certain pool covers receive the WaterSense moniker, this will improve consumer awareness regarding the energy and water saving capabilities of this technology. Understanding that drowning prevention is not part of the WaterSense mandate, we would still argue that consumers should be encouraged to only consider technologies that save water, energy, and perhaps the most precious resource, human life.

As outlined in this letter and on behalf of the many pool and spa professionals represented by PHTA, we thank the WaterSense Program for the consideration of developing a WaterSense specification for automatic pool covers.

Sincerely,

Jennifer Hatfield
PHTA Government Affairs Director
jhatfield@phta.org

**About Us**

The Pool & Hot Tub Alliance was formed in 2019, combining the Association of Pool & Spa Professionals (APSP) and the National Swimming Pool Foundation (NSPF). With the mission to "Celebrate the Water," PHTA facilitates the expansion of swimming, water safety and related research and outreach activities aimed at introducing more people to swimming, making swimming environments safer and keeping pools open to serve communities.

APSP, now the PHTA, is the world's oldest and largest association representing swimming pool, hot tub, and spa manufacturers, distributors, manufacturers' agents, designers, builders, installers, suppliers, retailers, and service professionals. Dedicated to the growth and development of its members' businesses and to promoting the enjoyment and safety of pools

and spas, PHTA offers a range of services, from professional development to advancing key legislation and regulation at the federal and local levels, to consumer outreach and public safety. PHTA is the only industry organization recognized by the American National Standards Institute to develop and promote national standards for pools, hot tubs, and spas.

PHTA is also the co-developer, along with the International Code Council (ICC), of the International Swimming Pool and Spa Code (ISPSC) which has been adopted in all or parts of over 20 states.  PHTA is also represented on and participates in various other standards-making organizations promulgating standards including the ICC, International Association of Plumbing and Mechanical Officials (IAPMO), American Society of Testing and Materials (ASTM F1346-91), and the National Electrical Code®. In addition, the PHTA provides educational programs and monitors the accredited continuing education requirements for various licensing programs for aquatics professionals. For more information, visit APSP.org or NSFP.org.

**Commenter:** Mark Smith
**Affiliation:** Latham Pool Products, Inc.
**Comment Date:** April 30, 2019

***Email Text:***

You would think that as an employee of a pool cover company, I'm always trying to sell pool covers. And you would be right. But the true test is that I recommend to my family and friends who are thinking about building a pool to always include an automatic pool cover. The first reason is the level of safety they provide, especially when they have young children. But a very close second is the savings on water and chemicals. It's very common after working with a new autocover dealer to get stories about how surprising those savings are, and what a great deal it is for the pool owners. I hope that with a Water Sense designation, it will help more dealers, pool builders, and home owners adopt automatic pool covers. Not only will it keep families safe, it will help keep our limited resources secure, and allow those families to enjoy a great recreation choice in an environmentally responsible way.

Mark Smith
Product Manager – Automatic Safety Covers
801-373-4777 EXT 6173
Fax# 801-772-2300

**Commenter:** Rob Viergutz
**Affiliation:** Coverstar Central
**Comment Date:** May 1, 2019

***Email Text:***

Good morning. I wanted to say that the water savings of an automatic cover is very very important to our green efforts.

I have been selling, installing, and training with people for 30 years. When a cover is closed across the pool, there is almost no evaporation.
Working on an indoor pool in the winter was a big surprise.
When the pool was open the steam was so thick you can't see a person standing on the other end of a 75' pool. Once the cover was closed, it only took about 40 seconds for the air to clear. That's when I realized how much the cover helped.

The southwest has water problems now. Using an automatic pool cover can only help.
Just wanted to put in my two cents.

**Commenter:** John St. Clair, Jr.
**Affiliation:** Coverstar Central
**Comment Date:** May 3, 2019

***Email Text:***

I wanted to provide supporting feedback to you on how much we value our automatic pool cover. While I am involved in the swimming pool industry, I would like to share my personal experience with the automatic pool cover on our pool. Using our cover, has saved us thousands of dollars over the years we have owned our pool. We've seen savings from reduced water evaporation, which in turn has reduce the loss of heat & chemicals from our pool. Due to ease of use, our automatic cover was the best option for us. While it can be an expensive option initially, based on use of the pool cover over time, it really has save water, time which over time has saved us money.

Bottom line we love our automatic pool cover!

Thanks,

John St. Clair, Jr

**Commenter:** Margaret Riggs
**Affiliation:** Aquality Construction
**Comment Date:** May 8, 2019

***Email Text:***

As a swimming pool construction company in a cold weather climate, a pool cover is an essential component to our pool projects. The City of Boulder, CO as well as Boulder County requires covers on all pools. Reasons include energy savings primarily the water and chemical savings but also the safety features of an automatic pool cover. Almost all residential swimming pools that Aquality Construction designs and builds will have an automatic cover.

Sincerely

Margaret Riggs
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Broomfield, CO 80020
303-469-2229 Fax 303-469-2221
www.aqualityconstruction.com