



# Newsline

1298 Cronson Blvd. • Suite 201 • Crofton, MD 21114 • (800) 607-3772 • [www.epsindustry.org](http://www.epsindustry.org) • [info@epsindustry.org](mailto:info@epsindustry.org)

## Innovation in Action – Recycled Content EPS Resin

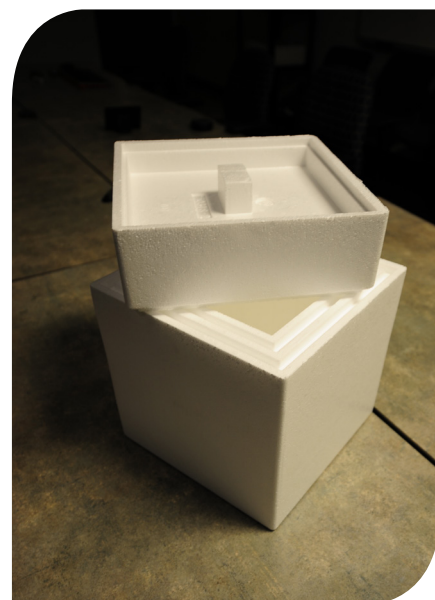
The EPA estimates that in most parts of the developed world, packaging constitutes as much as one-third of the non-industrial solid waste stream. Packaging plays a critical role in protecting products, but as the sustainable packaging movement has matured there has been growing concern about the environmental impacts of the resources used to make packaging and its contribution to waste. Delivering sustainable packaging is now an integral part of today's global competitive market. Packaging producers are undertaking ambitious initiatives to incorporate recycled content without sacrificing strength, durability and performance.

Expanded polystyrene (EPS) foam packaging is an engineered solution that solves many packaging transport, safety and protection problems. In order to appreciate real world recycled content limitations in expanded bead foam materials it is important to understand the supply chains and product manufacturing methods. Because protective packaging manufacturers don't melt the plastic beads, they can only incorporate recycled in two ways: (1) blend in used EPS; or (2) purchase resin that already contains recycled content.

Until recently recycled content EPS resin was not widely incorporated into packaging applications due to manufacturing and performance limitations. The challenge to blend recycled resin with the right ratio of virgin resin in order to produce high quality foam packaging with exacting performance has been elusive. But a new recycled content resin is revolutionizing the foam packaging industry.

NOVA Chemicals worked with RAPAC, a leader in North American foam recycling, to develop a 25% recycled content resin for EPS protective packaging and other shape molding applications. R625B Expandable Polystyrene (EPS) Shape Molding Resin is helping molders and brand owners achieve their sustainability goals without compromising standards for high performance packaging materials.

Twenty five percent of the R625B feedstock is EcoSix™, a 100% recycled polystyrene resin from RAPAC, a RING Company based in Oakland, Tennessee. RAPAC is the largest recycler of EPS in the United States, keeping millions of pounds of packaging material from entering landfills. This reclaimed material is the foundation of RAPAC's EcoSix™ resins. There are two key factors that distinguish EcoSix™ molding bead: performance and certified recycled content. The RAPAC EcoSix™ resin is certified to have 100% recycled content by Scientific Certification Systems and meets the FTC and EPA guidelines for recycled content. NOVA Chemicals is ISO-9001 certified and produces R625B to those standards.



KAB PROMOTES  
RECYCLING  
BEHAVIOR

3



A CLOSER LOOK  
AT COLD CHAIN  
PACKAGING

5



EPS SOLUTIONS  
FOR CONTINUOUS  
INSULATION

8



TECH TALK:  
ICC CODE  
DEVELOPMENTS

9

**Recycling gives everybody a sense of wellness. To help everyone do their part, the EPS Industry Alliance is now on [f FACEBOOK](#) and [t TWITTER](#). We will post information on new recycling centers and events and creative, offbeat solid waste solutions for EPS foam.**

*continued from page 1*

RAPAC collects and processes polystyrene (PS) beads ready for pentane impregnation by NOVA Chemicals. According to NOVA, its unique resin manufacturing allows the RAPAC recycled resin and the NOVA virgin PS resin to be homogenized in the reactor prior to adding pentane, creating a highly consistent R625B resin.

The R625B EPS shape molding resin is processed similar to virgin EPS resin and requires no additional equipment for EPS manufacturers. NOVA's R625B EPS boasts a low VOC content of around 4%, minimum foam density of 1.2 pcf, fast molding cycles and excellent fusion and part strength. It can be used for the same applications as a virgin EPS resin; its quality and consistency are similar to its virgin counterparts and surpass that of other EPS resins with recycled content. Applications include general-purpose packaging, coolers, wine-packs, medical/pharmaceutical shippers and custom-shape molding.

"We are excited to deliver a consistent, high-quality, next generation EPS resin with recycled content to North American shape molders. R625B is a resin that conserves natural resources and is expected to spur market development of EPS recycling," said John Thayer, Global Business Director of the EPS Business at NOVA Chemicals.

Like other plastics recycling, the key to successful EPS recycling is obtaining sufficient quantities of clean material. Generally, consumer drop off programs are not able to generate adequate quantities, or quality, to support large-scale collection and reliable market demand. Because EPS packaging represents such a small portion of the residential solid waste stream, community-based recycling programs are not likely to add EPS to their list of materials for collection.

Still, the EPS industry has achieved an average post-consumer recycling rate of 14% and average post industrial recycling rate of 25% for the past twenty five years, one of the highest among all plastics. The [2012 EPS Recycling Rate Report](#) shows nearly 94 million pounds of EPS was recycled. This level of recycling is extraordinary given that virtually no community-based recycling programs collect EPS from consumers for recycling.

NOVA's R625B increases the availability of recycled content EPS for protective packaging while creating a demand for consumers and businesses to recycle more EPS. This 'cradle-to-cradle' product optimizes resources and addresses sustainability concerns with a practical eye toward waste elimination, reducing environmental impacts and increasing value from waste. All while bolstering packaging's primary role - to protect the product. ■

### R625B Expandable Polystyrene (EPS) Shape Molding Resin

#### APPLICATIONS

- General Purpose Packaging
- Coolers & Wine Racks
- Medical/Pharmaceutical Shippers
- Custom Shape Molding

#### PERFORMANCE CHARACTERISTICS

- Minimum Density of 1/2 pcf
- 25% Recycled PS Resins
- Low Pentane
- Fast Molding Cycles
- Excellent Fusion/Part Strength

## NOVA Supports Community Recycling

Last year NOVA Chemicals in Monaca, Pennsylvania introduced a program for its employees to recycle their EPS foam. The initiative was so successful it spurred NOVA to take their recycling efforts further by partnering with the Pennsylvania Resources Council (PRC) to collect EPS for recycling free of charge at 2013 PRC events.

Several "Hard-to-Recycle" events were held throughout western Pennsylvania that enabled hundreds of individuals to drop off unwanted EPS foam for recycling. The foam collected at the PRC events is recycled into a variety of products, including coat hangers, insulation, decorative moldings and picture frames.

The summer recycling event attracted over 350 participants and collected approximately 1,300 cubic yards of polystyrene. Details on future EPS collection events can be found on the PRC website at [www.prc.org](http://www.prc.org). ■



# KAB Promotes Recycling Behavior



The average American produces 4.4 pounds of trash a day, and on the whole the United States produces more than 250 million tons of trash a year. However, only about 35 percent is currently recycled, according to the Environmental Protection Agency (EPA). To address this national issue, the [Ad Council](#) and [Keep America Beautiful](#) (KAB) launched a new public service advertising (PSA) campaign designed to raise awareness about the benefits of recycling with the goal to make recycling a daily social norm.

More than 40 years after the iconic “crying Indian” advertising campaign, *I Want to Be Recycled*, is aiming to motivate Americans to recycle more every day. In keeping with KAB’s mission to ‘engage individuals to take greater responsibility for improving their community’s environment’, the new campaign encourages consumers to do their part to make recycling successful. *I Want to Be Recycled* features a complimentary website that provides a localized search tool for users to find information on recycling in their area as well as other environmental resources. It aims to generate awareness, mobilize individual ownership and explain how and where consumers can recycle. In conjunction with the campaign launch, KAB featured an [educational webinar](#) on promoting recycling behavior.

In addition to unveiling the new campaign, the Ad Council released the results of a survey that shows only 52 percent of Americans say that they are “very” or “extremely” knowledgeable about how to properly recycle. And that only 38 percent say they are “avid recyclers,” recycling as much as possible and willing to go out of their way to do so. “Based on survey feedback, we know people want to recycle. This campaign is designed to tap into that desire as well as provide helpful tools to make recycling easier.” said Brenda Pulley, Keep America Beautiful senior vice president, recycling.

Founded by a group of corporate and civic leaders in 1953, KAB was a revolutionary idea - bringing the public and private sectors together to develop and promote a national cleanliness ethic. With a network of more than 1,200 affiliate

## ASTM Rennovates the Resin Identification Code

The chasing arrows found on plastic containers, formally known as the Resin Identification Code (RIC), are a universal symbol for recycling. It is a common misperception that all packages stamped with the symbol are recyclable, however, the RIC was originally developed and continues to be solely dedicated to identifying resin content, rather than a product’s recyclability. For many consumers, the chasing arrows symbol denotes recyclability, which, in some cases, is not true, depending on the resin and any given community’s recycling collection program.

Originally developed by the Society of the Plastics Industry, the RIC system was handed over to ASTM International in 2008. In response to a strong plea from municipal recyclers and other recycling organizations that interact with the general public, the ASTM International Subcommittee D20.95 on Recycled Plastics (part of Committee D20 on Plastics) developed a new RIC via ASTM D7611, Standard Practice for Coding Plastic Manufactured Articles for Resin Identification.



The new RICs are surrounded by an equilateral triangle instead of the chasing arrows. ASTM D7611 will help eliminate consumer confusion and highlight the need for further education about what is and what isn’t recyclable, which is largely dictated by local waste haulers. By implementing this new symbol, D7611 aims to bring focus back to the system’s core mission: resin identification and quality control prior to recycling.

There will be a transitional period in switching to the triangle; the new symbol is only required on new items. Molds already in place won’t have to be changed right now. The current ASTM D7611 gives codes for the six most commonly found resin types: 1) PET, which it identifies as “PETE”; 2) high density polyethylene (HDPE); 3) PVC (V); 4) low density PE (LDPE); 5) polypropylene (PP); 6) polystyrene (PS). All other resins, including materials made with more than one type of resin from categories 1-6, are marked with a No. 7. ■



Litter is a serious and expensive environmental problem – it lowers property values, it is costly to clean, it endangers water quality and affects the quality of life for humans and wildlife. It also wastes valuable resources that could be put to better use through established waste management programs. Litter cleanup costs the U.S. almost \$11.5 billion each year, with businesses paying \$9.1 billion. Governments, schools and other organizations pick up the remainder.

and participating organizations including state recycling organizations, KAB works with millions of volunteers to take action in their communities through programs that deliver sustainable impact.

KAB offers solutions and resources for environmental program management that focus on problem solving ideas and realistic goals for communities. With a firm philosophy that *education is the starting point for sustainable environmental behaviors*, Keep America Beautiful reached more than 2.1 million youth in 2011-12 through either a KAB formal classroom or informal educational presentation or project.

KAB's educational resources provide activities and tools to teach the fundamentals of litter prevention, preserving our resources, responsible solid waste management and how to reduce, reuse and recycle. Many KAB educational programs are sponsored by leading corporations, such as Pepsi, Citigroup and Nestle, and are developed with the help of other national organizations and federal agencies. All educational materials are designed to be locally adaptable to meet the needs of individual communities.

The *Waste in Place* resource guide recently underwent a two-year renovation process with the support from the William Wrigley Jr. Company Foundation. It includes over 100 activities for pre-K to sixth-grade students and was field tested by over



300 educators. *Waste in Place* is used nationwide by thousands of teachers to influence positive behavior, to foster social responsibility and respect for the environment and to enrich their students' learning experiences.

KAB also sponsors the [America Recycles Day](#) initiative, the only nationally-recognized, community-driven event dedicated to promoting and celebrating recycling in the United States. On (and around) November 15 each year, thousands of organizations hold events to educate people about recycling and encourage recycling at home, at school, in the office and in the community. As the national steward of America Recycles Day, Keep America Beautiful provides this vast network of volunteer organizers in every state with resources and promotional materials to support their local America. [Click here](#) to find an America Recycles Day event in your community.

#### Other KAB resources include:

- [The Great American Cleanup](#) annual report features a colorful overview of the broad scope of the nation's largest community improvement program.
- To assist affiliates in their community outreach, KAB developed six distinct [Litter Fact Sheets](#) covering littering behavior, costs of litter, general litter overview, sources of litter, cigarette butt litter and pedestrian area litter.
- [Litter research](#) with findings and recommendations concerning litter quantities, statistics, costs and behaviors.
- [Resources for Businesses and Organizations to Encourage Recycling in the Workplace.](#)

For information on Keep America Beautiful programs and resources [click here](#).





# A Closer Look at Cold Chain Packaging



Of all of the ways expanded polystyrene protects valuable resources, cold chain packaging really stands out. It is synonymous with added value and exceptional performance, particularly with products which are very sensitive to changes in temperature. EPS is an ingenious solution thanks to its two intrinsic properties – insulation performance and shock resistance.

Today's demanding global commodity chains hinge on exact timing and coordination. Compounding this challenge is the fast-paced, short-lived perishable supply chains in which products can flow from source to customers within a matter of weeks, days and sometimes hours. To ensure that cargo does not become damaged or compromised throughout this process, the pharmaceutical, medical, agricultural and fishery industries rely on cold chain technology.

Not all cold chains are created equal – some are longer, more rigorous and more time consuming from end to end. Land, sea and air modes all have different structures for keeping perishable products fresh throughout the transport chain. Certain supply chains may only require one transportation mode, but many times ground shipments are one link in a combination of transport modes. Cold chain concerns include:

- Destination of the shipment and the weather conditions for those regions (especially extreme cold or heat);
- Reliability of refrigeration equipment in the storage areas, transport vehicles and at the point of sale;
- Care and skill of individuals handling the packaging.

Cold chain technology demands packaging that provides the stable and reliable insulation necessary for products where an increase in temperature would be detrimental to their quality and safety. In addition to thermal impacts, sensitive food and life science products must be protected from physical impacts during transit and storage to protect their integrity.

## Pharmaceutical & Life Sciences Distribution

According to the [Global Healthcare Cold Chain Logistics Market Report & Forecast \(2012-2017\)](#) the demand for cold chain in the pharmaceutical and life science industry is experiencing explosive growth - the size of the healthcare cold chain market is expected to expand from its current figures of \$6.7 billion to nearly \$10.7 billion by 2017. Improper packaging failures involving products ranging from flu vaccines to topical creams resulted in a staggering financial loss of \$1.5 million in 2012. The environmental loss is also staggering; wasted manufacturing, products and transportation does more harm to the environment than any negative impact of the packaging system itself.

Of the close to 200 billion dollars in pharmaceutical distribution, about 10% are drugs that are temperature sensitive. Within the pharmaceutical industry testing, production and movement of drugs relies heavily on controlled and uncompromised transfer of shipments. If these shipments should experience any unanticipated exposure to variant temperature levels, their safety, efficacy and quality are impacted.



continued from page 5

EPS packaging is the gold standard for pharmaceutical and life science products; it maintains product safety, security and temperature throughout the cold chain. For pharmaceutical leaders such as Merck, Wyeth and Abbott patient safety is paramount which is why they rely on EPS packaging to deliver life saving medicine and vaccines around the world.

### Fresh Food Distribution

Food waste is often considered environmentally benign because it is 'biodegradable' but consider this: globally, about a third of the food produced for human consumption goes to waste — which means that a third of the water, land use, energy and financial resources that went into producing it are also squandered. For perspective, over



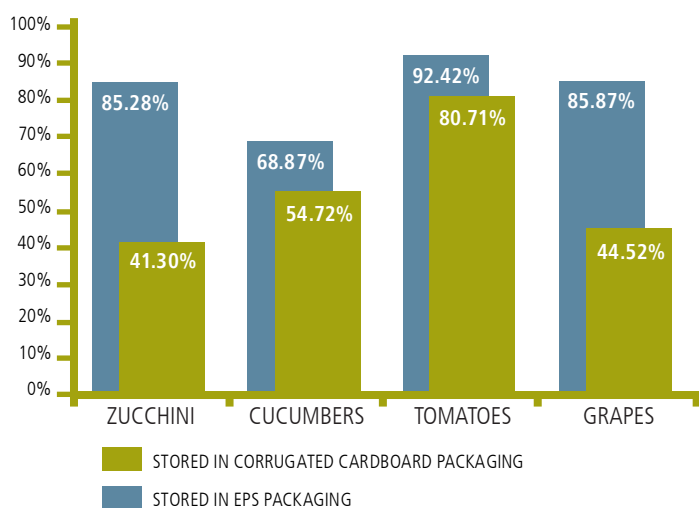
When the lobster industry in Portland, Maine was challenged with a potential ban on foam containers, representatives turned out in force at City Council Hearing to expound on the benefits of EPS and state, "There is no substitute for fresh lobster distribution – the industry can't use anything else." In addition to local seafood markets, the Maine lobster industry provides the global market with more than 90 million pounds of fresh catch per year.

Fresh lobsters are unloaded from the boat into EPS containers specifically designed for live lobster distribution and immediately shipped via air to destinations around the world. Once packed, the interior of the box stays cool for about 36 hours. EPS prevents crushing during shipment and provides essential quality control for the multi-million dollar lobster industry which prides itself on delivering quality and freshness.

100 billion pounds of food, or more than a quarter of the 400 billion pounds of edible food, is spoiled each year during transport. When it comes to protecting food, the right package can dramatically reduce waste and have a major positive impact on the environment.

EPS packaging keeps produce fresh for extended periods and eliminates doubts over the uncompromised quality and safety of the food products. A study by the [Korea Food Research Institute](#) shows that EPS packaging is the most efficient material for storing fruit and vegetables. Results show fruits (and vegetables) packaged in EPS retain their vitamin C content longer than food packaged in other materials. EPS provides improved cold chain maintenance, lower microbiological growth and improved physical appearance of perishable foods.

### Percentage of Remaining Vitamin C After One Week of Storage



### Fresh Seafood Distribution

The delicate nature of seafood presents a cold chain scenario that challenges any packaging solution to its core. Fresh, chilled, frozen and processed fishery products are a global cold chain that crosses nearly every ocean and touches almost every principal land mass. Spoilage cannot be stopped in fresh fish but it can be controlled to a great extent. Maintaining fish at the core temperature from catch until delivery ensures optimum safety, freshness and quality and reduces post-harvest losses. Fish starts to spoil from the time it is caught and this spoilage continues throughout its shelf-life. The main reasons for fish spoilage are enzyme activity and bacterial growth. In addition,

continued from page 6

## Learn More About the Coolest Container in the Fish Industry



oil-rich fish such as mackerel and herring will spoil due to oxidation. All of these biological and chemical reactions occur more rapidly at higher temperatures which can lead to rapid spoilage, decreased shelf-life and possible food safety risks. Chilling and freezing do not improve the fish quality, but slow down the bacterial, enzymatic and chemical actions and prolong shelf life.

International regulatory measures require food industry and food safety professionals to comply with strict temperature requirements. Live and fresh fish is transported by sea, air or land. Air cargo is responsible for transporting over 5% of the world's annual catch. Successful air transport of fish and seafood requires special care in preparation and handling. Most importantly, improperly packaged fishery products are a safety hazard because of the potential damage, mainly by corrosion, to the interior and control mechanisms of the aircraft. Containers used to transport fresh fishery products must be designed to ensure both their protection from contamination and their preservation under hygienic conditions and, more importantly, they must provide adequate drainage of melt water.

EPS is the preferred cold chain solution for seafood protection from sea to sales counters across the globe. This leading market position is due to EPS' proven thermal performance, impact resistance and sustainability attributes. EPS ensures seafood products are kept at an even temperature throughout the distribution chain and that products arrive at the point of sale in optimal conditions.

A recent life cycle analysis by PricewaterhouseCoopers measured the environmental impacts of several fish box packaging systems, including EPS and cardboard. Results show EPS is a sustainable material for fresh fish, with similar or better results than alternative packaging. The advantages of EPS are its low carbon impacts and clean manufacturing technologies which result in minimal energy and water inputs with no production waste.

In all, cold chain distribution presents formidable challenges for product protection. Packaging can't meet those challenges alone, but it is an instrumental component of a damage control program. For cold chain technology, expanded polystyrene (EPS) guarantees the quality and safety of perishable products. In addition to its unsurpassed thermal and protective properties, EPS is hygienic and moisture resistant. EPS also offers exceptional stacking strength which helps overcome problems with collapsed pallets and spoiled goods. And because EPS is lightweight it reduces overall transportation cost, fuel and pollution impacts. EPS keeps products cold – reliably and sustainably. ■

Recycle your scrap foam  
**Densify it.**

With the Bright Technologies

**DENSIFIER**

**BRIGHT**  
TECHNOLOGIES

A Division of Sebright Products, Inc.



for more information see:  
[www.brightbeltpress.com](http://www.brightbeltpress.com)

1-800-253-0532 US

1-269-793-7183 Phone

**Proudly designed  
and manufactured  
in the USA**



# EPS Solutions for Continuous Insulation



Residential housing design continues to move towards the development of high performance sustainable building systems. To be sustainable, a building must not only be efficient and durable but also economically viable. According to the U.S. Department of Energy (DOE), Heating and cooling accounts for 50% to 70% of the energy used in an average home. DOE states that homeowners may be able to reduce their energy bills from 10% to 50% by increasing the amount of thermal insulation. Insulation saves money, increases home comfort and protects the environment by reducing energy use. Insulated EPS foam sheathing is an effective and cost-efficient way to increase the R-value of exterior walls and meet prescriptive requirements for continuous insulation (CI).

CI is a proven solution for long term energy savings and is the most effective way to insulate the building envelope. [The Building Energy Codes](#) define continuous insulation as “insulation that runs continuously over structural members and is free of significant thermal bridging”. Thermal bridging occurs when there is a break in the continuity of the insulation layer, which results in heat loss.

Thermal bridging through framing components reduces envelope insulation performance by 15-20% in wood frame construction and by 40%-60% in metal frame construction. This means that a typical 6” metal stud wall construction with R-19 fiberglass batt insulation actually performs at a dismal R-9. When CI is properly installed the approximate full R-value of the insulation material is achieved.

For some regions continuous insulation (CI) has been an energy code requirement since the release of [ASHRAE 90.1](#), however, revisions to the [2012 International Energy Conservation Code](#) (IECC) have created opportunities for CI systems. With a heavy emphasis on building insulation and building envelope construction, these revisions require a 30 percent increase in energy savings in residential and commercial buildings (as compared to the 2006 code) and specifically apply to the construction of residential and commercial walls. The updated IECC also calls for increased levels of insulation, particularly for residential walls.

Insulated EPS foam sheathing allows CI systems to achieve the new IECC R-value requirements. EPS used on the exterior surface of the studs minimizes the temperature differential between the cavity and studs and prevents the transfer of heat or cold.

When exterior rigid EPS foam insulation is integrated into the enclosure assembly it acts not only as insulation but also as the primary sheathing and, in certain areas, as the drainage plane and vapor control layer for the wall assembly. It protects against condensation on the inside wall by keeping the interior of the wall warmer and above dew point temperature. This system combined with advanced framing concepts can provide cost savings from the reduction of building materials used (fewer studs, the elimination of plywood or OSB sheathing and house wraps), and the reduction of construction waste (incorporating standard construction product dimensions in the design of the building to minimize cutting).

## Insulated foam sheathing has these additional advantages:

- Reduces thermal bridging through wood studs, saving energy and improving comfort.
- Easier, safer and faster to cut and install than heavier-weight sheathing products.
- Usually more cost effective than plywood or oriented strand board (OSB).

Insulated EPS foam sheathing can be specified as a replacement for non-insulating sheathing such as OSB and can be used in both new and retrofit construction. It’s one of the only ways to radically improve the R-value of older homes while retaining the house’s character. Even small energy efficiency improvements on a large scale can have a big impact on resources and the environment.

EPS has been used in a wide array of groundbreaking new construction applications, solidifying its reputation as a versatile, high performance material. Time-tested and trusted to provide a stable, superior insulation envelope for the life of the building it’s an exceptional choice for a continuous insulation system. ■

[ASTM C578, Standard and Specifications for Rigid, Cellular Polystyrene Thermal Insulation](#), is the material standard that covers the types, physical properties and dimensions of cellular polystyrene intended for use as thermal insulation in the United States. [CAN/ULC-S701-01, Standard for Thermal Insulation, Polystyrene Boards and Pipe Covering](#) is the National Standard of Canada that specifies requirements for EPS insulation material.

EPS-IA is a member of the [Foam Sheathing Committee](#) which provides information on [foam sheathing construction details](#).

# ICC Realigns EPS Below Grade Insulation Codes

## TECH TALK

At the recent ICC Final Action Code Hearings in Atlantic City, EPS was accepted and approved by code officials as suitable for both horizontal and vertical application in frost protected shallow foundations (FPSF). Under this amended building code, EPS is now permitted for use in the entire FPSF system as well as beneath foundation slab and in any other below grade applications.

Earlier this year, EPS-IA submitted a code change proposal to correct a footnote that allowed EPS to be used in vertical orientation in below grade applications but did not allow its use in horizontal applications. EPS-IA's Executive Director, Betsy Steiner, with the support of the EPS-IA Technical Committee, successfully testified at the Preliminary ICC Code Change Hearings last spring, convincing the panel that eliminating the horizontal limitation was technically sound and warranted. That first round win paved the way for uncontested passage that occurred at the Final Action Code Hearings.

Unlike the U.S., Canada approved EPS for horizontal installation more than a decade ago. Field research performed by the [National Research Council Canada](#) proved that EPS used as exterior basement insulation is extremely durable, even in wet soils that freeze and thaw. In frost protected shallow foundations, insulation in both horizontal and vertical orientation is exposed to moisture. Independent, third party testing confirms the freeze thaw and moisture resistance properties of EPS insulation. Test results prove no loss in R value or change in compressive strength for EPS. Additionally, the results clearly demonstrate that EPS insulation does not absorb excessive amounts of moisture.

The FPSF system is a practical alternative for building with slab-on-grade, stem wall or floating slab foundations as well as for an unvented (heated) crawl space and the on-grade side of a walk out basement. Frost protected shallow foundations are most suitable for slab-on-grade homes on sites with moderate to low sloping grades, however, FPSFs design can be used effectively with walk-out basements by insulating the foundation on the downhill side of the house,

eliminating the need for a stepped footing. A FPSF is also useful for remodeling projects, in part because they minimize site disturbance. In addition to residential, commercial and agricultural buildings, the technology has been applied to highways, dams, underground utilities, railroads and earth embankments.

Foundations are a surprisingly large source of heat loss in residential construction. An un-insulated, conditioned basement may represent up to 50 percent of the heat loss in a house that is tightly sealed and well insulated above grade. Surrounding the foundation with EPS foam insulation is an effective method to dramatically reduce the heat loss from the foundation and ultimately increases the efficiency of the entire structure. Because FPSF technology relies on the thermal interaction of a building's foundation with the ground, the frost line near a foundation rises if the building is heated. This effect is magnified when foam insulation is strategically placed around the foundation. For heated buildings, this insulation—along with the earth's geothermal energy—keeps the soil temperature under the building above freezing, preventing frost heave.

EPS products have over 30 years of proven performance as sub-slab insulation in residential, commercial and industrial floor systems. ICC's approval of EPS for horizontal installation below grade realigns the U.S. market access for EPS insulation, allowing builders to select EPS for an entire below grade project with confidence. ■



# ICC Preserves High Standards of Fire Safety

## TECH TALK



In another key development during the October code hearings, ICC upheld the April decision of the International Residential Code (IRC) Building Committee to reject proposals put forth to side-step the ASTM E-84 Steiner Tunnel test. The Energy Efficient Foam Coalition

(EEFC) – a partnership of foam insulation manufacturers include the EPS Industry Alliance (EPS-IA), the Polyisocyanurate Insulation Manufacturers Association (PIMA), the Center for the Polyurethanes Industry (CPI) and the Extruded Foam Polystyrene Association (XPSA) – provided testimony to encourage code officials to support existing fire safety measures within the code.

EPS-IA applauds the ICC for agreeing with the IRC Building Committee's decision to reject these proposals, which attempted to remove one of the IRC's minimum and basic fire performance test provisions – the E-84 Steiner Tunnel test for foam insulation. "Side-stepping the Steiner Tunnel test would have potentially led to the removal of flame retardants from foam insulation in certain residential applications. The Council's actions help preserve high standards of fire safety and reemphasize the importance of using flame retardants in foam insulation", states Betsy Steiner, Executive Director.

Fire safety is a top priority for the EEFC, and flame retardants in foam insulation play an important role in fire safety by helping to delay ignition and slow fire growth, giving building occupants valuable time to escape. Furthermore, no fire test studies have been published to date establishing that foam insulation not treated with flame retardants, even when protected by a thermal barrier, provides equivalent fire protection to foam insulation that is treated with flame retardants.

Current fire test and performance requirements are based on years of careful analysis, extensive testing, and a robust and inclusive public development process. Any change to existing building code fire safety provisions should come after careful study, analysis and deliberation through a recognized voluntary standard development organization or code body.

To learn more about the Energy Efficient Coalition, please visit [www.foaminsulationcoalition.org](http://www.foaminsulationcoalition.org)



*A facility conducting the Steiner Tunnel Test*

**HIRSCH GRUPPE**

**EXPANDING WITH IDEAS**  
MORE THAN 40 YEARS EXPERIENCE IN EPS PROCESSING

PROVIDING HIGH QUALITY EPS PROCESSING MACHINERY

- › EPS & EPP PRE-EXPANDERS
- › EPS & NEW EPP SHAPE-PRESSES
- › BLOCK-MOLDS
- › EPS-MOLDS
- › CUTTING LINES
- › RECYCLING UNITS

office.maschinenbau@hirsch-gruppe.com [www.hirsch-gruppe.com](http://www.hirsch-gruppe.com)



# Growing Farms of the Future



The world is growing hungrier and agricultural systems are increasingly challenged to produce more food with fewer environmental resources. Countries from Bangladesh to Canada, and cities from Berlin to Baltimore, are employing an ancient farming technique to the 21<sup>st</sup> century—aquaponics is growing orchards in the desert and yielding harvests in the city, and EPS is helping to make it possible.

Aquaponics is a sustainable method of farming that combines conventional aquaculture, (raising aquatic animals such as snails, fish, crayfish or prawns in tanks), with hydroponics (cultivating plants in water) in a symbiotic environment. In normal aquaculture, excretions from the animals being raised can accumulate in the water, increasing toxicity. In an aquaponic system, water from an aquaculture system is fed to a hydroponic system where the by-products are broken down and utilized by the plants as nutrients. The water is then re-circulated back to the aquaculture system.



For the water-strapped, aquaponics can seem like a miracle solution. It both farms fish and grows plants in floating EPS 'rafts' using the same closed-loop, freshwater system with just a tenth of the water that traditional agriculture requires. In raft based aquaponics (also known as float, deep channel and deep flow) the plants are grown in holes on EPS foam rafts that float on top of water separate from the fish tank. Water flows in a continuous loop from the fish tank, through filtration components, to the raft tank where the plants are grown and then back to the fish tank.

Raft based aquaponics is the most commonly used method in commercial systems as it provides the versatility to grow a wide variety of leafy plants and herbs and can be set up relatively inexpensively. In a commercial system, the raft tanks can cover large areas, best utilizing the floor space in a greenhouse. Plant seedlings are transplanted on one end of the raft tank. The EPS foam rafts are pushed forward on the surface of the water over time and then the mature plants are harvested at the other end of the raft. Once an EPS raft is harvested, it can be replanted with seedlings and set into place on the opposite end. This optimizes floor space, which is especially important in a commercial greenhouse setting.

Even in countries where water shortages aren't an immediate problem, aquaponics holds some promise of cutting down on transportation costs because it can be done on a fraction of the land of traditional agriculture. In Berlin, an old 21,500 square foot brewery is being converted into an urban aquaponics farm that is expected to yield 24 metric tons of fish and 34 metric tons of vegetables annually.

While aquaponics isn't the miracle solution that will raise yields at the rate that the world needs, it is proving to be successful a part of the global agricultural economy. ■

# EPS Shines Through

Temple University Professor Robert Trempe's course *Architectural Design VI* gives students the opportunity to take on a special topic in architectural design. In one project, talented students let the light shine on a whole new application of EPS.

"The students are expected to learn about new techniques in full-scale architectural manufacturing including the translation of complex computational geometries and physical production employing CNC [Computer Numerical Control] technologies," Trempe said.

Students used a CNC machine to carve intricate patterns out of EPS foam. The purpose of the project was not only to get students familiarized with the latest materials and technologies but also to reveal the "condition of light through a sequence of transformative patterns." Each student designed a window panel of the corridor between the Tyler Cafe and the Architecture building, which came together as one impressive installation.



"I'd like people to know that the role of an architect is much larger than simply following building code, that architects are passionate in the crafting of space and spatial experience," Trempe said. This project reiterates the possibilities for EPS are endless. ■

## EPS-IA Member Companies

ACH Foam Technologies  
ADLAM Films LLC  
AFM Corporation  
Airlite Plastics Co./Fox Blocks  
APTCO, LLC  
Aqua-Pak Styro Containers Ltd.  
Armstrong Brands, Inc.  
Atlas EPS, A Division of Atlas Roofing  
BASF Corporation  
Beaver Plastics Ltd.  
BuildBlock Building Systems, LLC  
Cellofoam North America, Inc.  
Concrete Block Insulating Systems, Inc.  
DiversiFoam Products  
Drew Foam Companies, Inc.  
Evergreen Chemicals USA, Inc.  
Flint Hills Resources, LP  
FMI-EPS, LLC  
Foam Equipment & Consulting Co.  
Foam Fabricators, Inc.  
Fransyl LTD  
Georgia Foam Inc./ Mid-Atlantic Foam  
Groupe Isofoam

HIRSCH Americas, LTD  
Houston Foam Plastics  
Huaxinxing Mould Co., Ltd  
Huntington Foam LLC  
InSoFast, LLC  
Insulation Corporation of America  
Insulation Technology, Inc.  
Insulfoam LLC  
KBM ApS  
Kurtz ERSA  
Lanxess Corporation  
Le Groupe LegerLite, Inc.  
Lifoam Industries  
Logix ICF Ltd.  
Mansonville Plastics(BC)Ltd./First Choice  
Manufacturing  
MODIX Corporation  
Nexkemia Petrochemicals Inc.  
Northwest Foam Products  
NOVA Chemicals, Inc.  
Nudura Corporation  
Nuova IdroPress SpA  
OPCO, Inc.

Plasti-Fab Ltd.  
Plymouth Foam Inc.  
Polar Industries, Inc.  
Polyfoam Corporation  
Polyform Inc.  
Polymos Inc.  
Progressive Foam Technologies, Inc.  
ProWall Building Products  
Quad-Lock  
RAPAC, LP  
RecycleTech Corp.  
Riemschneider Recycling & Plastics, Inc.  
Sebright Products, Inc.  
Shelter Enterprises, Inc.  
Solid Green Systems  
Sonoco Protective Solutions  
Takashima U.S.A., Inc.  
TEC Associates  
Therma Foam, LP  
Thermal Foams, Inc.  
Truefoam Limited  
Versa-Tech, Inc.  
Zimmermann Management Solutions, LLC