

Sealed Air®

Insulated Bubble Cushioning®

Reflective foil bubble material

Superior Multi-layer
Reflective Insulation



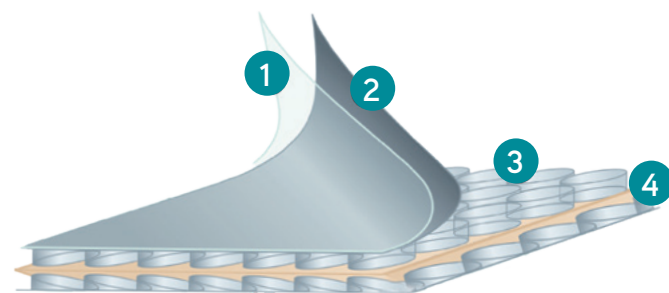
INSULATED BUBBLE CUSHIONING

Superior Multi-layer Reflective Insulation

Initially created by NASA and used as protective insulation material for astronaut suits, the technology was soon recognised as an excellent heat insulation product, widely used in construction.

WHAT IS IT?

This multi-layer reflective insulation consists of two external, high purity layers of aluminium foil, covering layers of Bubble Wrap® brand AirCap® bubble and SEALED AIR® brand Cell-Aire® polyethylene foam.



- 1 Anti-corrosion layer
- 2 High purity aluminium foil
- 3 AirCap® bubble
- 4 Cell-Aire® polyethylene foam



HOW DOES IT WORK?

While the aluminium reflects up to 95-97% of heat transferred via radiation, AirCap® and Cell-Aire® provide the necessary mechanical strength to the final product.

They also give additional thermal resistance to heat transferred via conduction.

According to U.S. Reflective Insulation Manufacturers Association (R.I.M.A.), heat transmitted via radiation represents at least 50% of all heat transferred in nature.

Traditional thermal insulation like foam or fibres are resistant to heat transferred via conduction, but are unable to reflect more than 30% of the heat transmitted via radiation.



With the Insulated Bubble Cushioning

Without the Insulated Bubble Cushioning

THE BENEFITS OF ALUMINIUM?

Compared with other surface materials, aluminium foil has superior reflectivity:




Surface material	Emittance
Asphalt	0.90-0.98
Aluminium foil	0.03-0.05
Brick	0.93
Concrete	0.85-0.95
Glass	0.95
Fiberglass/Cellulose	0.8-0.90
Limestone	0.36-0.90
Marble	0.93
Paint: white lacquer	0.80
Paint: white enamel	0.91
Paint: black lacquer	0.80
Paint: black enamel	0.91
Paper	0.92
Plaster	0.91
Silver	0.02
Steel (mild)	0.12
Wood	0.90



About Reflective Insulation

HOW IS HEAT TRANSFERRED?

There are three ways heat moves from warm to cool regions:

-  **Radiation** – electromagnetic transfer of energy through space.
-  **Convection** – heat flow transferred by the movement of air.
-  **Conduction** – heat flow through a fluid or solid material.

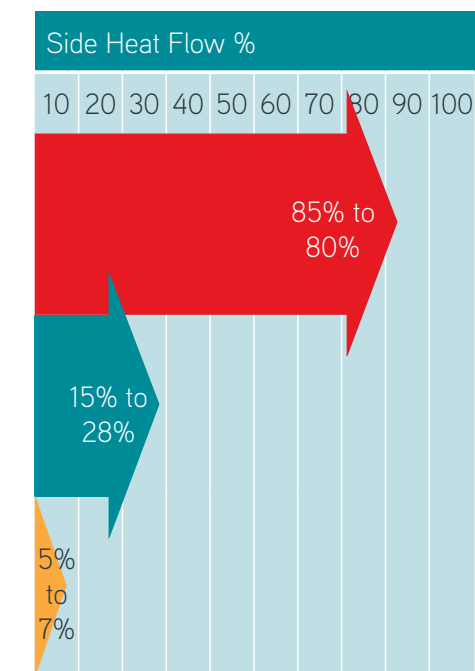
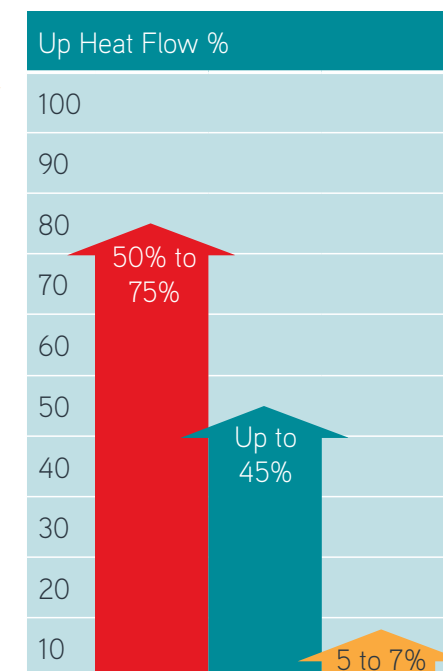
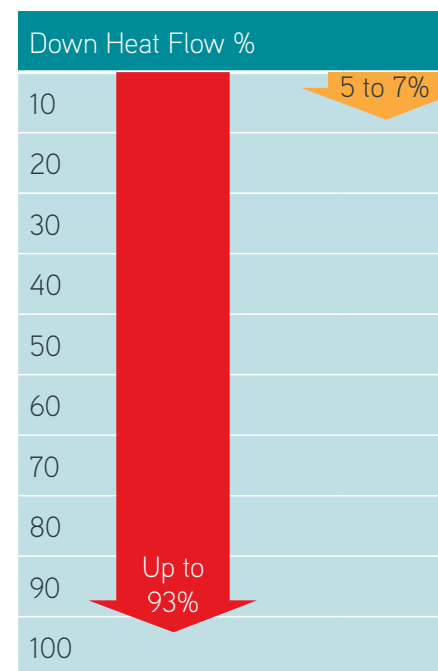
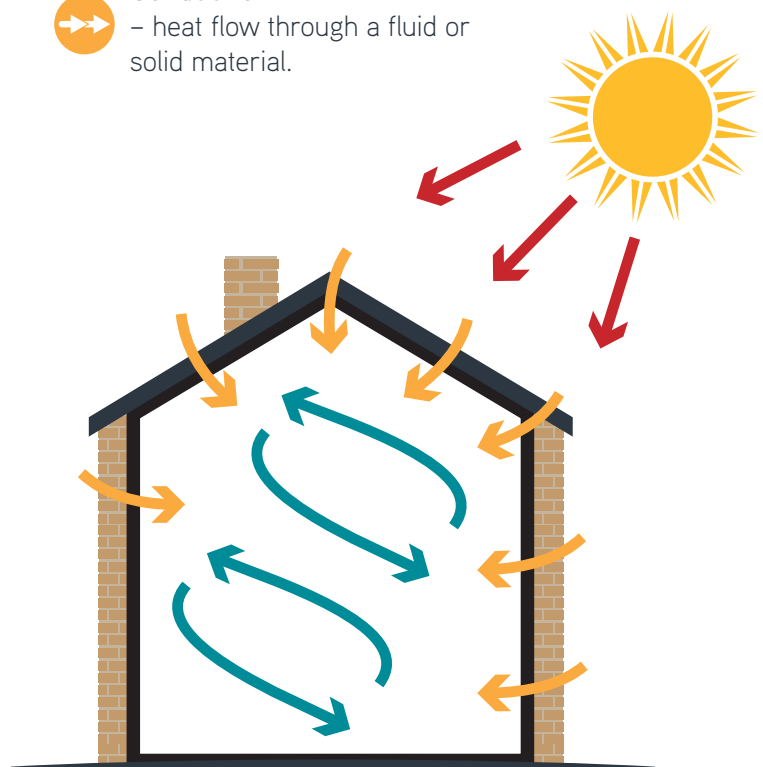
HEAT TRANSFER DIRECTIONS



There are three heat transfer directions:

- **Down Heat Flow**
- **Up Heat Flow**
- **Side Heat Flow**

According to an analysis performed at Penn State University, approximately 75% of total heat transfer in structures occurs through radiation. The foil in the Insulated Bubble Cushioning reflects 95 – 97% of the radiant energy striking it.

An example of down heat flow is through the floor in the winter or through the attic in the summer. Up heat flow is through the ceiling in the winter. Side heat flow refers to heat loss through the walls.



-  Radiation
-  Convection
-  Conduction

Why Choose the Insulated Bubble Cushioning

COMPARE THE VALUES

- **R values** – R values rate how much heat loss the material resists from passing through.
- **U values** – U values rate how much heat the component allows to pass through it.

R values rate one single material while U values measure entire components.

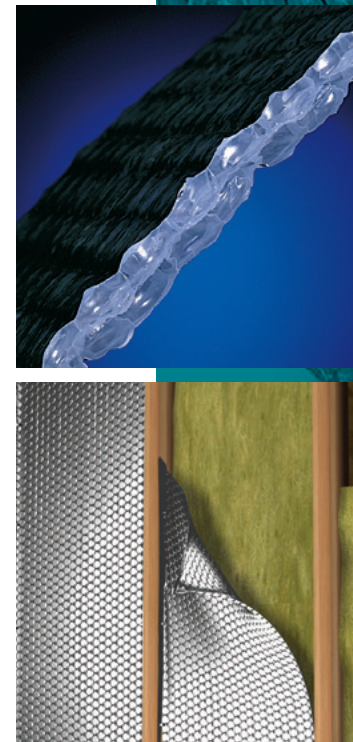
For example R values measure how much heat loss passes through fibreglass insulation while U values rate how much heat can pass through a window component (glass, air, vinyl sash).

$$R = m2K/W \quad U = W/m2K$$

Converting a U value to a R value is as simple as:

$$R = 1/U. \text{ So a U value of 1.110 would equal a R value of 0.90}$$

Material	Gauge (in mm)	R-Value	U-Value
Insulated Bubble Cushioning DB	7.5mm*	0.90	1.11
Mineral Fibre	25mm	0.750	1.33
Tile	20mm	0.044	22.73
Coating	2mm	0.027	37.04
Brick	120mm	0.267	3.75
Concrete	200mm	0.114	8.77
Extruded Polystyrene	30mm	1.071	0.93
Extruded Polystyrene	50mm	1.613	0.62
Polyurethane	25mm	0.836	1.20
Fibreglass	30mm	1.000	1.00
Fibreglass	50mm	1.666	0.60



Features & benefits of the Insulated Bubble Cushioning

Being an energy and cost effective insulation product, this is one of the most versatile building materials on the market today. Ideal for new construction or retrofit installation in commercial or domestic structures, it delivers unsurpassed benefits:



LOWERS HEATING AND COOLING COSTS

- Reflects 95 – 97% of radiant energy
- Controls condensation



LOWERS INSULATION COST

- Easy to install
- Permanent and maintenance free
- Durable and lightweight
- Does not compress, collapse or disintegrate
- Does not promote nesting or rodents
- Not affected by moisture or humidity



LOWERS RECYCLING COST

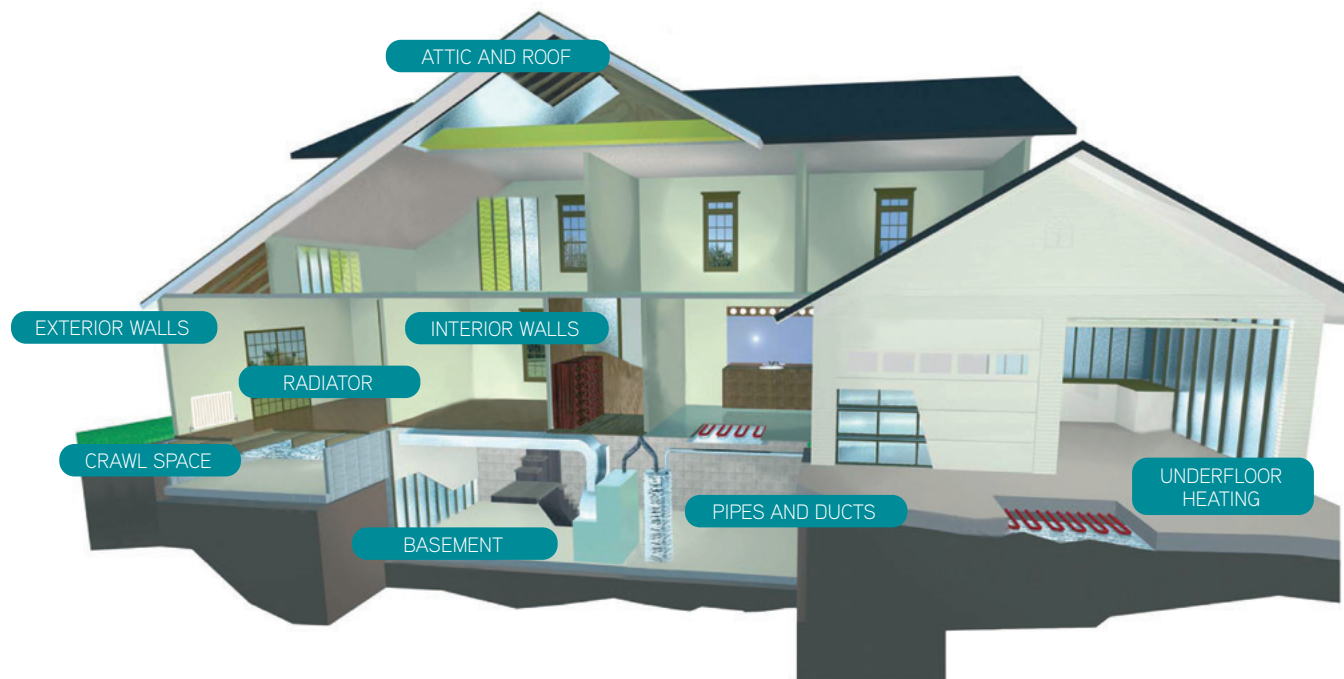
- Environmentally safe
- Non-toxic/non-carcinogenic
- Fibre-free

*performance includes 2 air spaces of 8 mm each from both side of product

The Versatility Of The Insulated Bubble Cushioning

The possibilities are endless. Its versatility means that it is the ideal solution for a number of applications from domestic attics to insulating cartons for shipping.

Being easy to install it is suited for use by both the competent DIY-ers and the Professional Contractors:



METAL BUILDING APPLICATIONS

For roof and wall insulation, the Insulated Bubble Cushioning is a quick and easy, high performance and cost effective solution for agricultural and commercial buildings.

NON CONSTRUCTION APPLICATIONS

Shipping

One area where temperature can be an issue is during the shipping of your product. You can use the Insulated Bubble Cushioning not only to cover the walls of your truck but you can also use sheets of our material to cover your boxes. It is ideal for shipping anything from fish to pharmaceuticals.





Hobby

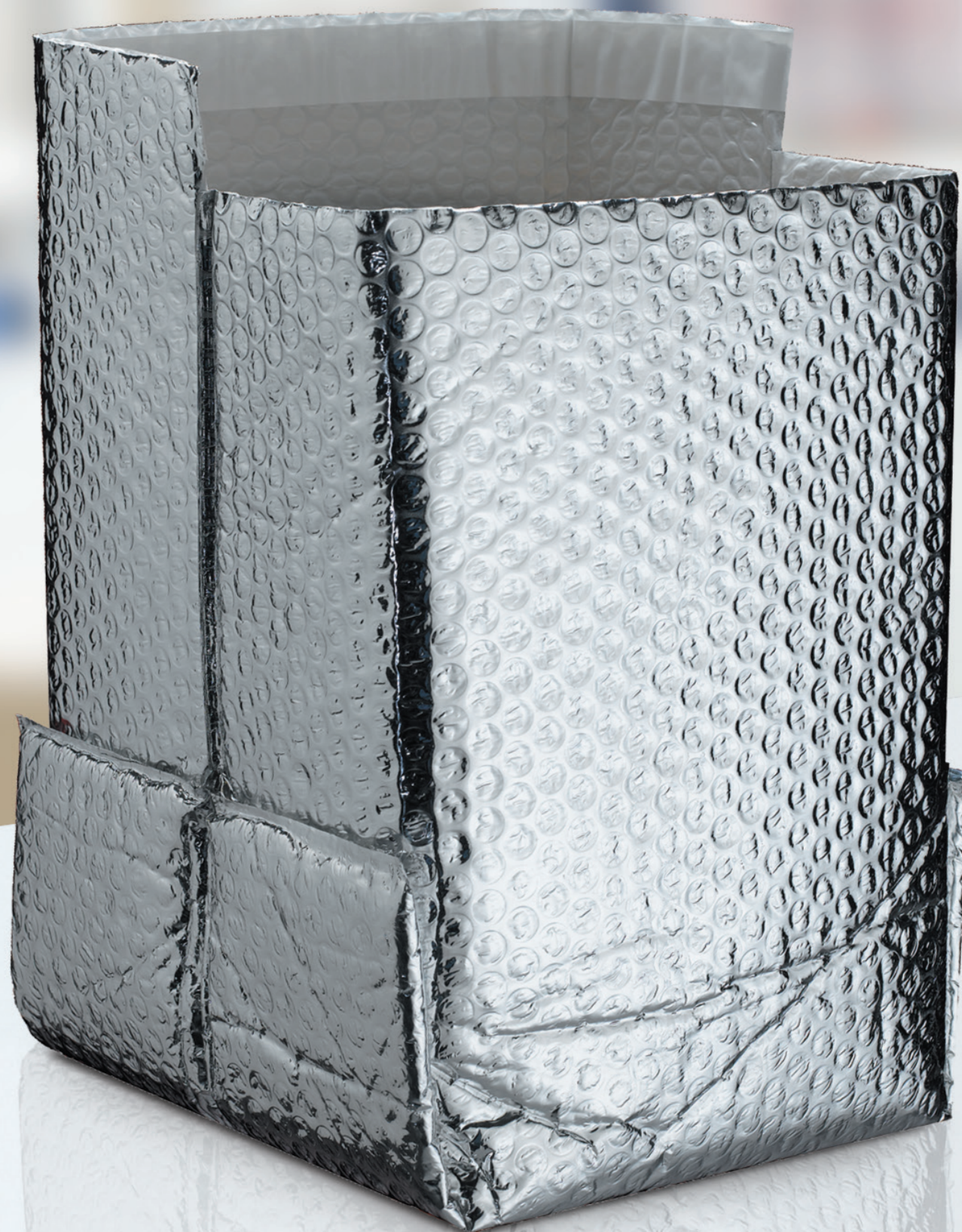
Ever thought of insulating your caravan or mobile home? The Insulated Bubble Cushioning can make your trip even more comfortable during hot summers or cold winters. Apply our SB version to the walls or the top and either save energy in winter or keep cool in summer.



MORE PROVEN APPLICATIONS

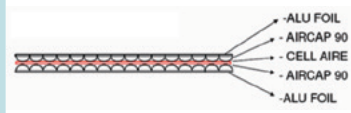
For extended protection of extremely perishable products, dry ice and/or other refrigerants can be placed in a package without damage to the liner.

 <p>Perishable Foods</p> <ul style="list-style-type: none"> • Seafood, Meat and Poultry • Beverages i.e. wine, juices • Gourmet Foods • Baked Goods • Dairy i.e. ice cream, milk, cheese • Confectionery i.e. sweets and chocolates 	 <p>Medical</p> <ul style="list-style-type: none"> • Pharmaceutical • Healthcare • Biotechnology • Blood Transport • Clinical Labs • Cryogenic Research • Organ Transporting • Medical Supplies (implants) • Prescription Labs • Genetics, DNA 	 <p>Scientific/Industrial</p> <ul style="list-style-type: none"> • Chemicals • Adhesives • Bio Chemicals • Solders • Ink Manufacturers 	 <p>Animal Health</p> <ul style="list-style-type: none"> • Animal Fluids • Animal Labs • Veterinarian Products and Supplies • Dead Animal Removal
<p>Other</p> <ul style="list-style-type: none"> • Flowers • Cosmetics/Perfumes • Tropical Fish • Freight Companies • Banquet Facilities 			



Technical Data And Certification

TECHNICAL DATA

Product Type	SB (single bubble)	DB (double bubble)
Description	Top layer: Alu Foil Middle Layer: AirCap® bubble Bottom layer: Alu Foil	Foil + AirCap® + Cell-Aire® 1,5mm + AirCap® + Foil 
Nominal Thickness	3.5mm (±10%)	7.5mm (±10%)
Aluminium Foil Thickness	7MY + 22MY PE	7MY + 22MY PE
Aluminium Foil Purity	99,9%	99,9%
Aluminium Foil Reflectivity	95-97%	95-97%
Foil Anti-corrosion coating	NC lacquer	NC lacquer
AirCap® bubble density	90 gr/m2 (±5%)	90 gr/m2 (±5%)
Total Product Density	170 gr/m2 (±5%)	285 gr/m2 (±5%)
Roll Size	1,20m x 50m = 60m2	1,20m x 25m = 30m2
U Value	1,30 W/m2K	1,11 W/m2K

Sustainability

Sealed Air has identified the opportunity whilst improving our business to make a positive difference in the world by increasing our commitment to sustainable packaging.

Sustainable packaging, which makes efficient use of natural resources and minimises the impact on the environment, can include many forms of packaging. Improving the sustainability of our offering can come by reducing packaging via thinner, lighter products, removing packaging via new package designs, recycling packaging to reduce waste going to landfills and redesigning packaging using materials from bio-based sources.

Sealed Air is working closely with key customers in target applications to advance environmentally responsible, innovative packaging solutions.



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