



## **Heat Reflecting Liner ideal for prefabricated buildings**

*Long-life Heat Reflecting Membranes (HRM's) made from a various sheet materials were conceived by NASA space scientists to protect orbiting craft from solar radiation. This heat control technology has spawned a variety of terrestrial applications. These include the famous "space" blankets that keep athletes and accident victim's warm, heat-reflecting sheaths for water tanks, air- conditioning ducts, heat-sensitive equipment and even high performance racing car components.*

Eco-Brite® is a further development by Apollo Insulation Limited where mass production techniques has provided an effective, two sided HRM for use as a liner within the fabric of portable and static cabins, prefabricated and modular building systems associated with site, domestic and commercial uses. In combination with fibre insulation, Eco-Brite can provide the most cost-efficient insulating method available that meets the requirements of current Building Regulations.

Colin Hawkes, MD at Apollo explains, "When combined with the fibre insulation normally installed in cabin structures for example, manufacturers have found our low emissivity Eco-Brite system enhances the U-value of ceilings, walls and floors. Indeed it may be possible to reduce the thickness of the insulation matt and still meet the U-values for the structure demanded by the Regulations and achieve the lowest cost per square metre for any insulation system on the UK market today. Conveniently installed, the associated air space that is created in front or behind the membrane can also be used to run electrical and other services. The product is used in conjunction with our heat reflecting adhesive tape which seals the edges of adjoining sheets and adjacent structures ensuring an air-tight envelope that will pass mandatory pressure testing".

The Eco-Brite membrane at 135 microns thick, is a composite laminate of aluminium foil, a tough polyethylene film and metallised polyester film. The outer reflective surfaces are protected with a proprietary coating which ensures their reflectivity for many years. The BBA certificate states a life-span of 60 years.

The primary function of a HRM is to block infrared energy radiating across air spaces. Infrared energy (radiation) converts to conducted heat when it strikes a surface such as a wall or roof. The energy transmits through materials, molecule to molecule, until it reaches the next air space where it then radiates from the surface to the next object. The molecules of air touching the solid surface warm, so energy can also leave the surface as rising convective air currents.

The Apollo Eco-Brite system is primarily intended for installation within prefabricated floors, walls, ceilings and roofs. Its inclusion will reduce the thickness of the soft insulation required, substantially minimising energy needs and improve comfort for occupants. The membrane eliminates excessive heat gain caused by incoming solar radiation yet can keep the room warm

during cold weather. No matter the season, room temperatures are far easier to control. For example, solar heat striking a prefabricated roof will conduct through the tiles and insulation layers crossing any air spaces as unwanted infrared energy, eventually warming the inner skin and over heating the interior.

Conversely, useful heat from within the room will conduct through the inner skin, radiate across any air space into the insulation and be lost. In both scenarios the Eco-Brite system blocks the radiating heat.

It is generally accepted that air leakage and infiltration through any building has a detrimental effect on energy efficiency and the comfort level of occupants. In temperate climates during winter, warm air can be literally blown or sucked out of building's and be replaced by cold, damp air. In tropical climates, moisture-laden air entering a structure will certainly have a negative effect on air quality and a building's general performance.

The Eco-Brite membrane is easily moulded around adjacent framework and once positioned will not spring back. The system includes an aluminium-faced, self-adhesive tape to seal joints between sheets of membrane, around doors, windows and other fittings, obviating the need for many of the mastics usually employed. Assuming outer doors and windows are of adequate specification to stop unwanted draughts, by sealing the envelope, factors for air infiltration and leakage may be eliminated from the energy calculation. In addition, the flow of ventilation air through rooms is easier to control as it is not disrupted by unwanted draughts or stack effect where buoyant air in the building can draw in outside air.

With low moisture transmission rates, the Eco-Brite system also acts as excellent vapour barrier, halting moisture migration into the fibre insulation layers. The systems ensure the insulation keeps dry and maintain its performance.

Apollo is confident the inclusion of Eco-Brite within pre-fabricated structures will be economic and reduce the energy required for heating or cooling. More information is available on [www.apollo-energy.com](http://www.apollo-energy.com)



Eco-Brite in pre-fabricated cabin walls

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