



insulbrick ICF

The Insulbrick Building System

www.insulbrick.com.au



Insulbrick – Insulated Concrete Formwork for Australian Standards

Insulbricks provide a fire retardant expanded polystyrene [EPS] formwork for casting concrete structures. When interlocked and filled with concrete, they create a solid wall with remarkable insulating properties for both internal and external walls.

The key benefits of the system include:

- **Versatility and strength** - the system is ideal for high wind areas and allows maximum load bearing potential,
- **Bushfires and termite protection** - no timber is required with Insulbrick construction thus reducing the risk for fire and termite infestation,
- **Structural support** - concise engineering specifications ensure that all walls are appropriately reinforced,
- **Insulation** - the polystyrene form provides enormous benefits for sound and thermal insulation. It also insulates the concrete core minimising any movement resulting from temperature fluctuations,
- **Guidelines** - the simple construction procedures and clear guidelines ensure that erection is fast and efficient,
- **Maintenance free** - no painting or cracking. The cracking often seen with rendered BV structures does not occur with this system.

About Expanded PolyStyrene - EPS

Properties

EPS is a lightweight cellular plastics material containing small spherical shaped particles consisting of 98% air.

Densities

EPS is produced in a wide range of densities to match its various applications. The grade used for Insulbricks has been tested to achieve the appropriate strength as formwork for the concrete but still ensuring the optimum amount of insulation is achieved.

Durability

EPS is an inert, organic material. It will not rot and is highly resistant to mildew. It provides no nutritive value to any living thing. Therefore it will give no life support to termites or rodents. EPS has no natural enemies.

Moisture resistance

EPS is a closed cell material and does not readily absorb water, unless subjected to prolonged saturation. Testament to this is its widespread use in fishing floats and marinas. However, with any of the external finishes recommended for our Building System, no moisture penetration should occur.



Insulation

From sub zero temperatures as low as -40°C experienced in freezer insulation, to the high temperatures around 60°C occurring on hot water pipes, EPS provides excellent insulation properties. In countless everyday situations EPS is successfully used for its insulating ability.

Combustion

As with many construction and packaging materials, EPS must be considered combustible. Its fire behaviour depends on the type of material and its application conditions. It is important to distinguish between the two commonly used grades of EPS.

All EPS used in the manufacture of Insulbricks contain a flame retardant.

The flame retardant reduces the flammability and spread of flame on the surface of EPS products, to such an extent that it is classified as “flame retardant” according to the European Standard DIN 4102. If ignited with a flame the EPS extinguishes itself as soon as the ignition flame is removed.

The flammability Insulbricks is further reduced with surface coatings, such as plaster, and external cladding. Non flame retardant EPS, typically used in packaging, will sustain combustion and the resultant fire spread at a rate of about 3cm per minute over the surface. This is comparable to other combustible solid materials. EPS does not catch fire spontaneously, and small sources of ignition will not ignite it.

Type of test piece	Constituents of the fire gases	Fire gas composition in ppm at a test temperature of			
		300 °C	400 °C	500 °C	600 °C
Standard EPS	Carbon monoxide	50*	200*	400*	1000**
	Styrene monomer	200	300	500	50
	Other aromats	Traces	10	30	10
	Hydrogen bromide	0	0	0	0
Flame Retardant EPS	Carbon monoxide	10*	50*	500*	1000**
	Styrene monomer	50	100	500	50
	Other aromats	Traces	20	20	10
	Hydrogen bromide	10	15	13	11
Pine wood	Carbon monoxide	400*	6000**	12000**	15000**
	Aromats	-	-	-	300
Insulating softboard	Carbon monoxide	14000**	24000**	59000**	69000**
	Aromats	Traces	300	300	1000
Expanded cork	Carbon monoxide	1000*	3000**	15000**	29000**
	Aromats	Traces	200	1000	1000

Note:

Test conditions as specified in DIN 53 436, air supply 100 l/h, test piece size in mm: 300 x 15 x 10

* Smouldering fire

** Flame fire

- Not measured



Tropical applications

- **Temperature** - The elevated tropical house with louvered windows and underfloor space is a thing of the past. Today Territorians seek a domestic environment with complete internal climate control. Consequently optimum insulation is demanded. We believe Insulbricks provide the most economic and effective protection against extreme temperatures.
- **Cyclones** - Insulbrick construction results in a solid concrete wall from footings to truss level. Its strength is consolidated by the inclusion of reinforcement steel rods at regular intervals according to engineering requirements. **With Insulbrick construction all standard engineering specifications for all wind categories are provided.**
- **Termites** - The Insulbrick system offers no attraction or nourishment for termites. With the use of steel trusses timber can be totally eradicated, thus eliminating the threat of termite infestation.

Environment

- **Insulation** - The insulating properties of EPS are further enhanced by its environmentally friendly characteristics. By most methods of measurement, EPS has a positive contribution to the environment at every stage of its cycle.
- **Energy** - From raw material production, to processing into useable products, EPS uses less energy, saves energy, has fewer emissions and creates less environmental impact on disposal, than most competing materials.
- **Global warming** - In terms of global warming, EPS plays a positive role in reducing carbon dioxide emissions. Domestic and industrial consumption of fossil fuels for heating is widely recognised. EPS is produced from oil and as it comprises approximately 98% air, it consumes only a small fraction of one percent of oil use. On a volume basis, EPS production uses between one third and one half of the energy required for an equal volume of cardboard. It has been estimated that the effective application of EPS insulation could cut carbon dioxide emissions by up to 50%. **As the insulation performance of EPS does not deteriorate during its lifetime, this reduction in emissions lasts the lifetime of the buildings.**
- **No CFC's** - The manufacture of EPS raw material and the processing into useable products does not require the use of CFCs or HCFCs.
- **Environment friendly** - EPS accounts for less than a tenth of one percent of the weight of municipal waste. The foam scrap improves the aeration of landfills and thus contributes to a faster degradation of the organic substances. EPS products do not degrade into harmful substances, are not water-soluble and do not give off any water-soluble substances which could lead to contamination of ground water.



- **Recycling** - EPS can be readily recycled in several ways. Within our processing plant, internal waste can be ground and mixed in various proportions with virgin material in the production of EPS blocks and mouldings. Used EPS can be ground and mixed with soil and compost to promote aeration. Studies confirm that plant growth is enhanced with this aeration. Recycled EPS can also be mixed with plaster to provide insulated coatings, and concrete to produce lightweight blocks. Our waste material when melted becomes solid polystyrene and shrinks to its original volume. Once solidified it is reground into solid granules and used in the production of simple polystyrene products such as pens, coat hangers and cassettes.

About Insulbrick Construction

Specifications

Insulbrick 200

Length	1,200mm
Height	300mm
Width	200mm
R-Value	3
Concrete	1 m3 of concrete fills 12 m2 wall approx.



Insulbrick 250

Length	1,250mm
Height	300mm
Width	250mm
R-Value	3.62
Concrete	1 m3 of concrete fills 8m ² of wall approx.





Polywall 250

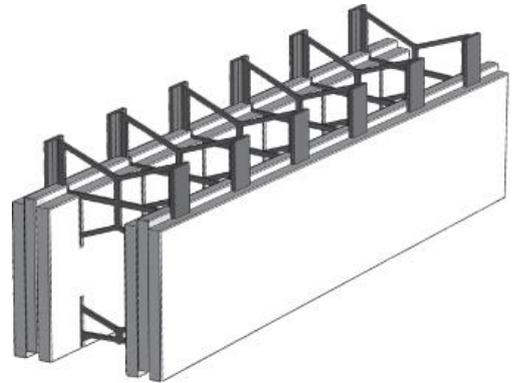
Length 1,200mm
 Height 300mm
 Width 245mm
 R-Value 3.55
 Concrete 125mm
 Concrete 1 m³ of concrete fills 8m² of wall

Polywall 270

Length 1,200mm
 Height 300mm
 Width 270mm
 R-Value 3.59
 Concrete 150mm
 Concrete 1 m³ of concrete fills 6.7 m² of wall

Polywall 320

Length 1,200mm
 Height 300mm
 Width 320mm
 R-Value 3.65
 Concrete 200mm
 Concrete 1 m³ of concrete fills 5 m² of wall



Lintelbrick The Lintelbrick interlocks with the Insulbricks and facilitates a solid horizontal concrete column with ample room to accommodate reinforcement steel. Its design enables extra horizontal reinforcement bars, where necessary, to be placed.



Lintelbrick 200



Lintelbrick 250

Structure

The Insulbrick core is filled with 32mpa concrete and reinforced in accordance with engineering specifications forming Insulbricks structural integrity.



Ligatures



Reinforcement



Basic Procedure



Insulbrick interlock like “lego”.



Our Engineers can provide full reinforcement specifications for all wind areas.



Comprehensive on site instruction.



Formwork is braced and filled by pump.



Wiring and plumbing is set into the polystyrene face, plasterboard is glued.



All external finishes are possible, render is popular.



About Us

The Director of “The Insulating Brick Company” (the creators of Insulbrick) has a long history with the use of Insulated Concrete Forms. Our experience gives us an edge when dealing with the process from the initial documentation through to the actual construction.

Our product is designed to make the process effortless. Whether you engage a professional or wish to do it yourself, we will offer whatever support necessary to ensure a good result. Our bricks are 300mm high to conform to standard window heights (2,100 & 2,400) and standard ceiling heights (2,400, 2,700, & 3,000). Clear instructions as to steel placement are given to ensure that every aspect of the concrete core is appropriately reinforced.

When plans are submitted to the relevant authorities it is important to provide full specifications and certification whatever construction method you are using. When you build with Insulbrick, engineer’s specifications can be supplied with every project, ensuring full compliance with all relevant building standards.

The Director

Tim Drummond

Since building his own home with ICF in 2000, Tim has been focusing on developing Insulbrick ICFs – ICFs that allow for optimum performance and ease of construction. He has also been concentrating on every aspect of ICF construction and is constantly implementing subtle changes to the system that help improve the overall process. He spends much time assisting Owner Builders and Builders onsite. He is also the driving force with all the installations applying the same standards he applied on his own home many years ago.

His goal is to see ICF construction not an alternative building system but as a mainstream option – as it is in many countries throughout the world.

If you are considering building with ICF contact Tim. It will be clear the extra yards he will go to support your venture. You can contact Tim on 0414 745 513 or by email at tim@insulbrick.com.au

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