

STEEL Fact File

An information source for design professionals

FF8 - KEEP THE HEAT OUT

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How ZINCALUME® steel outperforms galvanised steel and fibre cement/asbestos for thermal efficiency

🔍 Fast facts

- The choice of roofing material can affect the amount of solar energy that enters a building, affecting the comfort level for occupants.
- ZINCALUME® steel has an attractive, shiny appearance designed to keep heat out by limiting solar absorptance.
- ZINCALUME® steel will stay brighter for longer than alternative products.
- ZINCALUME® steel continues to deliver strong thermal performance throughout the life of the product.
- Weathered ZINCALUME® steel provides approximately twice the thermal performance delivered by weathered galvanised steel and fibre cement/asbestos.
- ZINCALUME® steel has proven field performance around the world for >30 years.



🔍 Behind the facts

- The continuous hot dip process used to produce ZINCALUME® steel provides a zinc/aluminium coating which has a shiny appearance with a consistently small spangle.
- The characteristics of this patented coating determine the solar absorptance of the upper surface.
- ZINCALUME® steel minimises the fraction of the sun's energy absorbed by the roof and maximises the fraction reflected.
- ZINCALUME® steel minimises the emissivity of upper and lower roof surfaces to limit the amount of energy absorbed by the roof sheeting that is re-radiated to the surrounding environment.
- These properties of ZINCALUME® steel continue to provide high levels of thermal efficiency throughout the service life of the product.
- The thermal efficiency of galvanised steel and fibre cement/asbestos significantly degrades as weathering occurs, delivering performance levels approximately half that of similarly weathered ZINCALUME® steel.



ZINCALUME® steel, galvanised steel or fibre cement/asbestos?

Apart from the initial surface properties of the roofing materials, other factors that affect thermal performance include the ambient conditions, the weathering properties of the roofing material and the influence of any insulation materials that may be used in the building.

To compare the thermal performance of roofs manufactured from ZINCALUME® steel and roofs manufactured from fibre cement/asbestos or galvanised steel, the properties of all three materials were measured in both new and weathered (>12mth natural exposure) states.

This data was then analysed against a set of conditions typical of a hot, sunny day – with an inside/outside air temperature of 30 degrees Celsius and solar radiation equivalent to 850 W/m².

The analysis included three outside wind speed conditions: no wind, a slight breeze of 1.5m/s and a moderate breeze of 3 m/s.

As the results in the accompanying tables illustrate, the long term performance of ZINCALUME® steel is clearly superior to that of either fibre cement/asbestos or galvanised steel.

Both ZINCALUME® steel and galvanised steel perform well when new, but as the products weather, the thermal performance of ZINCALUME® steel becomes dramatically superior to that of identically weathered galvanised steel.

In a comparison with fibre cement/asbestos, the research has revealed an even more comprehensive performance advantage for ZINCALUME® steel from the first day a roof is erected.

ZINCALUME® steel is much more effective than fibre cement/asbestos in keeping the heat out and offering greater thermal comfort in a new building and increases its advantages over time.

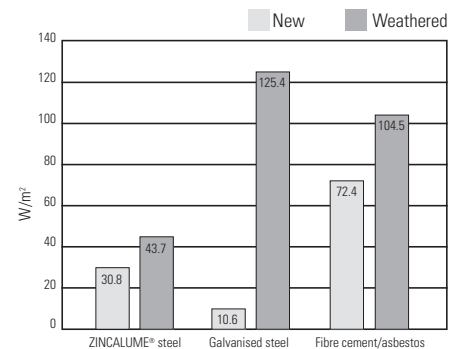
HEAT RADIATED INTO DWELLING OR ROOF SPACE (W/m²)

No insulation

Roof System	Exposure					
	NEW			WEATHERED		
	Wind Speed m/s			Wind Speed m/s		
	0	1.5	3	0	1.5	3
ZINCALUME® steel	50.5	30.8	22.0	69.4	43.7	31.6
Galvanised steel	20.3	10.6	7.1	175.4	125.4	98.1
Fibre cement/asbestos	98.3	72.4	57.1	141.6	104.5	82.4

HEAT RADIATED INTO BUILDING

Slight breeze of 1.5 m/s



Make sure it's genuine.

If your good name is on the line, make sure ours is on the steel. Look for the brand that identifies the long lasting guaranteed performance of genuine ZINCALUME® steel made by BlueScope Steel. Why risk your reputation by using generic Al/Zn coated steel when you can enjoy peace of mind by using genuine ZINCALUME® steel.

Look for the following dot matrix brands on the steel you use:

ZINCALUME(R) AZ150 steel made by BlueScope Steel

BlueScope Steel

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