

## GENERAL INFORMATION

Revision 4, November 2003

This literature supersedes all previous issues

### GENERAL DESCRIPTION

The metallic coated products of BlueScope Steel Limited are generally described by a registered trade mark followed by a designation of the steel base and coating class as outlined in Australian Standard 1397:2001.

### Continuously hot-dipped metallic-coated steels

As the surface of steel products gradually reverts to its most stable form, that is, iron oxide, it is necessary to isolate the surface from atmospheric conditions to prevent the unsightly oxide forming. This can be achieved by covering the surface with metals or organic materials such as paint or PVC laminate. The latter materials and some metals merely provide a blanket covering to protect the steel from the atmosphere and this is successful provided the complete coverage remains intact. Some metals, such as zinc, give an added feature of sacrificial protection at areas where the steel base is exposed such as cut edges, holes and scratches. A zinc/aluminium alloy coating combines the best features of both aluminium and zinc coatings. Metallic coating with zinc or zinc/aluminium alloy by the hot dip method is a universally proven and accepted system. The continuous hot-dip metallic coating lines operated by BlueScope Steel Australia produce a range of zinc-coated and zinc/aluminium coated steel sheet and strip products to meet the requirements of manufacturers in Australia.

The degree of corrosion protection afforded by each coating type and class depends on the many macro and micro environments in which it performs and therefore cannot be simply quantified. However it can generally be assumed that for a particular coating the life of the sheet would be in direct proportion to the coating mass on the sheet. For normal exterior protection the life of ZINCALUME® steel coating is far superior to the life of an equivalent thickness zinc coating.

ZINCANNEAL® and ZINCSEAL® are hot-dipped, zinc/iron alloy coated cold rolled steels which have smooth matte finish suitable for direct on painting in critical surface applications. This material is produced as a zinc coating which is heat treated after the hot dip coating process to provide a smooth zinc/iron alloy coating.

Zinc coatings are superior where products manufactured from them come into contact with concrete or concrete based products and are also superior for sheds used in intensive animal farming.

In addition, some manufacturers prefer the increased ductility of zinc coatings when forming metallic coated steel sheet into articles with very tight bends.

ZINCALUME® and GALVALUME® steel are the brand names of BlueScope Steel alloy-coated steel sheet. They are more readily painted than zinc surfaces for which added precautions are necessary in pretreatment and priming to ensure adequate paint adhesion.

ZINCALUME® zinc/aluminium alloy-coated steel is now supplied standard with a new specially formulated water-based clear acrylic resin film factory roller-coated and oven cured over the conventional passivation layer. The resin film, in combination with the passivation layer, has excellent adhesion to the substrate, very good impact resistance and flexibility, excellent marking resilience and the resin film acts as a lubricant during forming operations. GALVALUME® zinc/aluminium alloy-coated steel is essentially the same product as ZINCALUME® except that it is not supplied with a resin coating.

ZINCALUME®, ZINCANNEAL®, ZINCSEAL® and GALVALUME® are registered trade marks of BlueScope Steel Limited. BlueScope is a trade mark of BlueScope Steel Limited.

**Please ensure you have the current data sheet for this product as displayed at [www.bluescopesteel.com.au](http://www.bluescopesteel.com.au)**

### BlueScope Steel Limited

BlueScope Steel Limited ABN 16 000 011 058  
BlueScope Steel (AIS) Pty Ltd ABN 19 000 019 625

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### Designation System - Base Steel

The steel base grades of BlueScope Steel Limited continuously heat-treated, hot-dipped qualities are designated with the letter "G" followed by characters which indicate formability or strength and condition. Refer Table 1.

### Designation System - Coatings

Metallic coatings on steel sheet and strip are divided into five different types. Refer Table 2.

### Coating Mass

The ability of a metallic-coated sheet and strip product to withstand corrosion in a particular environment is a function of the amount (and type) of coating on the surface of the steel base. This is quantified as the "coating mass" and is the mass of coating on both sides of the steel base expressed in grams per square metre (g/m<sup>2</sup>).

### Coating Class

Coating Class is designated by the specified coating type and the minimum mass of coating on both sides of the sheet measured by the triple spot test as detailed in Australian Standard 1397:2001, eg AZ150, zinc/aluminium coating with a minimum coating of 150 g/m<sup>2</sup>.

### Coating Adhesion

The ability of a metallic coating to withstand deformation without peeling from the steel substrate varies with coating type and coating mass. Table 3 lists the guaranteed performance of the various metallic coatings and base combinations.

**This table is an EXPLANATION of the DESIGNATION SYSTEM ONLY**  
**It does not imply that all combinations are available**  
 Regularly available products are listed in the Data Sheets

**Table 1** – Designation System for Base Steel of Metallic-Coated Steel Sheet & Strip

GROUPS	CHARACTER POSITION			
	1	2	3	4
<b>Formable (Ductile)</b>	<b>Product Type</b>	<b>Degree of Formability</b>	<b>Condition</b>	<b>Surface Quality</b>
	G – Continuously heat-treated and hot-dip coated	1 – Profiling 2 – Commercial forming 3 – Drawing	B – Bake hardenable S – Skin – passed N – Non-ageing	F – Fully inspected E – Exposed applications
<b>Example</b>	<b>G</b>	<b>2</b>	<b>S</b>	
<b>Structural (Strength)</b>	<b>Product Type</b>	<b>Strength (Minimum Yield Strength – MPa)</b>		
	G – Continuously heat-treated and hot-dip coated	Numeral	Numeral	Numeral
<b>Example</b>	<b>G</b>	<b>2</b>	<b>5</b>	<b>0</b>

**Table 2** – Metallic coating types and designations

Coating Type	Coating Designation
Hot-dipped zinc (Zn)	Z
Hot-dipped aluminium/zinc (Al/Zn)	AZ
Hot-dipped zinc/iron (Zn/Fe)	ZF, ZS

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**Table 3** – Approximate coating thickness (total both sides) resulting from coating mass values

<b>Coating Class Designation</b>	<b>Nominal Total Coated Thickness Calculation Factor</b>
Z100	0.02 mm
Z200	0.03 mm
Z275	0.04 mm
Z350	0.05 mm
Z450	0.07 mm
Z600	0.09 mm ( $\leq 2.00$ mm BMT)
Z600	0.10 mm ( $> 2.00$ mm BMT)
AZ50	0.02 mm
AZ150	0.05 mm
AZ200	0.06 mm
ZF80	0.01 mm
ZF100	0.02 mm
ZS30	0.01 mm
45F45	0.01 mm
60F60	0.01 mm

Note: BMT – base metal thickness

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