

# TRUECORE® STEEL TECHNICAL GUIDE

For product identification and originality, please check the reverse side of the coil for the following branding text.

TRUECORE (R) AZ150 G550 steel made by BlueScope 16:18 01:APR:13 11



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# TrueCore®



## What is Structural Integrity?

Structural integrity affects the building's function and safety. Some framing materials are prone to warp, sag or shrink over time, hence increasing the risks of cracked walls, jammed doors and waving rooflines. Framing materials made from steel is an investment for your building's future.



### Dimension accuracy

TRUECORE® steel is true, straight and resistant to deformation.

### How does it work?

TRUECORE® steel is inert to moisture attack including any other defects such as fungal growth or termite infestation.

### How does it perform?

TRUECORE® steel is much easier to be utilised because it is flexible in design and provides structural versatility. Framing made from TRUECORE® steel is quick and easy to erect due to prefabrication and fastening techniques.

### Other advantages

- Termite proof - TRUECORE® steel is resistant to insect infestation and hence no damage to the building with the structure remaining as it is.
- No preservative or post treatment - TRUECORE® steel does not require any post treatment to prolong service life and minimum maintenance cost.

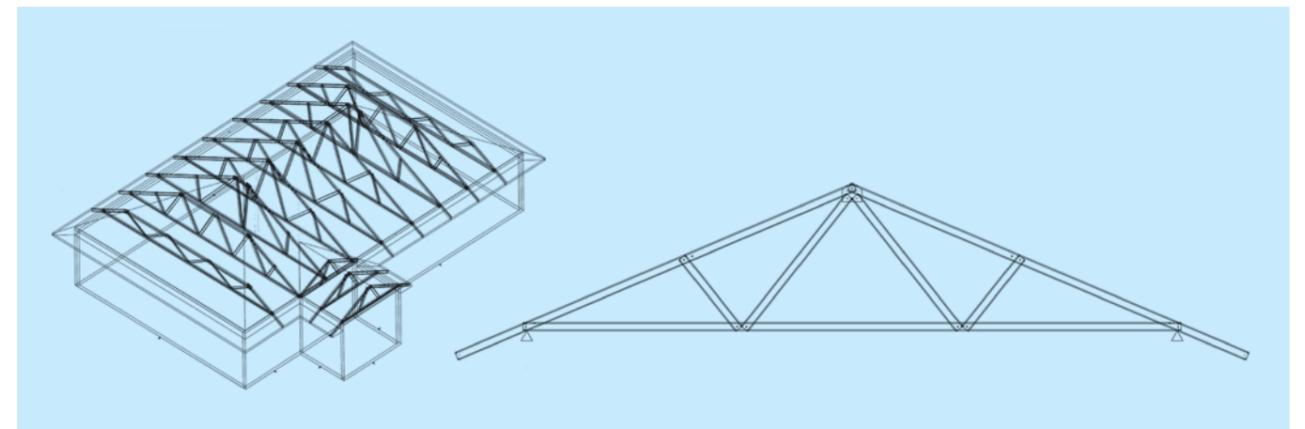
#### Key notes:

- Certain framing materials are highly sensible towards moisture and will shrink, twist, rot, warp and damaged.
- TRUECORE® steel is flexible in design with simple and quick installation.
- A TRUECORE® steel is ferrous metal, it is inert to moisture and termite attacks.



## What is Structural Design?

Structural design for roof trusses are carried out using Computer Aided System (CAD) in compliance to relevant design codes such as BS 5950 part 5 or AS/NZS 4600 and other code of practices as required by local authorities. A typical roof truss system should consist of top chord, bottom chord, web and batten made from high strength structural steel grade material with high corrosion resistance performance.



### G550—High strength

TRUECORE® steel is a designed structural grade building material that has a standard chemical composition and specific consistency in strength. TRUECORE® steel is high tensile and comes with a guarantee of 550 MPa yield strength.

### How does it work?

TRUECORE® steel can form a specific shape or cross section. With such high tensile strength together with the optimised engineering design, the structural load can be handled with less support and larger span.

### How does it perform?

As the structural load is optimised with less building material, it reduces the overall structural cost. TRUECORE® steel is light thus it is easy to handle including steel frame erection that requires minimum lifting cost. This also contributes to quick installation and a higher operating efficiency.

### Other strengths

- Non combustible - TRUECORE® steel is non fire propagated, hence minimum fire risk up to a temperature of 300 degrees celcius.
- High in durability - TRUECORE® steel when used properly, will have a service life of minimum 50 years.



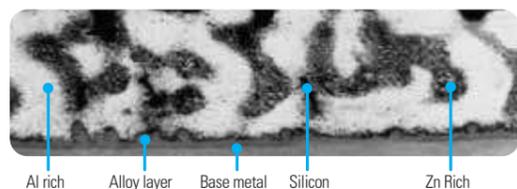
#### Key notes:

- More timber trusses are required for traditional building to support the structural load in preventing structural failure.
- TRUECORE® steel has high tensile strength that can handle the structural load more effectively with less support.
- TRUECORE® steel is specially designed as a high strength structural grade building material.



## What is Corrosion?

Corrosion is caused by the deterioration of metal due to chemical reaction as a result of exposure to the environment (water and oxygen). It is also known as oxidation. Corrosion of metal results in the formation of rust or oxides in the corroded area.



### ZN/AL coating technology (AZ150)

BlueScope's proprietary metallic coating technology - TRUECORE® steel is superior in corrosion performance under varied conditions, when compared with other galvanised steel.

TRUECORE® steel comprises 43.5% zinc, 55.0% aluminium and 1.5% silicon. The minimum coating mass of 150 g/m<sup>2</sup> offers a high level of corrosion resistance.

### How does it work?

Sacrificial protection is provided by an active metal (e.g. zinc), protecting a less active metal (e.g. steel). The more active metal corrodes in preference to the less active metal will corrode (Figure A). TRUECORE® steel exhibits a more complex coating structure consisting of both zinc-rich and aluminium-rich areas (Figure B). The zinc-rich area provides excellent sacrificial protection, while the aluminium rich area provides durable barrier protection. It is the combination of these two characteristics that make TRUECORE® steel durable and effective against corrosion.

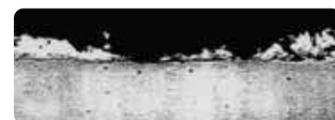


Figure A - Microscopic view of galvanised steel



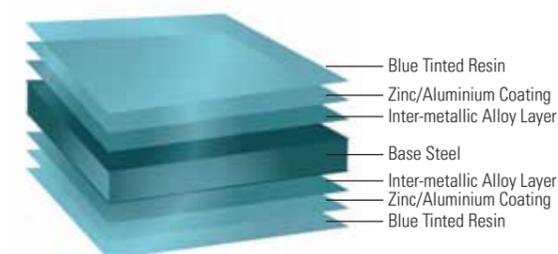
Figure B - Microscopic view of TRUECORE® steel

Corrosion rates of galvanised steel and 55% Al-Zn alloy coated steel at Australian Atmosphere Exposure Test Sites.

Site	Galvanized Steel		55%Al-Zn Alloy Coated Steel	
	g/m <sup>2</sup> /y	µm/y	g/m <sup>2</sup> /y	µm/y
Severe Marine	140	9.8	16	2.2
Marine	18	1.3	4.0	0.54
Industrial/Marine	20	1.4	4.2	0.57
Rural	4	0.28	1.3	0.17

g/m<sup>2</sup> - two sided      µm - one side

### Cross-section of TRUECORE® steel



### How does it perform?

The pictured samples were exposed for the same period of time under a similar severe condition. The galvanised steel shows severe loss of coating and consequent red rusting of the steel substrate but the TRUECORE® steel is still in good condition.



AZ150 at 500 hours



Z180 at 500 hours



Salt Spray chamber

### Key notes:

- Corrosion is dissolution of metal due to the surrounding environment.
- TRUECORE® steel comprises 43.5% zinc, 55.0% aluminium and 1.5% silicon with a minimum coating mass of 150g/m<sup>2</sup>.
- For TRUECORE® steel, the zinc-rich area provides excellent sacrificial protection, while the aluminium-rich area provides durable barrier protection.

# What is TRUECORE® steel from BlueScope?

## 1 2 3

### How confident are you if offered an equivalent product?

TRUECORE® steel combines the superior strength of zinc/aluminium alloy-coated steel with an exclusive blue resin tint from BlueScope.

TRUECORE® steel complies with Australian Standards AS 1397 and Malaysia Standards MS 1196. Durability and performance is backed by warranty\*.

### Benefits of TRUECORE® steel, only from BlueScope

- High corrosion resistance
- Guaranteed material strength of G550
- Warranty\* against structural failure caused by corrosion up to 50 years
- Proven customer and in-field response and support
- Nationwide availability and support
- Certified and tested by SIRIM

### How to identify genuine TRUECORE® steel, only from BlueScope

To identify genuine TRUECORE® steel made only by BlueScope, pay attention to the TRUECORE® steel branding text on every coil. The brand presence is your assurance of BlueScope's commitment to quality.

The quality assurance and warranty\* offered from BlueScope

- Guaranteed minimum yield strength of G550 MPa
- Minimum coating mass of 150g/m<sup>2</sup> by triple spot test

\*Warranty terms and conditions apply

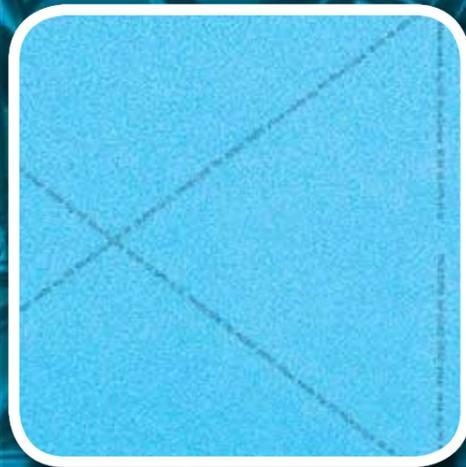
# Nothing less than original TRUECORE® steel

This simple checklist is your guarantee of our TRUECORE® steel superiority.

- ✓ Dimensionally stable
- ✓ Durable, strong & lightweight
- ✓ Termite proof
- ✓ Environmentally-friendly
- ✓ 50 years BlueScope warranty\*
- ✓ Manufactured only by BlueScope and tested in Malaysia

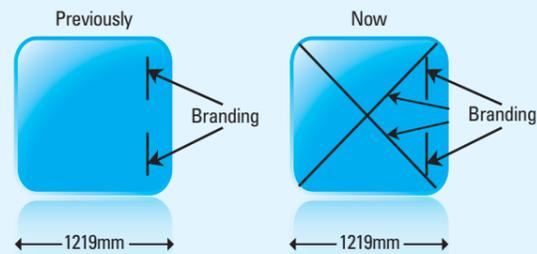
## How to identify genuine TRUECORE® steel?

To identify that your TRUECORE® steel is genuine from BlueScope, look for this branding text on every coil and its distinctive blue tinted resin appearance.



## How many types of branding text exist on TRUECORE® steel?

To maximize the identity of TRUECORE® steel, both side branding and sinusoidal branding co-exist in TRUECORE® steel. See illustration below.

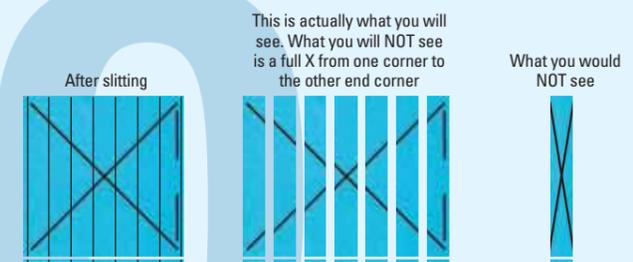


## Will the TRUECORE® steel sinusoidal branding text affect the product performance including mechanical properties such as tensile strength and elongation?

No. Sinusoidal branding is just a change with the printing orientation and there is NO impact to the product performance and the mechanical properties. TRUECORE® steel still guarantees minimum yield strength of 550 MPa.

## After TRUECORE® steel has been slitted and roll-formed into truss, would I still able to see the branding text in sinusoidal form?

No. After TRUECORE® steel has been slitted, the sinusoidal branding text will be cut into small portions. You may see only a portion of the branding text in diagonal directions in every slit piece or every truss. See illustration below.



## Can I reject the coil if the sinusoidal branding text is not consistently printed?

No. The objective of reverse sinusoidal branding text is to increase the visibility of TRUECORE® steel's branding text for easier identification. However if its content is wrongly printed such as wrong coating mass e.g. AZ100 instead of AZ150, then a formal complaint could be raised.

## If I cannot read the full branding text now, how do I know the TRUECORE® steel is genuine and made by NS BlueScope Malaysia?

Although you are seeing only a portion of the branding text, the diagonal direction of the branding text is now a unique product identification feature of TRUECORE® steel, where imitated blue tinted steel products will not be able to replicate.

# Datasheet

REVISION 1, SEPTEMBER 2012

## GENERAL DESCRIPTION

TRUECORE® steel is a hot-dipped zinc/aluminum alloy-coated structural steel with a regular blue tinted resin spangle surface and a guaranteed minimum yield strength of 550MPa with limited ductility.

## TYPICAL USES

Steel house frames and trusses where the product is not visible. For material selection advice, please contact your nearest BlueScope sales office.

**AUSTRALIAN STANDARD**  
AS 1397

**MALAYSIAN STANDARD**  
MS 1196

## DIMENSIONS: (For normal supply product)

Preferred base metal thickness, mm*	Strip width range, mm
0.45, 0.48, 0.50, 0.55	610 - 1219
0.60, 0.70, 0.75	610 - 1219
0.80, 0.90, 1.00, 1.20	610 - 1219
*Any other sizes may be available on request	

## MECHANICAL PROPERTIES

Steel base	Guaranteed (0.42mm)	Guaranteed (> 0.60mm)	Typical* (0.42 mm thick)
Longitudinal tensile			
Yield strength, MPa	550 min	550 min	680 - 740
Tensile strength, MPa	550 min	550 min	680 - 740
Elong on 50 mm, %	—	2 min	1 - 6
Hardness, HR30T	—	—	75 - 85
180° transverse bend (L axis)	—	—	—

## CHEMICAL COMPOSITION

Guaranteed maximum %	
Carbon (C)	0.20
Phosphorus (P)	0.04
Manganese (Mn)	1.20
Sulphur (S)	0.03
Typical %	
Carbon (C)	0.035 - 0.07
Phosphorus (P)	0.00 - 0.02
Manganese (Mn)	0.20 - 0.30
Sulphur (S)	0.00 - 0.02
Silicon (Si)	0.00 - 0.02
Aluminium (Al)	0.02 - 0.07
Nitrogen (N)	0.000 - 0.008

\* Typical mechanical properties are based on aggregation of x and 2SD performance.

## SUPPLY CONDITION

Coating class	Normal AZ150
Surface condition	Spangled Tinted Blue
Surface treatment	Passivated/ Resin Coated Tinted Blue
<b>Tolerance class AS/NZS 1365*</b>	
Thickness	Class A
Width	Class A
Flatness	Class A
<b>Branding</b>	<b>Branded</b>

\* The dimensional tolerances for thickness, width, flatness and camber shall be in accordance with the requirements of AS 1365.

## FABRICATING PERFORMANCE

Where 1 = Limited to 5 = Excellent or NR = Not Recommended	
Bending	2
Drawing	NR
Pressing	NR
Roll-forming (5t min. Internal radius)	3
Welding (design must allow for some strength reduction near welds)	4*
Painting (pretreatment)	5

\*Welding design must allow for some strength reduction near welds.

Note: 1. Customers should use this product promptly (within 6 months) to avoid the possibility of storage related corrosion.  
2. Rollforming marks do not affect the performance of TRUECORE® steel.

## Green accreditation for the environment

Environmental sustainability is a continuous effort and commitment from all of us. We ensure our customers receive the highest standard in both quality and efficiency with the environment's best interest at heart. There is no better way to demonstrate our commitment than receiving green accreditation from renowned independent bodies.

Our coated steel products are accredited with Eco-Label by SIRIM QAS International, a member of the Global Ecolabelling Network (GEN).

The SIRIM Eco-Label certification identifies a product's overall environmental impact and the communication of its environmental information to consumers and businesses. Through this scheme, the product has undergone independent evaluation; and certified by SIRIM on its environment performance against criteria which include the composition of raw materials used, hazardous substances management and waste and energy management in the entire manufacturing operation cycle.