



TRUECORE® STEEL
TECHNICAL GUIDE

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

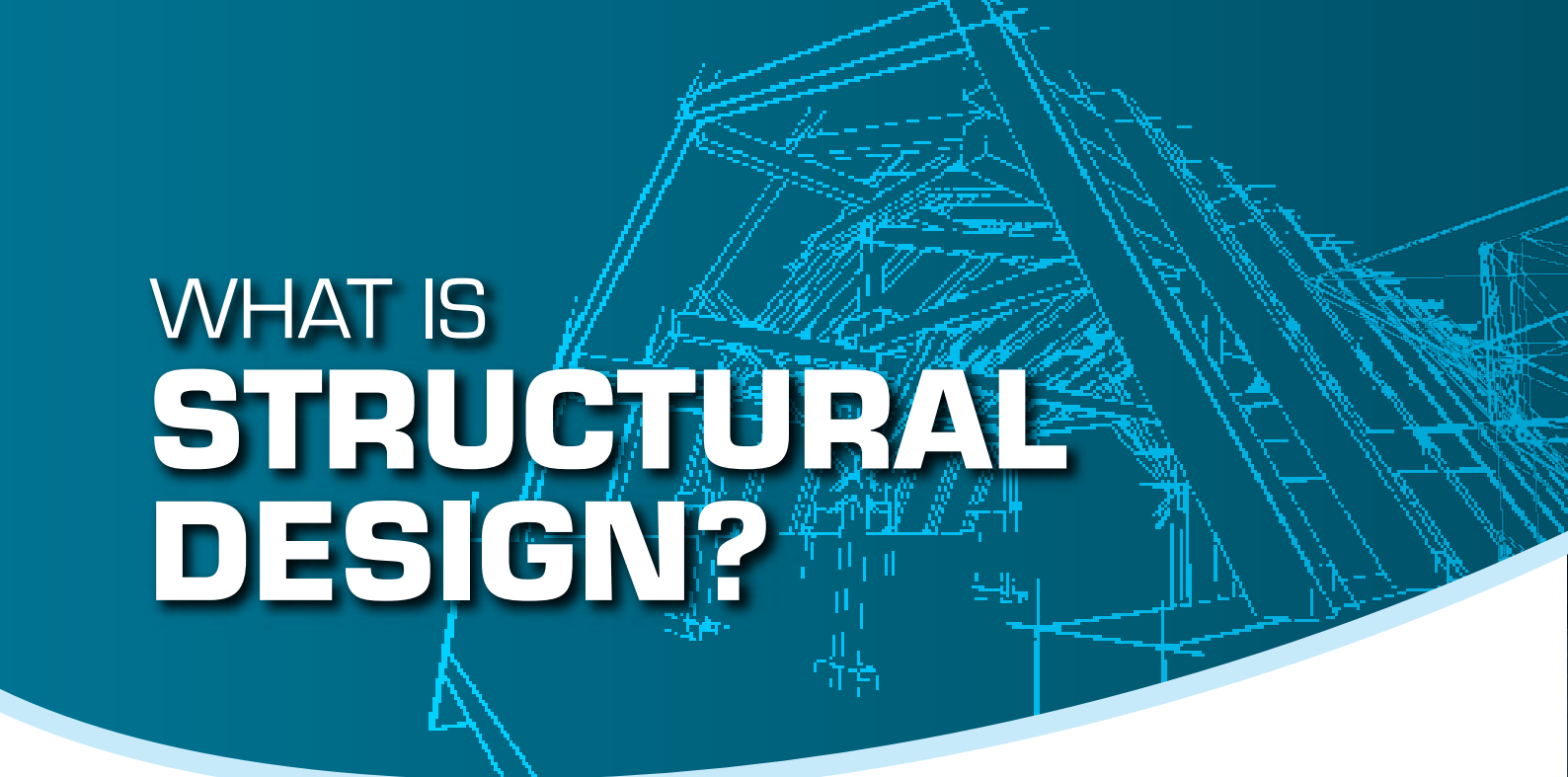
Termite proof - TRUECORE® steel is resistant to insect infestation and hence no damage to the building with the structure remaining as it is.

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 sensitive and vulnerable towards moisture and will shrink, twist, rot, warp and damaged.
- TRUECORE® steel is Flexible in design with simple and quick installation.
- TRUECORE® steel is able to prevent 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 guaranteed minimum 550 MPa yield strength.

OPTIMIZE DESIGN PERFORMANCE

TRUECORE® steel can be used to 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.

OPTIMIZE STRUCTURAL COST

As the structural load is optimised with less building material, it reduces the overall structural cost. TRUECORE® steel is light 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

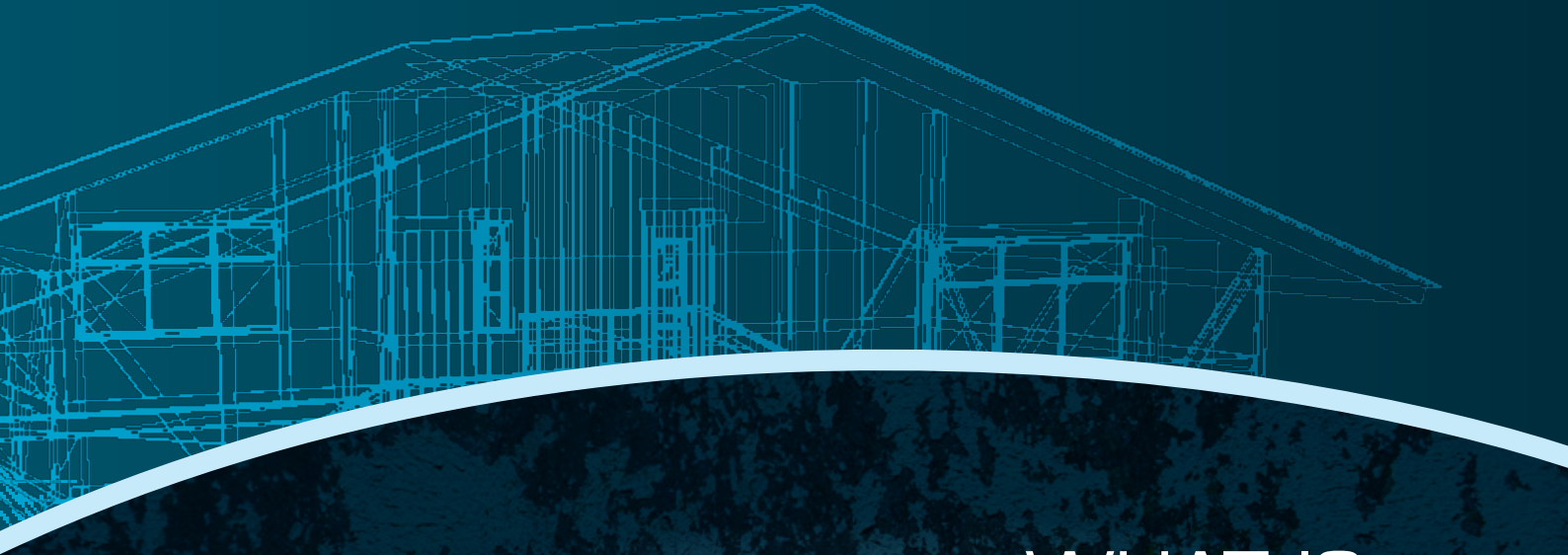
Non combustible - TRUECORE® steel is non fire propagated, hence minimum fire risk up to a temperature of 300°C

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 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.



COATING TECHNOLOGY

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

TRUECORE® steel coating comprises of 55.0% Aluminium, 43.5% of zinc, 1.5% of silicon. The minimum coating mass of 150g/m² by triple spot test offers a high level of corrosion resistance.



AL RICH

ALLOY LAYER

BASE STEEL

SILICON

ZN RICH

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 galvanized steel



Figure B - Microscopic view of TRUECORE® steel

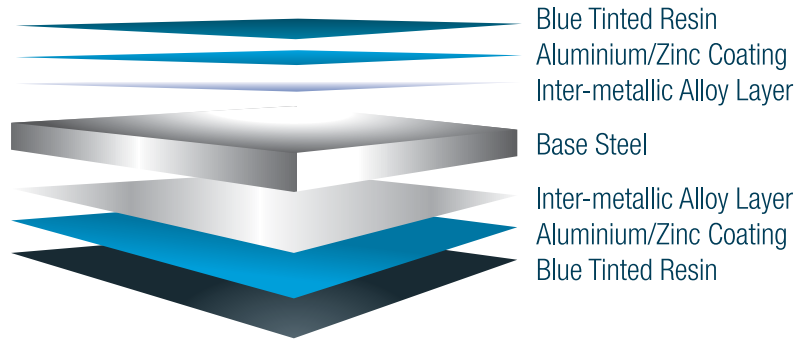
Corrosion rates of galvanized steel and 55% Al-Zn alloy coated steel at Australian Atmosphere Exposure Test Sites.

Site	Galvanized Steel		55% Al-Zn Alloy Coated Steel	
	g/m ² /y	µm/y	g/m ² /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/m² - two sided

µm - one side

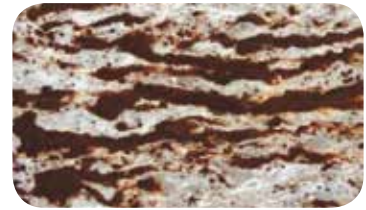
CROSS SECTION OF TRUECORE® STEEL



Salt Spray chamber



TRUECORE® steel at 500 hours



Galvanised steel at 500 hours

The pictured samples above were exposed for the same period of time under a similar severe condition. The galvanised steel (Z180) shows severe loss of coating and consequent red rusting of the steel substrate but the TRUECORE® steel remains in good condition.

KEY NOTES

- Corrosion is dissolution of metal due to the surrounding environment.
- TRUECORE® steel coating comprises of 55.0% Aluminium, 43.5% of zinc, 1.5% of silicon with a minimum coating mass of 150g/m² by triple spot test.
- For TRUECORE® steel, the zinc-rich area provides excellent sacrificial protection, while the aluminium-rich area provides durable barrier protection.

HOW DOES IT PERFORM?

WHAT IS **TRUECORE®** **STEEL** FROM **BLUESCOPE?**

1

HOW CONFIDENT ARE YOU IF OFFERED AN EQUIVALENT PRODUCT?

TRUECORE® steel combines the superior strength of aluminium/zinc 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*.

2

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 reponse and support.
- Nationwide availability and support
- Certified and tested by SIRIM

3

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 text is your assurance of BlueScope's commitment to quality.

The quality assurance and warranty* offered by BlueScope:

- Guaranteed minimum yield strength of 550MPa
- Minimum coating mass of 150g/m² by triple spot test

NOTHING LESS THAN **TRUECORE® STEEL**



HOW TO IDENTIFY GENUINE TRUECORE® STEEL?

To be assured that your TRUECORE® steel is genuine from BlueScope, look for this branding text on the reverse side/surface of every coil and its distinctive blue tinted resin appearance.

THIS SIMPLE CHECKLIST IS YOUR GUARANTEE OF OUR TRUECORE® STEEL SUPERIORITY.

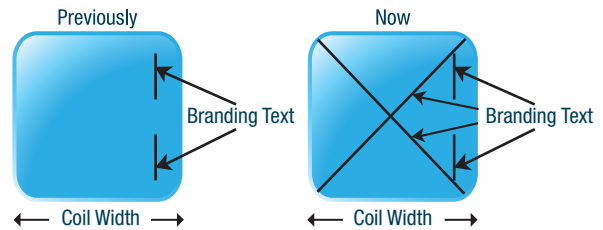
- Dimensionally stable
- Durable, strong & lightweight
- Termite proof
- Environmentally-friendly
- 50 years BlueScope warranty*
- Manufactured only by BlueScope and tested in Malaysia.



Q&A

TYPES OF BRANDING TEXT ARE THERE ON TRUECORE® STEEL:

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

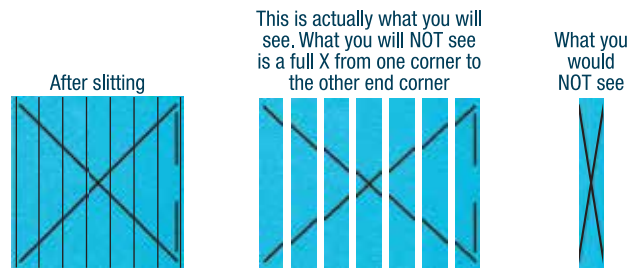


WILL THE TRUECORE® STEEL SINUSOIDAL BRANDING TEXT AFFECT THE PRODUCT PERFORMANCE INCLUDING MECHANICAL PROPERTIES SUCH AS TENSILE STRENGTH AND ELONGATION?

No. Sinusoidal branding is just a change with 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 complete and full 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 on the right.



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.

Green accreditation for the environment

Environmental sustainability is a continuous effort and commitment from BlueScope. We ensure our customers meet 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 the green accreditation from renowned independent bodies.

Our coated steel products are accredited with SIRIM ECO-LABEL for Coated Flat Steel Products Criteria by SIRIM QAS International, a member of the Global Ecolabelling Network (GEN); and Singapore Green Building Council, the only non-profit organisation with a concerted private-public sector partnership to achieve a world-class and sustainable built-environment in Singapore.

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

Our commitment for sustainability is further proven as we are recognised by the Green Building Index (GBI) Credits by Green Pages Malaysia at www.greendirectory.com, MyHIJAU Directory at greendirectory.my

DATASHEET

REVISION 3, OCTOBER 2015

GENERAL DESCRIPTION

TRUECORE® steel is a continuous hot-dipped zinc/aluminium 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*

0.45, 0.48, 0.50, 0.55
0.60, 0.70, 0.75
0.80, 0.90, 1.00, 1.20

Maximum width, mm

1219
1219
1219

*Any other sizes may be available on request

MECHANICAL PROPERTIES

Steel base	Guaranteed		Typical*
	(0.42mm)	(>0.60mm)	
Longitudinal tensile			(0.42mm thick)
Yield strength, MPa	550 min	550 min	680 - 740
Tensile strength, MPa	550 min	570 min	680 - 740
Elong on 50 mm, %	-	2 min	1 - 9
Hardness, HR30T	-	-	75 - 85
180° transverse bend (L axis)	-	-	-

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

CHEMICAL COMPOSITION

Guaranteed maximum %	
Carbon (C)	0.25
Phosphorus (P)	0.045
Manganese (Mn)	1.15
Sulphur (S)	0.04

SUPPLY CONDITION

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

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

FABRICATING PERFORMANCE

Where 1 = Limited to 5 = Excellent or
NR = Not Recommended

Bending	1
Drawing	NR
Pressing	NR
Roll-forming (5t min. Internal radius)	3
Welding (design must allow for some strength reduction near welds)	4*
Painting (pretreatment)	-

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

METAL COATING ADHESION - 180° BEND TEST

Coating Class	
AZ150	2t
Notes	
Where t = the diameter of mandrel in terms of thickness of product.	

FIRE HAZARD PROPERTIES - AS/NZS1530.3

Index	Range	Result
Ignitability Index	0-20	0
Spread Of Flame Index	0-10	0
Heat Evolved Index	0-10	0
Smoke Developed Index	0-10	0-1

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.

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

TRUECORE (R) AZ150 6550 steel made by BlueScope 15.18 01.APR.13 II



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