COLORBOND® Ultra steel

TATA BLUESCOPE STEEL

Technical Data Sheet

Document No. TDS 003 | Revision - 05 | March 2021

This literature supersedes all previous issues.

Product

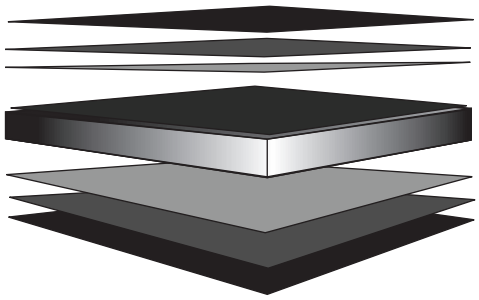
COLORBOND® Ultra steel (metallic coated & pre-painted) designed by BlueScope, Australia & manufactured in India by Tata BlueScope Steel combines long term durability & excellent corrosion resistance for roofing and wall cladding and accessories, suited to moderately severe marine & industrial environments.

Standard

Paint Coating*: AS/NZS 2728 Type 4 / ASTM A755M / IS15965 class 4
Substrate**: AS 1397 / ASTM A792M / IS 15961

*COLORBOND® Ultra steel is possible against other standards also
**Substrate: ZINCALUME® steel G550 / 550 class 1 / YS550 or G350 / 340 Class 2 / YS350 or G300 / YS300 with metallic coating of 200 g/m² minimum

Cross Sectional View of COLORBOND® Ultra steel



- Top Coat# paint with Super Durable Polyester Resin (Norminal 20µm)##
- High Corrosion Resistant Primer (Norminal 5µm)##
- Conversion Coating
- ZINCALUME® - AZ200 steel substrate
- Conversion Coating
- High Corrosion Resistant Primer (Norminal 5µm)##
- Backing Coat (Nominal 10µm)## (Refer Note 4)

#The top coat is incorporated with THERMATECH® solar reflectance technology (Refer note 10), inorganic pigments and is free of Lead.
Triple spot minimum coat thickness - 80% of nominal value.

Properties of Steel Base (other steel base possible on agreement)

Chemical Element	Guaranteed Maximum (%)			
	G550*/ 550**/ YS550#	G300*/ YS300#	340 Class2**	G350* YS350#
Carbon (C)	0.200	0.250	0.250	0.250
Manganese (Mn)	1.200	1.600	1.350	1.600
Phosphorus (P)	0.040	0.050	0.040	0.050
Sulphur (S)	0.030	0.035	0.040	0.035

Note: *AS 1397, **ASTM A792M, #IS 15961

Guaranteed Minimum				
Mechanical Property	G550#/ 550**/ YS550#	G300*/ YS300#	340 Class2**	G350*/ YS350#
Yield Strength, MPa	550	300	340	350
Tensile Strength, MPa	570	340	-	420
Elongation on 80 mm GL (≥ 0.60 mm), %	2	18	12	14
Transverse Bend Test (180⁰ Bend)	-	2t	-	t

**ASTM A792M (i) GL of 50mm, (ii) grade 550 in class 1, (iii) grade 340 in class 2
Note: Mechanical properties are guaranteed at ambient/room temperature | Tensile test in longitudinal direction

Dimension Range & Tolerances

Base Metal Thickness (mm)		
Range	Tolerance	
	Width ≤ 1200	Width > 1200
0.03 - 0.50	± 0.03	± 0.04
0.51 - 0.80	± 0.04	± 0.05
0.81 - 1.2	± 0.05	± 0.06
> 1.20	± 0.06	± 0.07

Width (mm)	
Range	Tolerance
< 900 (in slit edge)	+1 / -0
914 - 1000	+4 / -0
1001 - 1220	+5 / -0

a) Specific requirement is possible on agreement b) Other dimension & shape tolerances as per AS 1365/ ASTM A568M / ASTM 924M/ IS/ISO 16163

Paint Line Tested Properties of Top Coat

Property	Measured By	Test Method	Results
Hardness	Pencil	AS/NZS 1580.405.1 / IS 15965	HB or Harder
Adhesion	Reverse Impact	AS/NZS 2728 (App.E) / IS 15965 (Annex B)	≥ 10 Joule
	T - Bend	AS/NZS 2728 (App.F) / IS 15965 (Annex B)	Maximum 5T
Specular Gloss	60⁰ meter	AS/NZS 1580.602.2 / ASTM D 523 / IS 101 (Part 4/ Sce 4)	Nominal +/-10 unit.

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Expected Product Service Performance (Top Coat)

Property	Measured After	Test Method	Results
Adhesion	Natural well washed exposure (10 years)	AS/NZS 1580.457.1	No flaking or peeling. Refer note 9.
Flexibility	T - Bend	ASTM D 4145	Maximum 10T (no cracking). Refer note 5.
Resistance to colour change	QUV (2000 hours)	ASTM G 154 ASTM D 2244	ΔE cielab 2000 - Intermediate Color: ≤ 5 units
	Natural well washed exposure (10 years)	ASTM D 2244 AS/NZS 1580.457.1	ΔE cielab 2000 - Refer note 9. Light Color: ≤ 4 units Int. Color: ≤ 6 units, Dark color: ≤ 10 units
Resistance to chalking	QUV (2000 hours)	ASTM G 154 AS/NZS 1580.481.1.11 (Method B)	Chalk Rating: ≤ 4
	Natural well washed exposure (10 years)	AS/NZS 1580.457.1 AS/NZS 1580.481.1.11 (Method B)	Chalk Rating: ≤ 4. Refer note 9.
Resistance to corrosion	Salt Spray (2000 hours)	ASTM B117 AS 2331.3.1 NCCA Tech Bulletin 5.4.6 AS/NZS 2728 (App. I) AS/NZS 1580.481.1.9 (Blisters) AS/NZS 1580.408.4 (Adhesion) IS 15965 (Annex D)	Blister density: ≤ 2 Blister size: ≤ S3 Undercut from a score: ≤ 2 mm No loss of adhesion or corrosion
Resistance to humidity	1000 hours	ASTM D 2247 ASTM D 4585 AS/NZS 1580.481.1.9 AS/NZS 1580.408.4 IS 15965 (Annex D)	Blister density: ≤ 3 Blister size: ≤ S2 No loss of adhesion or corrosion
Resistance to acids	Exposure	ASTM D 1308 (3.1.1)	No discoloration or blistering. Refer note 6.
Resistance to alkalies		AS/NZS 1580.481.1.9 ASTM D 2244	
Resistance to solvents			
Resistance to heat	Exposure 100^0 C continuous (500 hours)	ASTM D 2244	Colour Change ΔE cielab 2000: ≤ 3 units
Resistance to fire	Exposure	AS/NZS 1530.3	Index / Range / Rating Ignitability 0-20 0 Spread of flame 0-10 0 Heat evolved 0-10 0 Smoke developed 0-10 0-1
Resistance to abrasion	Scratch	AS 2331.4.7	Typically 2000 g

Note:

1) COLORBOND® Ultra steel may not be suitable for use in abnormally corrosive environments; in areas not washed by rain, or in applications where it will be wholly or partly buried in the ground. Before purchase, check suitability by contacting Tata BlueScope Steel sales office.
2) Results mentioned are for standard colours of COLORBOND® Ultra steel under normal well washed conditions of exposure away from marine location.
3) The product is supplied with a nominal 25 unit (60^0) gloss Top Coat.
4) Backing Coat - a thin coating applied to the reverse surface of the prepainted coil. It also gives additional durability to the reverse surface during the service life of the product, but for aesthetic reasons it is not recommended for exposure to sunlight. Performance Requirements are generally not applicable to backing coats. The backer coat in specific color and with foam adhesion properties is possible on agreement.
5) The minimum internal bend diameter for forming process to achieve no paint cracking (visibility using x10 magnification) and to avoid paint adhesion issues are specified by T-Bend flexibility and T-Bend adhesion results respectively - where 1T equals the Total Painted Thickness (TPT) in mm of the material. These results are based on testing at 20-25^{0}C.
6) COLORBOND® Ultra steel has good resistance to accidental spillage of solvents such as methylated spirits, white spirit, mineral turpentine, toluene, trichloroethylene, dilute mineral acids and alkalis. However, all spillages should be immediately removed by water washing and drying.
7) For most products, the metallurgical ageing process which is inherent in the paint stoving cycle will result in some loss of ductility compared with unpainted product. However, minimum strength levels designated by relevant standards will still be qualified.
8) Improper storage or the use of un-approved roll-forming lubricants may adversely affect colour. Material which becomes wet while in stacks or bundles must be separated and dried (refer AS/NZS 2728 Appendix L).
9) Values quoted are for panels exposed in accordance with AS/NZS 2728. Variations for in-situ performance may occur due to complexity of building design and location.
10) COLORBOND® Ultra steel colours are incorporated with THERMATECH® solar reflectance technology. THERMATECH® technology lowers surface temperature by absorbing lesser heat from the sun, thereby reducing the heat radiation travelling downwards into the building and thus keeping both the roof and building cooler.

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