

1st
ANNIVERSARY

**WHICH COATED
STEEL SHOULD
YOU CHOOSE
WHEN ALL STEEL
LOOKS THE SAME.**

Mr. FEKRY ZAKY



POSTGRAD. RESEARCH IN PAINT TECHNOLOGY & PROJECT MANAGEMENT



ACCUMULATED 33 YEARS EXPERIENCE IN COIL COATING



17 YEARS IN BLUESCOPE IN VARIOUS RESEARCH ROLES





Fekry Zaky

Polymer Coating Approval Specialist

**WHICH COATED
STEEL SHOULD YOU
CHOOSE WHEN ALL
STEEL LOOKS THE
SAME.
THE CHOICE IS
YOURS.**

INTRODUCTION

Pre-painted Steel customer/ end-user expectations



Beautiful, durable and versatile



Safe and sustainable



Is subjected to years of rigorous testing ensuring a long-lasting performance



Made for the intended environment and conditions

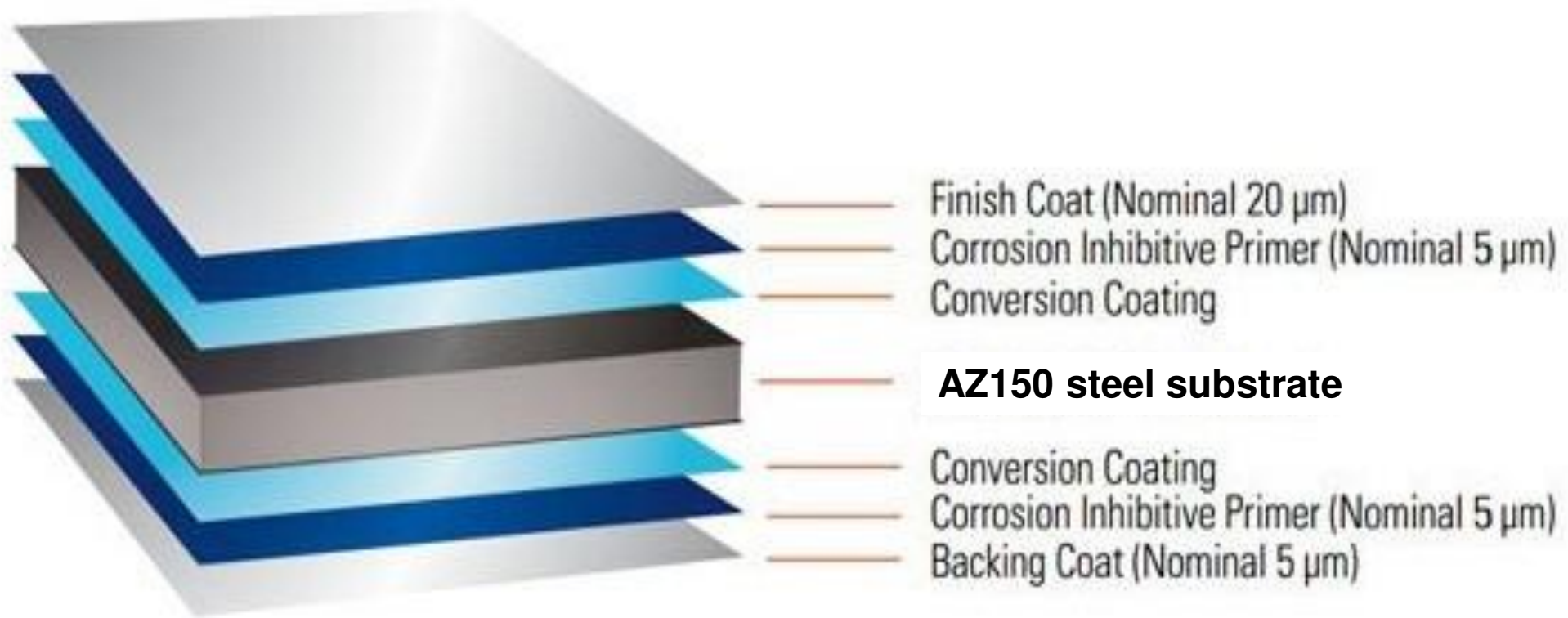


Supported by a suitable warranty and a strong team of technical experts during the product's life



Affordability

PRE-PAINTED STEEL LAYERS



BEAUTIFUL AND VERSATILE



DURABLE

11 years old roof



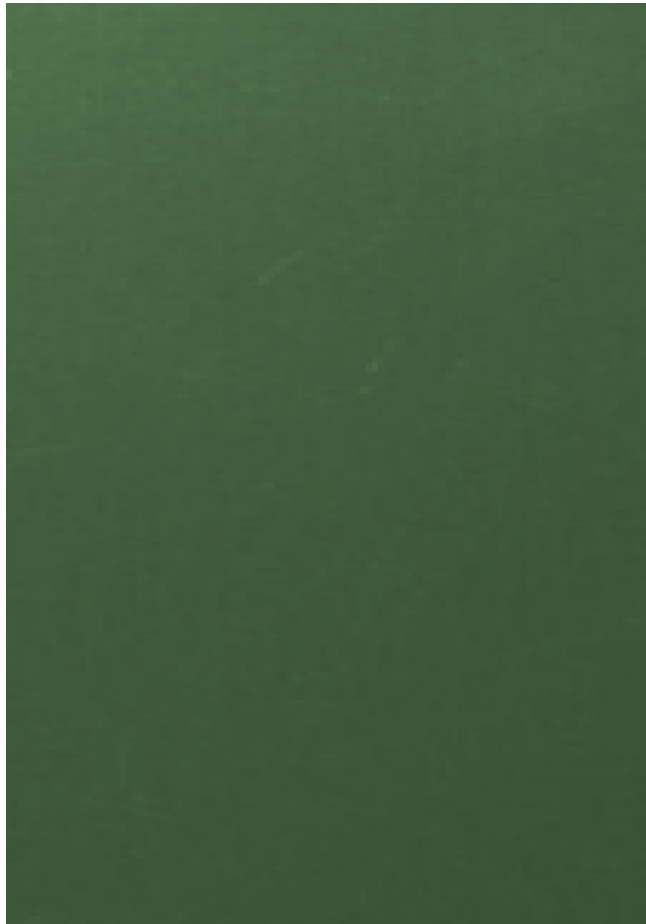
DURABLE

5 years old shed



INITIAL CHOICE

What questions should we ask?



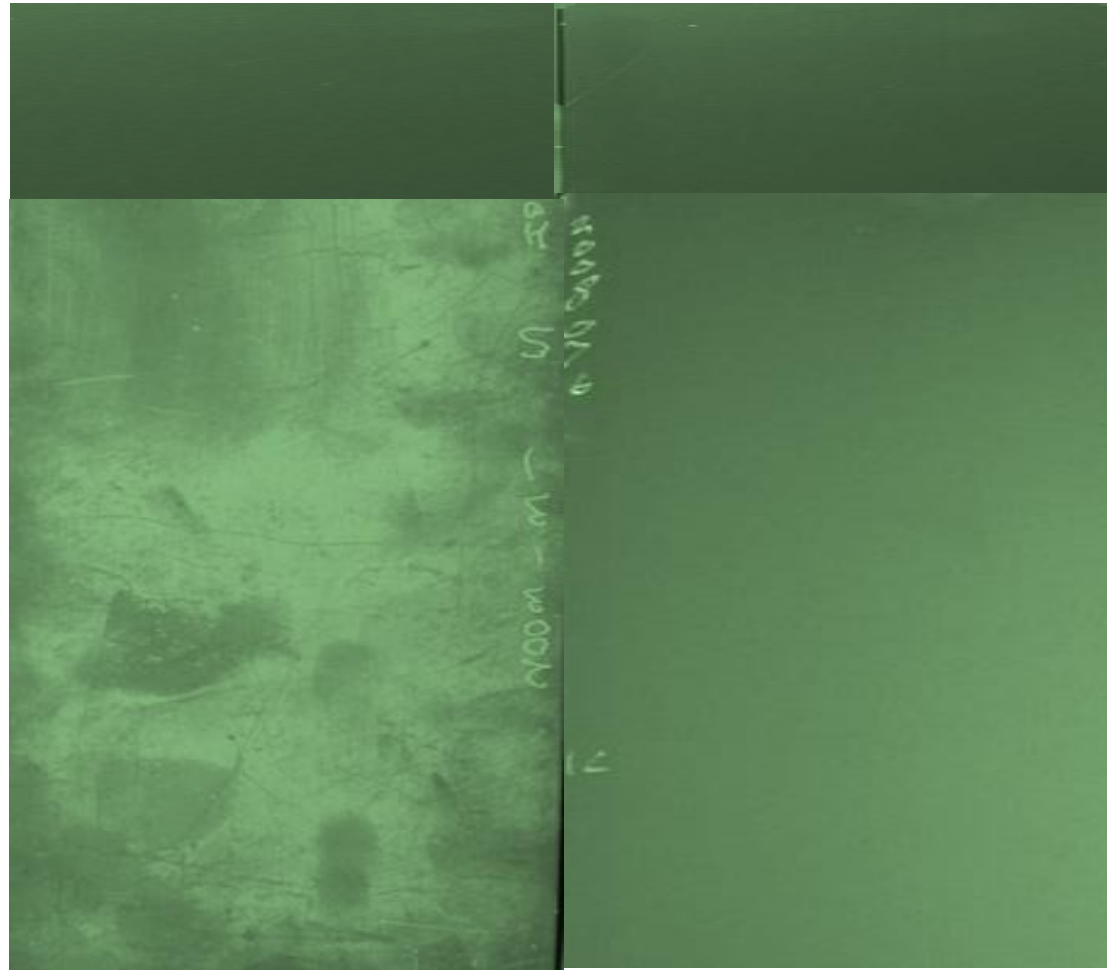
Supplier A



Supplier B

ACCREDITED SUNSHINE TEST SITE

4 years outdoor exposure choice

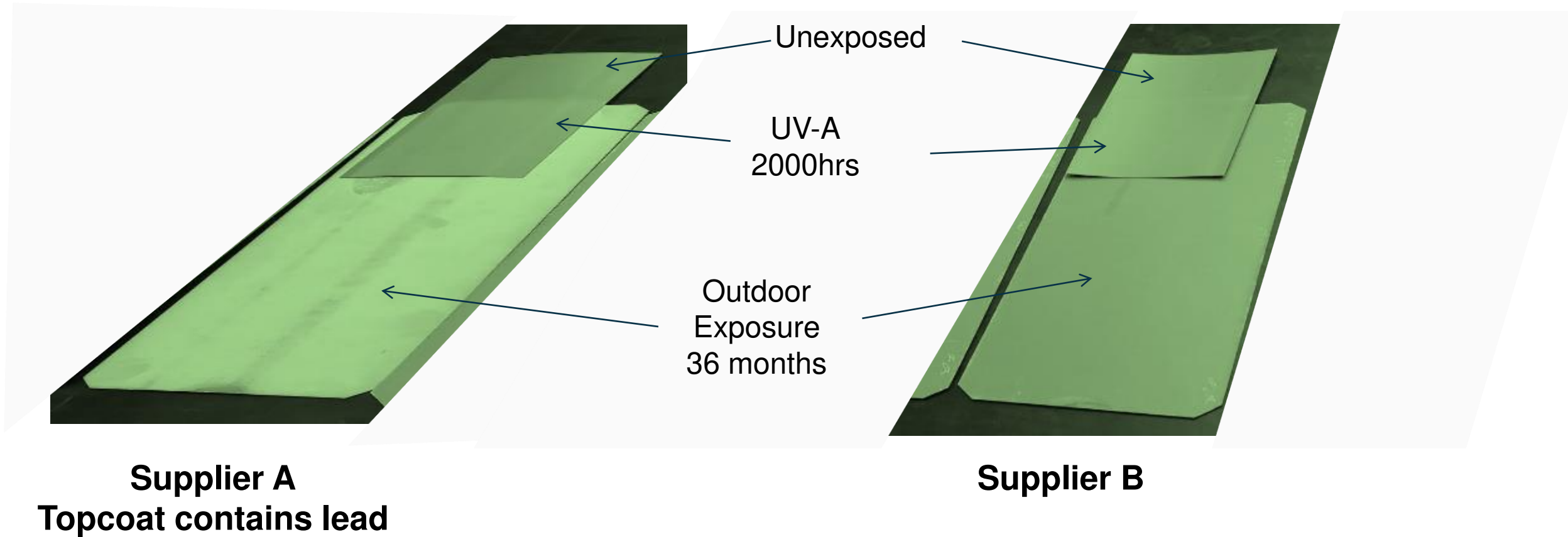


Supplier A

Supplier B

PRODUCT PERFORMANCE

36 months outdoor exposure vs. UV-A 2000hrs exposure



OUR STEEL TEST FACILITIES

Our steel endures rigorous testing.

A combination of:

- Accelerated laboratory testing;
- Outdoor testing with world wide exposure sites;
- Chemical analysis;
- Physical testing.

Our steel testing covers the life cycle of the product including production, transportation, roll forming, installation, long-term durability corrosion, UV and heat resistance.

ACCELERATED LABORATORY TESTING

Accelerated testing performed includes;

Corrosion testing

- Cyclic corrosion
- Salt Spray

Durability testing

- UV

Humidity testing

- Humidity

ACCREDITED LABORATORY TESTING

Our laboratory performs tens of thousands of readings each year.



OUTDOOR TEST SITE (SEVERE MARINE)

Rated as C4 corrosion test site according to ISO 9223 and AS/NZS 2728



OUTDOOR TEST SITE (SUNSHINE)

Rated as severe UV durability test site according to AS/NZS 2728



OUTDOOR TEST SITE (TROPICAL)

Combined industrial and UV site. Actual environment



COLOUR PERFORMANCE AT SUNSHINE SITE

- Lead, a poisonous substance detected in the topcoat of competitor sample. Lead not used in supplier B steel paints.
- Supplier A product has a low topcoat film thickness of 10.8microns. This could make it prone to early UV delamination.



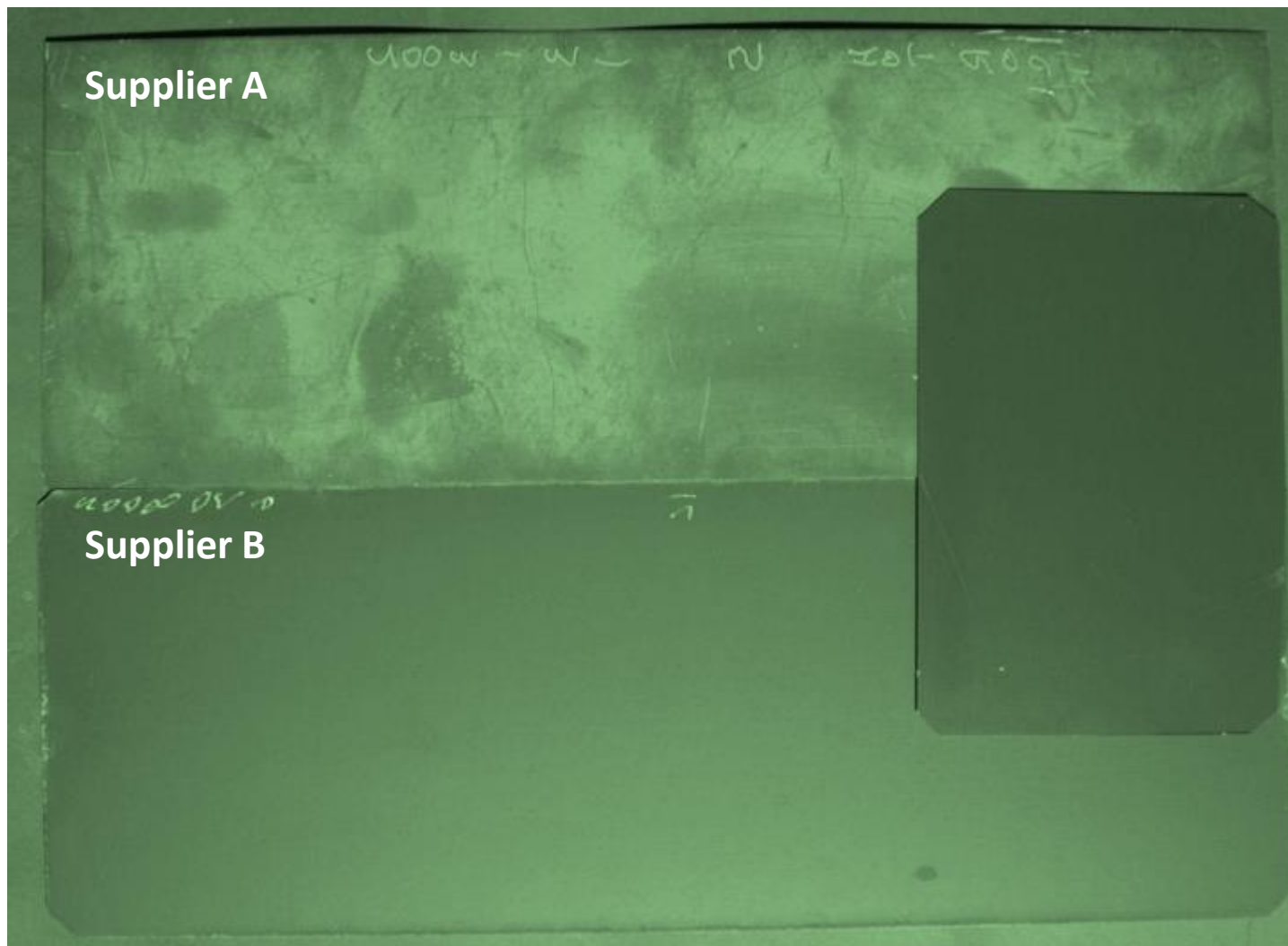
Supplier A
Exposed for 48 months



Supplier B
Exposed for 60 months

COLOUR PERFORMANCE AT SUNSHINE SITE

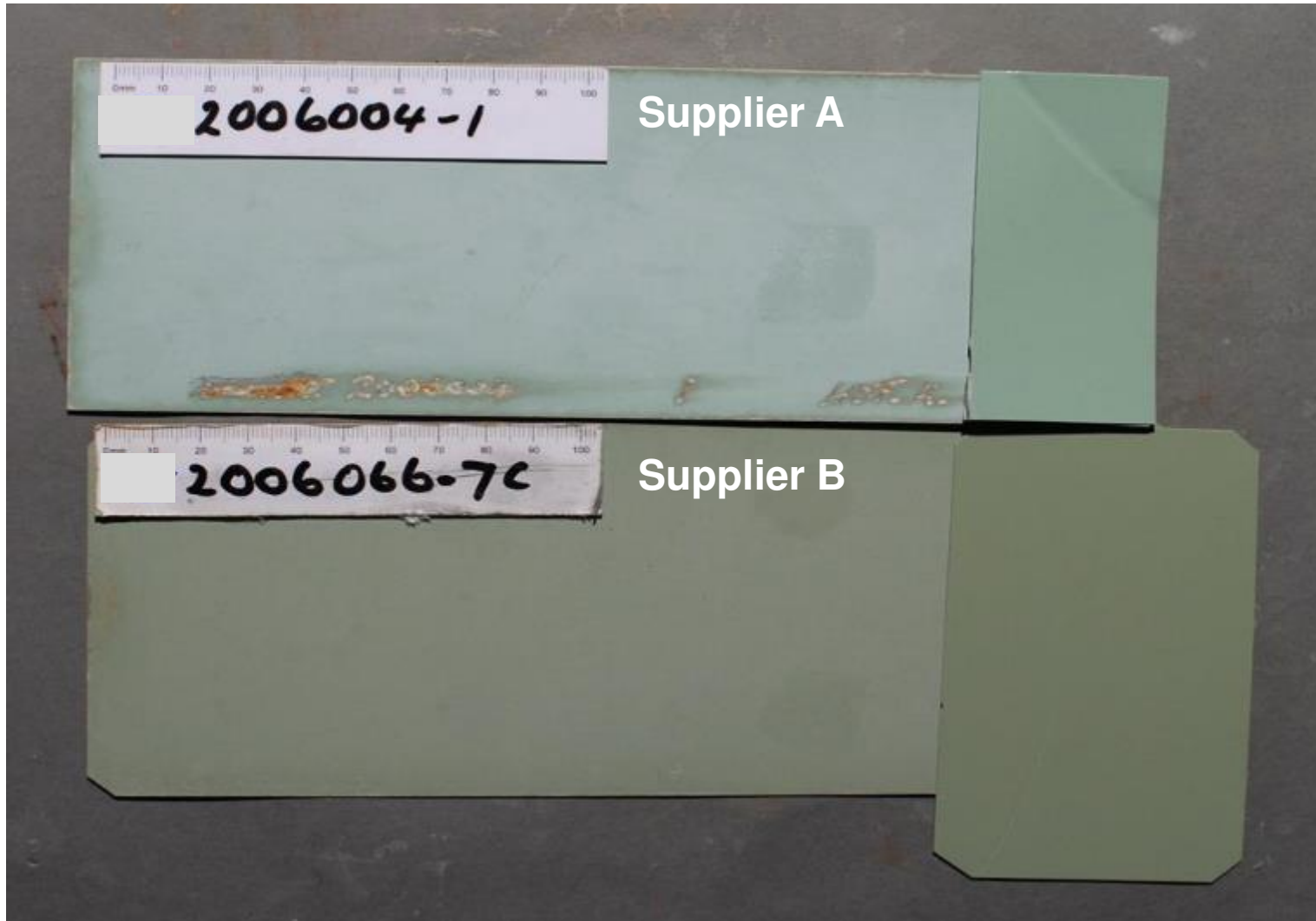
4 years exposure



Both samples
originally matched
this retain.

COLOUR PERFORMANCE AT SUNSHINE SITE

7 years exposure



COLOUR PERFORMANCE AT SUNSHINE SITE

4 years exposure



Both samples
originally matched
this retain.

COLOUR PERFORMANCE AT SUNSHINE SITE

6 years exposure



Both samples
originally matched
this retain.

SEVERE MARINE EXPOSURE AT MARINE SITE

Substrate of both samples is AZ150



Supplier A
Exposed for 84 months



Supplier B
Exposed for 105 months

SEVERE MARINE EXPOSURE AT MARINE SITE

4 years exposure

- Supplier A has an epoxy primer on the top surface compared to a polyester primer on the Supplier B product. This could make the Supplier A product prone to early UV delamination of the topcoat.
- Supplier A product has a low topcoat film thickness of 12.8 microns. This could make the Supplier A product prone to early UV delamination.



Supplier A



Supplier B

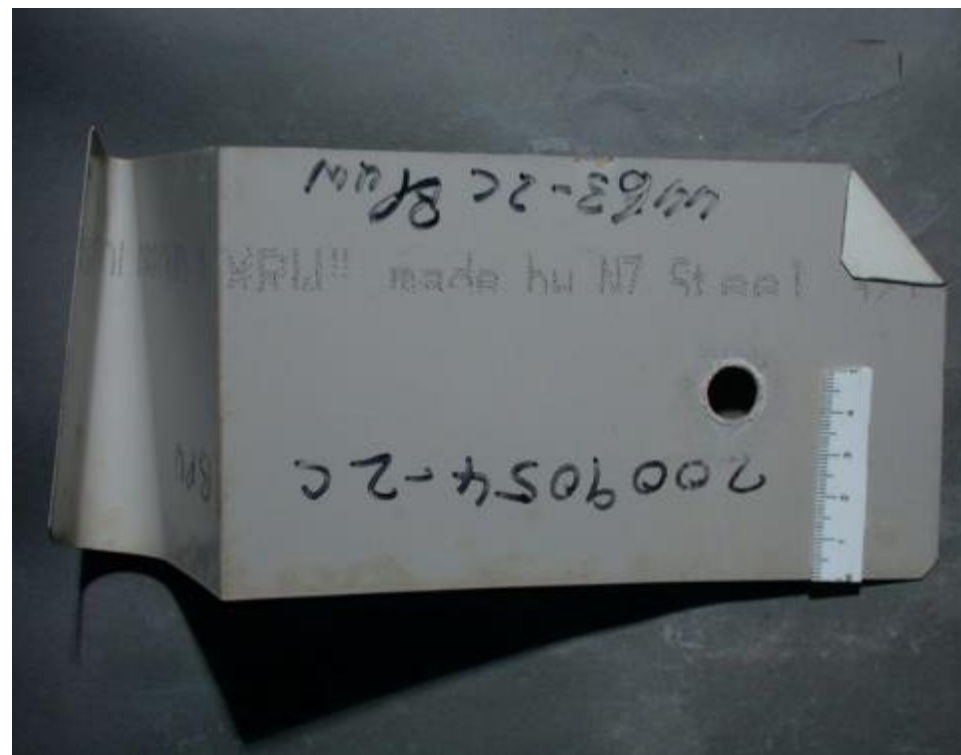
SEVERE MARINE EXPOSURE AT MARINE SITE

4 years exposure

- Supplier A product has a single coat epoxy backer compared with a two coat (primer and topcoat) backer on the Supplier B product. It is suspected that single coat backers give less corrosion protection than two coat backers.



Supplier A



Supplier B

PRODUCT PERFORMANCE AT MARINE SITE

Supplier A

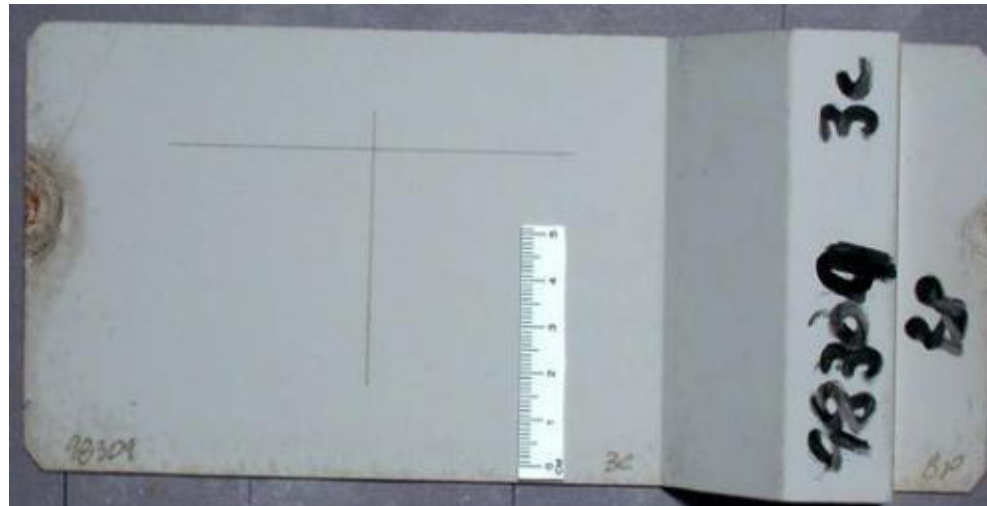
White: Z142
16µm polyester topcoat
3 µm epoxy primer



54 months

Supplier B

Grey: AZ150
18µm polyester topcoat
5 µm epoxy primer



84 months

CONCLUSION

Choosing a prefinished steel

1. Beautiful, durable and versatile
2. Identify suitable prefinished for your project design and your expectation
3. Identify a supplier or suppliers – based on your previous experience and their reputation
4. Compare the published data – technical data sheet, warranty and so on
5. Discuss your expectation including end environment, safety, suitability, supporting data....and any question of concern
6. Last but not least, consider a reputable supplier that has conducted all the above for your peace of mind



POLLING QUESTION



DIALOGUE SESSION



1

PREPAINTED VS POST-PAINTED



②

**STANDARD
OR
NON-
STANDARD
COLOURS**



③

OUTDOOR EXPOSURE VS ACCELERATED TESTS

COLORBOND® steel

Revision 14 June 2020
This literature supersedes all previous issues



Prepainted – PP

GENERAL DESCRIPTION

COLORBOND® prepainted steel, specifically designed by BlueScope, to provide a high durability, premier cladding and roofing material for general use. To determine if materials apply, please contact your nearest BlueScope sales office for advice.

TYPICAL USES

General, exterior architectural uses, for example wall cladding, roofing, rainwater goods, as well as other building products such as garage doors and inlet panels. For material selection advice, please contact your nearest BlueScope sales office.

AUSTRALIAN STANDARD

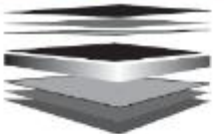
Paint Coating – AS/NZS 2728 Type 34;
Substrate – AS 1397

MALAYSIAN STANDARD

Paint Coating – MS 2383 CS-C4
Substrate – MS 1598

PRODUCT INFORMATION

PREFERRED SUBSTRATE	ZINCALUMIN COATED STEEL (aluminium-zinc alloy-coated steel)
PRE-TREATMENT PRIMER COAT	ZINCALUMIN COATED ACQ® steel (aluminium-zinc alloy-coated steel) (Paintable Metal II) Corrosion resistant proprietary conversion coating Universal corrosion inhibitor primer. Nominal dry film thickness 20µm (see note 4)
FINISH COAT	Custom formulated super polymer paint system with high performance pigments. Nominal dry film thickness 20µm on the top or weather side. If required, be applied to both sides to provide a double-sided product.
BACKING COAT CON COAT	Custom formulated Shandon Grey. Nominal dry film thickness 20µm A range of metallic colours is available. Other specifically required colours may be available on request.



Finish coat (nominal dry film thickness 20µm)
Universal corrosion inhibitor primer (nominal dry film thickness 20µm)
Conversion Coating
ZINCALUMIN COATED STEEL
Conversion Coating
Universal corrosion inhibitor primer (nominal dry film thickness 20µm)
Backing Coat (Shandon Grey, nominal dry film thickness 20µm)

DIMENSIONAL CAPABILITIES*

ZINCALUMIN COATED ACQ® STEEL		ZINCALUMIN COATED ACQ® STEEL	
PREFERRED BASE METAL THICKNESS, mm	MAXIMUM WIDTH, mm	PREFERRED BASE METAL THICKNESS, mm	MAXIMUM WIDTH, mm
0.35, 0.55	1219	0.35, 0.55	1219
0.62, 0.80, 0.96, 0.98	1220	0.62, 0.80, 0.96, 0.98	1220
0.70, 0.75, 0.89	1219	0.70, 0.75, 0.89	1219

Note:
* These dimensions reflect technical capability to produce. Any other sizes may be available on request.
The dimensions (thickness, width, length, etc.) are subject to BlueScope's standard tolerances and may vary from the requirements of specific standards.
Supply conditions may be subject to dimensional variations and is subject to BlueScope's standard tolerances and may vary from the requirements of specific standards.
Bidding and ordering available on request from BlueScope Sales Offices. For requirements outside the standard product range please contact your local Sales Office.

NS BLUESCOPE (MALAYSIA) SDN. BHD. (501499)
Lot 1031, Jalan Duta Pagar, 42200 Kapar, Selangor Darul Ehsan, Malaysia. Tel: +603-3361 6888 Fax: +603-3361 6889 Website: www.bluescope.com.my

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COLORBOND® steel

Revision 14 June 2020
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Prepainted – PP

RESISTANCE TO DIRT STAINING

The change in appearance of normal coil-coated products due to weathering is expected to be minimal within one year of installation. Yet, the overall appearance change can be obvious in some environments, not as a result of changes in the paint system itself, but as a result of severe dirt pick-up which causes darkening of its surface. These effects are more pronounced on light colours than on dark colours. In some instances, atmospheric dirt can become engrained into the surface of the paint, causing dirt staining which is difficult to remove.

COLORBOND® steel (with Clean Technology), can resist dirt pick-up and more importantly, RESIST DIRT STAINING.

A weathering test has been conducted where the appearance changes of normal coil-coated products and COLORBOND® steel (with Clean Technology) is monitored. The samples were placed in environments where atmospheric dirt is known to cause dirt staining problems. The Clean Technology shows clear benefits over normal coil-coated products after one year of exposure to rainfall where there's no cleaning conducted, as shown in TABLE 1 below.

TABLE 1 – Quantitative comparison of colour appearance change after 12 months sample exposure

COLOUR SHADE	TYPICAL APPEARANCE CHANGE (ΔC L* UNITS CIELAB 2000)	
	NORMAL COIL-COATED PRODUCTS	COLORBOND® STEEL (WITH CLEAN TECHNOLOGY)
Light (e.g. Off White)	25 to 10	4
Intermediate (e.g. Beige)	10 to 5	3

EXPECTED PRODUCT SERVICE PERFORMANCE

The appearance of COLORBOND® steel and other coil-coated products can change over time as exterior weathering not only due to dirt pick-up but also changes in the paint system itself and resulting in gloss loss and fading of pigmentation. Colour change, which is largely due to changes in pigmentation will depend on the colour shade chosen. It is measured using a spectrophotometer, according to ASTM D2244 on surfaces thoroughly cleaned of dirt, oxidized film and foreign contaminants. The typical appearance changes of standard COLORBOND® steel colours in normal environments after 12 years of service are given in TABLE 2.

TABLE 2 – Expected colour change after 12 years in natural well washed exposure (ASTM D5 1580-05/1 & ASTM D2244)

COLOUR SHADE	TYPICAL APPEARANCE CHANGE (ΔC L* UNITS CIELAB 2000)	
	Light (e.g. Off White)	Dark (e.g. Autumn Red)
Light (e.g. Off White)	4.5	1.5
Intermediate (e.g. Beige)	1.5	1.0

Note:

Refer Note 3 & 10

ATTRIBUTES TESTED DURING MANUFACTURE

PROPERTY	TEST & EVALUATION METHODOLOGY	RESULTS
Spontaneous Cracks		
Spontaneous Cracks at 60°C/min	AS/NZS 1580.602.2, ASTM D523	Normal 25 ± 10 units
Adherence		
Reverse Impact	AS/NZS 2728 (Appendix C)	≥ 10 joules
Tensile	AS/NZS 2728 (Appendix F)	Minimum 8T, Refer Note 7
Hardness		
Pencil	AS/NZS 1580.605.1	HB or harder

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EVALUATE PRODUCTS FROM TECHNICAL DATASHEETS



NATA ACCREDITED LABORATORY

National Association of Testing Authorities, Australia

(ABN 59 004 379 748)

has accredited

BlueScope Steel Limited
Weathering Laboratory
Port Kembla Laboratory

following demonstration of its technical competence to operate in accordance with

ISO/IEC 17025

This facility is accredited for the tests shown on the *Scope of Accreditation* issued by NATA

Jennifer Evans
Chief Executive Officer

Date of issue: 02 October 2019

Date of accreditation: 16 December 1958

Accreditation number: 269

Site number: 262

NATA is Australia's government-endorsed accreditor of laboratories, and a leader in accreditation internationally. NATA is a signatory to the international mutual recognition arrangements of the International Laboratory Accreditation Cooperation (ILAC) and the Asia Pacific Accreditation Cooperation (APAC).
APB-1-9 / Issue 5 / May 2019

ACCREDITED LABS CERTIFICATION



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NATA is Australia's government-endorsed
arrangements of the

ACCREDITED LABS CERTIFICATION

1st ANNIVERSARY

QUESTIONS & ANSWERS

steel CONNECT

Colorbond®

VERMOE™

Zincalume®

TrueCore®



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NS BlueScope Malaysia