

ALUNORDIC®

By EFTCG
NORDIC
S T E E L

PRE-PAINTED ZINC ALUM PANEL
Super Polyester Paint 20 Microns

ALUNORDIC®

- Best Roof for Environmental protection
- 10 years warranty



- Thermal Efficiency Good
- Color Performance Very Good
- Humidity Resistance Very Good
- Dimensional Stability Yes
- Resistance to Dirt Staining Yes
- Corrosion Resistance Very Good
- Abrasion Resistance Very Good
- Weather Resistance Yes
- Long-term Durability Yes
- Field Tested Performance Yes
- Meets Various International Building Standards Yes
- Environment-friendly Material Yes
- Fully Supported by NORDIC Steel Buildings Yes

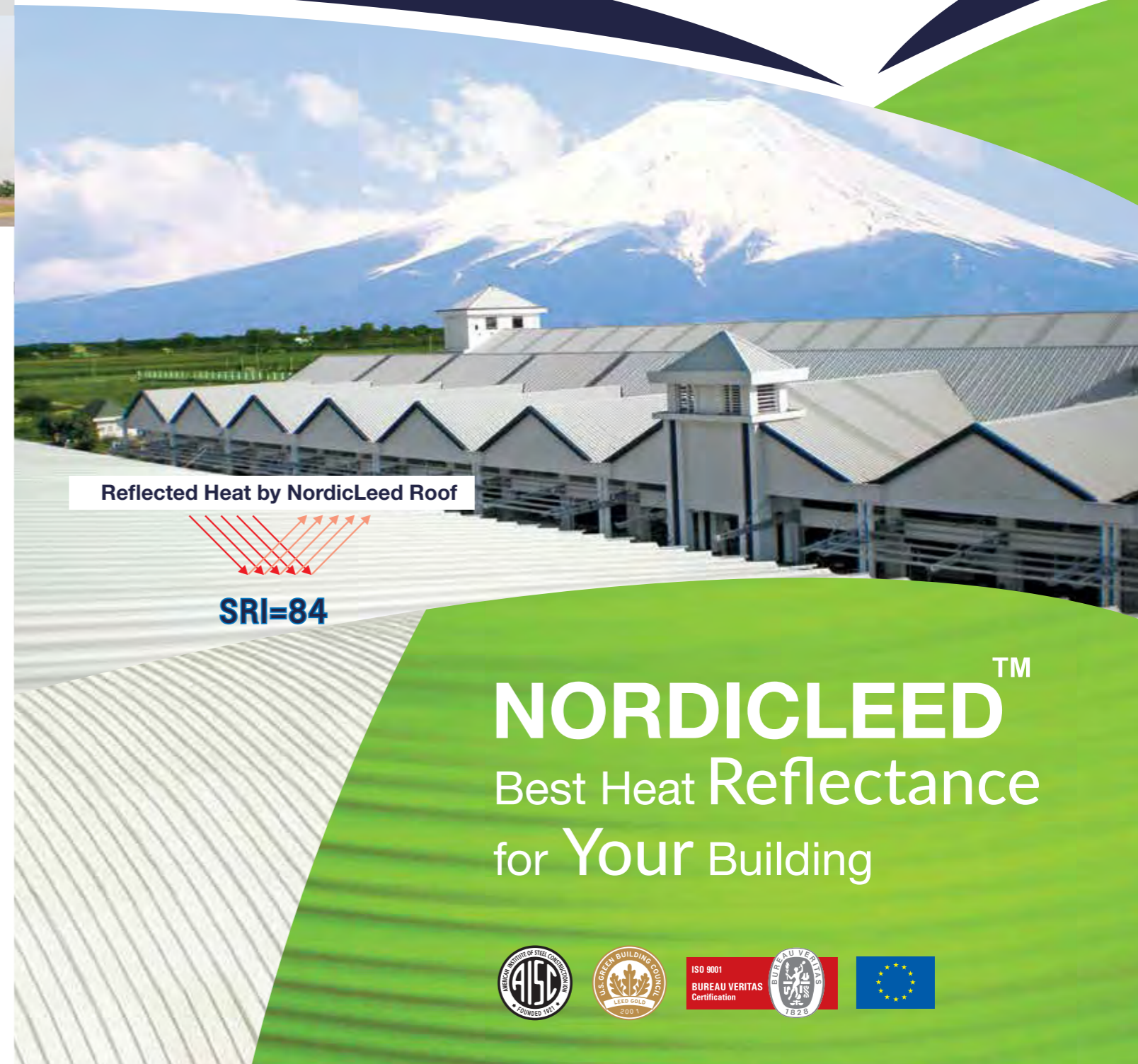


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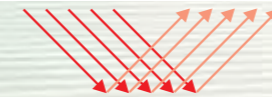
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Reflected Heat by NordicLeed Roof



SRI=84

NORDICLEED™
Best Heat Reflectance
for Your Building



Product Description:

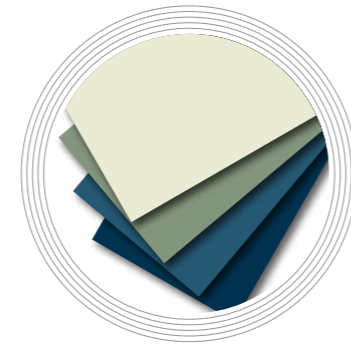
Alunordic® panel is a most innovative, super-durable and Environment-Friendly product to provide superb durability in color retention and very high corrosion resistance for medium/severe environment condition.

- Long-term durability
- Environment-Friendly product (Chromate-free)
- Good heat resistance
- Good heat reflectance

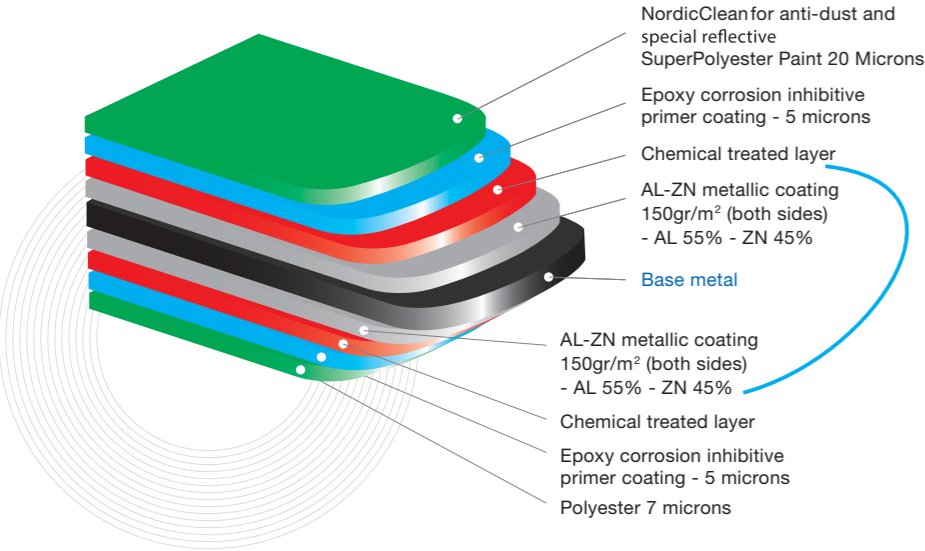
Base Metal Thickness (mm)	After Paint Thickness (mm)
0.42	0.50
0.52	0.60

ALUNORDIC®

SuperPolyester Painted AZ150 AluZinc



ZINC-ALUM
(Zinc-Aluminum coated layer 150gr/m²)
CHROMATE-FREE

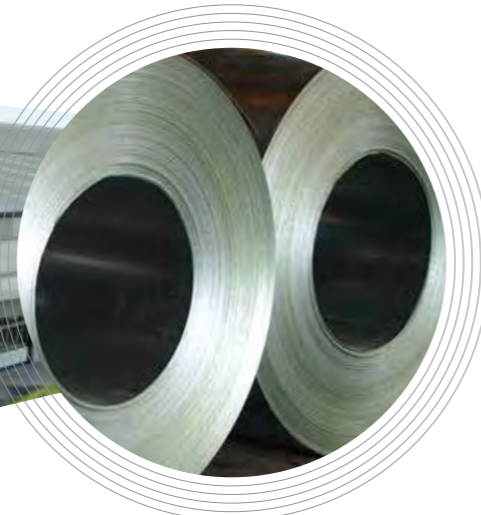


- + **Topcoat:** Super Polyester Paint 20 Microns which provides an anti-dust and special reflective functionalities -NordicClean, also maintains the color appearance and a barrier film to enhance long-term durability.
- + **Primer coat:** epoxy corrosion inhibitive primer coating - 5 micron to prevent undercutting of paint and enhance corrosion resistance.
- + **Chemical treated layer:** Chemical treated layer applied for good adhesion and to enhance corrosion resistance.
- + **ZINC-ALUM (Zinc-Aluminum) steel substrate:** Zinc-Aluminum Coated Layer 150 gr/m² (that consists of 55% Al-Zn 43.4% - Si 1.6%) Chromate-free, has a very high corrosion resistance for medium/severe Environment conditions.

- * **Specialty of Zinc:**
 - Zinc having self Physical Property called Cathodic reaction. Whenever any cut happens in the material the adjacent side of the zinc reacts with atmosphere O₂ and ZnO₂ layer will form on the cut edges to protect from the atmosphere (Self Healing Property).
- * **Specialty of Al-Zn:**
 - Aluminum having good barrier protection and Zinc having good self-healing property. Combination of both will give better resistance to atmospheric corrosion.
- + **Base metal:** JIS G3322 CGLC440, or equivalent
- + Superior back side coating of 12 micron.

Performance List

Examination item	Test Method	Result
Surface hardness test	Pencil hardness	"2H"
Formability test	Extrusion cross-hatch	No stripping
Impact test	∅ 1/2 1kg 500mm height	No crack & stripping
Salt-spray test	5% salt solution, 2,000h	No blistering
Weathering test	Sunshine WOM 2,000h	No change in appearance



Generic Coating Type	Humidity Resistance	General Corrosion Resistance (*)	Color Permanence	Abrasion Resistance	Gloss Retention	Formability	Chalk
Super Polyester Paint 20 Microns	Very good	Very Good	Very Good	Very Good	Good	Very good	Very Good

(*) Includes resistance to **severe** natural and industrial environments.

Classification of Durability Of Paint Coating And Designations

Classification of durability	Paint coating system	Durability test	
		Duration of salt spray test	Duration of dew-cycle type accelerated weathering test (for reference)
Class 1	one-coat	200 hours
Class 2	two-coat	500 hours
Class 3	two-coat or more	2,000 hours	1,500 hours

Recommended end Use

- Roofing & wall cladding, gutter & downspout in industrial, residential & commercial construction, sheds, fences...
- General exterior architectural users.



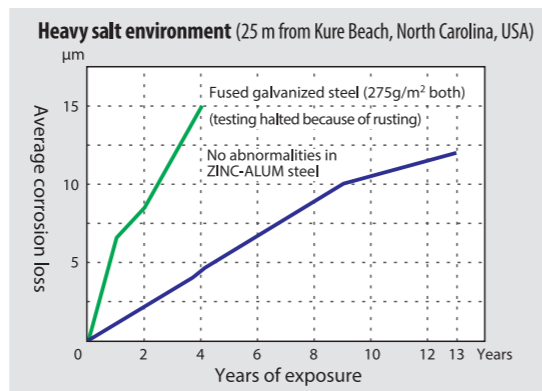
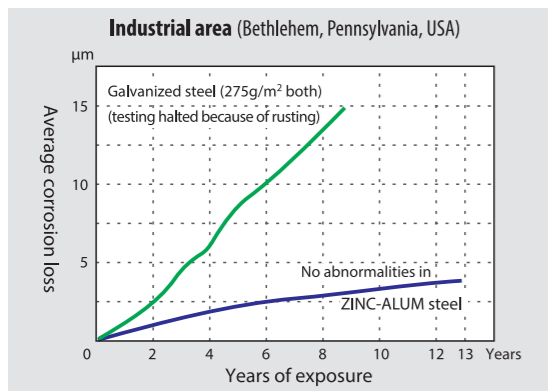
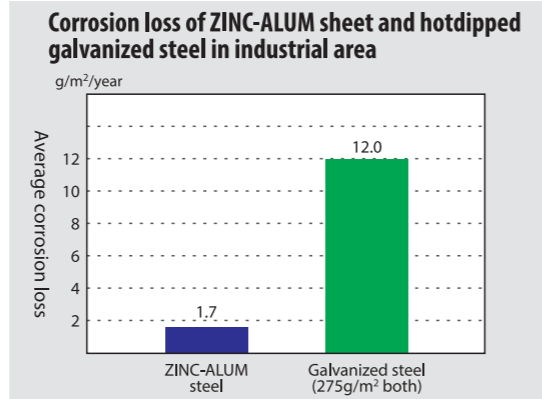
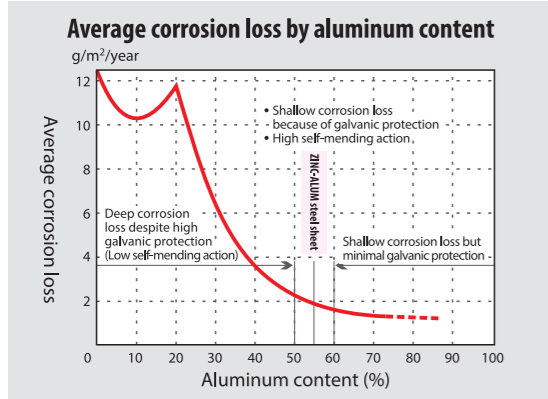
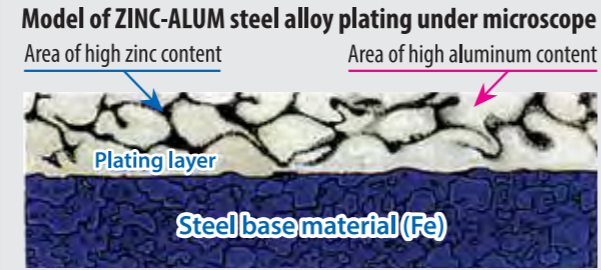
Capability List		ALUNORDIC®	
Coated Base Metal	Types	ZINC-ALUM Sheet (Chromate-free)	
	Coating Code	AZ150	
	Coating Content	Al: 55%; Zn: 45%	
Paint	Top	Resin	Polyester Resin
		Thickness in micron	20
	Reverse	Paint Hardness	2H
		Thickness in micron	7 micron
Coat & Bake		2 coat, 2 bake	
Formability	180-Degree Bending Test	Peeling Test	2T no peel
		Crack (Loupe Inspection)	7T no crack
Corrosion Resistance	Blister Observation in SST (flat surface) as per JIS Z2371		no blister for 2,000hrs
Weather Resistance	Colour Difference, Gloss	Sunshine Weathermeter	2,000Hr
			ΔE: 8 GR: 15%
First Maintenance	From Setup, Schedule Repaint		*15 years



Source: Nippon Steel & Sumikin Coated Sheet Corporation
Data shown are as per test sample results.

Corrosion Resistance

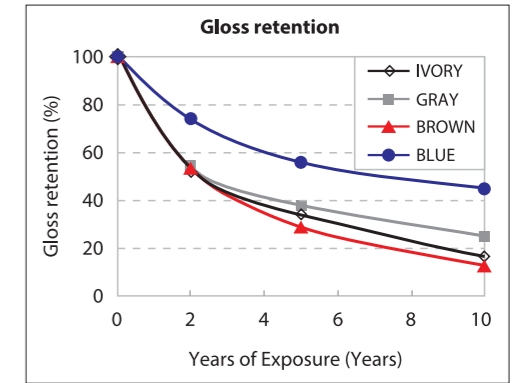
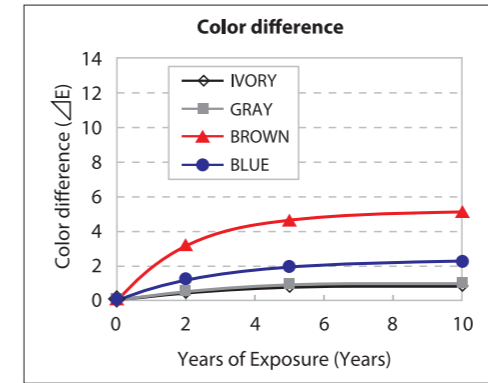
- * Both zinc and aluminum for protecting steel sheet
- ZINC-ALUM (55% AL-Zn ALLOY COATED) STEEL exhibits the corrosion prevention of aluminum and the galvanic protection and self-mending action of zinc in a good balance that prevents steel sheet from rusting for a long period of time.
- The layering of the ZINC-ALUM sheet plating begins by solidifying aluminum and then crystallizing zinc within that layer to form the crystal cross-section shown in the next figure.
- Over a long period of time, the zinc in the crystalline structure solves out and tiny cohesive oxides from the aluminum fill those spaces, creating what is known as the "self-mending action" of ZINC-ALUM steel.



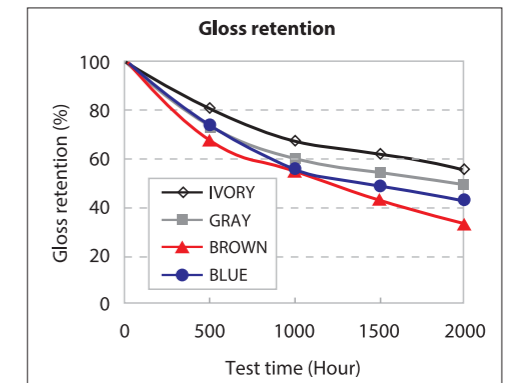
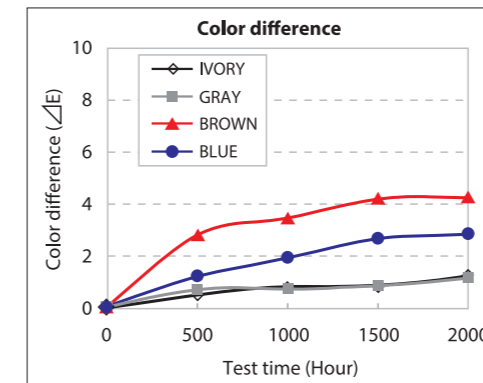
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Weathering Performance

<Exposure test> Exposure site : Miyazaki Prefecture, Japan
Exposed : 10 years



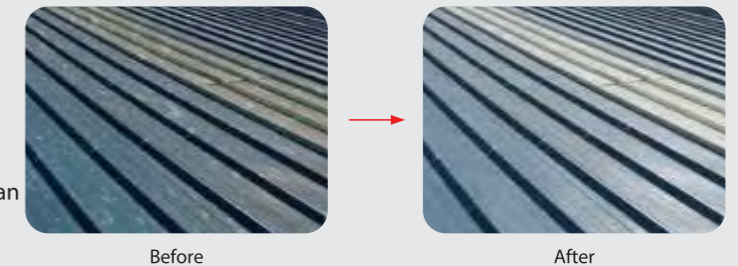
<Accelerated weathering test> Sunshine weather meter 2,000 hours



Resistance To Dirt Staining

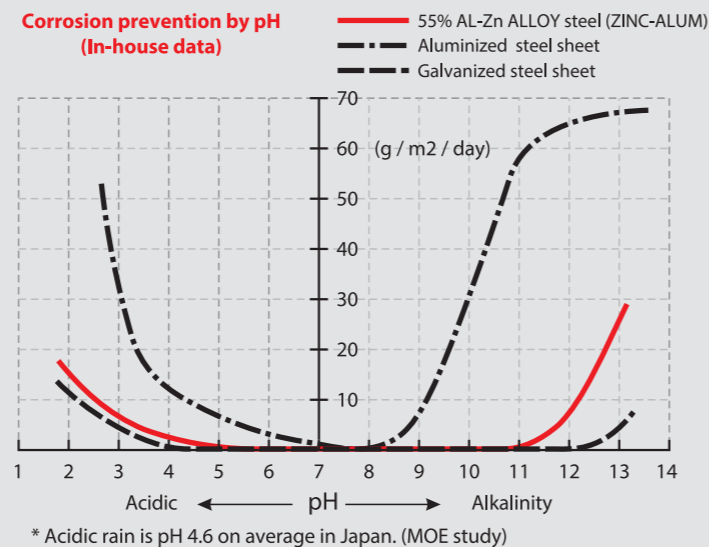
When pre-painted steel products are used for outer panels for a certain period of time, vertical streaks of dirt may appear on the surface; particles of dirt remain on the surface of the panel are NOT washed off by rainfall.

ALUNORDIC® with resistance to dirt staining can prevent dirt particle on the surface & easily wash off by rainfall, ensuring your building looks new.



Corrosion Resistance In Acidic Rain

Damage from acidic rain has recently become a social issue, but ZINC-ALUM (55% AL-Zn ALLOY COATED) STEEL demonstrates excellent durability against acidic rain damage. The graph at right shows corrosion in various types of plated steel sheet by pH. Both 55% AL-Zn ALLOY COATED STEEL and aluminized steel sheet exhibited very stable properties in the acidic range. In the alkaline range on the other hand, aluminized steel sheet was weak against weak alkalinity of pH9~pH11, whereas 55% AL-Zn ALLOY COATED STEEL maintained excellent properties.

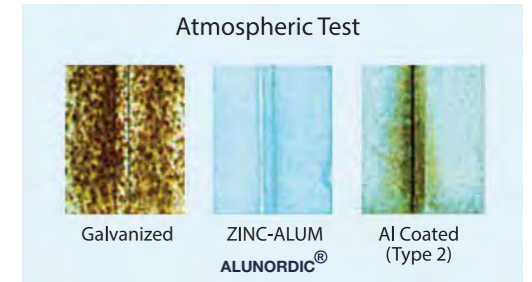


* Acidic rain is pH 4.6 on average in Japan. (MOE study)

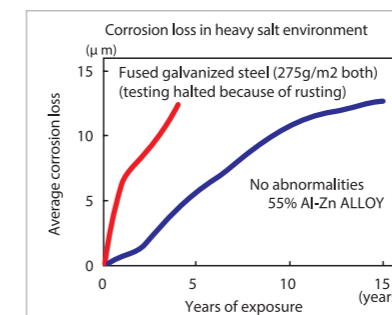
Data shown are as per test sample results.

Outdoor Exposure Tests

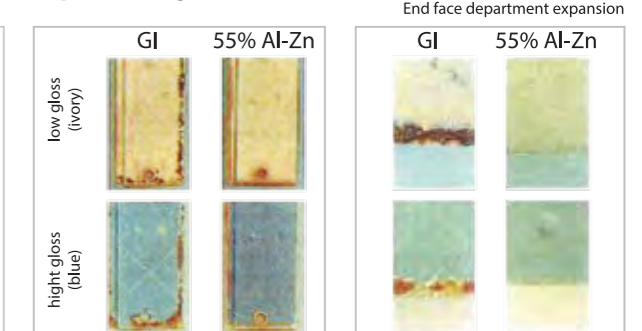
- According to results of exposure tests conducted over a period of several years, **ALUNORDIC®** is about three to six times as corrosion resistant as galvanized steel sheet.



Exposure Tests Result, Chikura Beach, Japan (10 years)



Sample Testing



End face department expansion

Data shown are as per test sample results.

NORDICLEED™

Best Heat Reflectance Coils

White Cream Color

SRI: 84

Solar Reflectance: 0.69

Thermal Emittance: 0.86

NordicClean for anti-dust and special reflective SuperPolyester Paint 20 Microns

Epoxy corrosion inhibitive Primer coating - 5 microns

Chemical treated layer

AL-ZN metallic coating 150gr/m² (both sides) - AL 55% - ZN 45%

Base metal

AL-ZN metallic coating 150gr/m² (both sides) - AL 55% - ZN 45%

Chemical treated layer

Epoxy corrosion inhibitive Primer coating - 5 microns

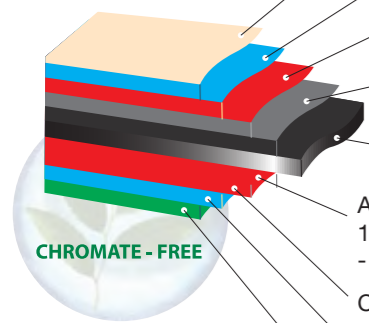
Polyester 7 microns

NordicLeed™ is needed to lower surface temperature by absorbing less heat from the sun. NordicLeed™ can reflect the solar heat of roofing material.

NordicLeed™ panel (White Cream Color) results in reduced heat retention after a long hot summer day, providing an opportunity to achieve cooler surface temperatures.

Increased global warming and government focus on climate change, have directed the attention to the need for greater thermal efficiency especially in a tropical climate.

Green building rating tool such as Leadership in Energy and Environment Design (LEED), require materials with high SRI values. NordicLeed™ offers higher SRI values thus complying to the green building requirements.



NORDIC

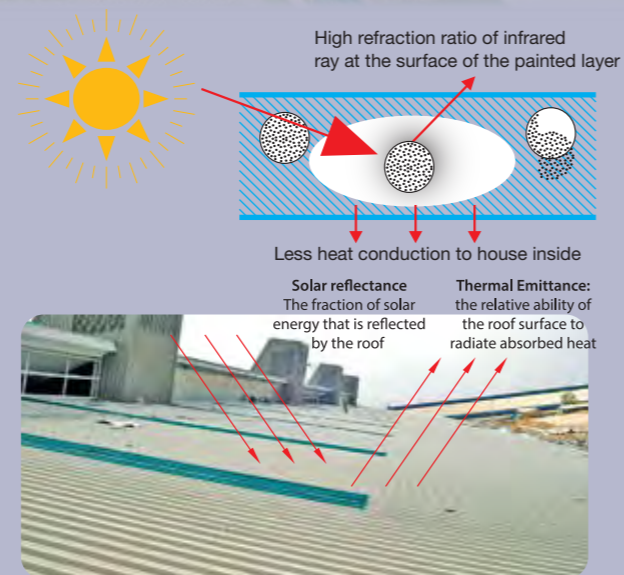
Lower Energy Consumption

NORDICLeed™ solar reflectance technology acts as added insulation in hot weather.

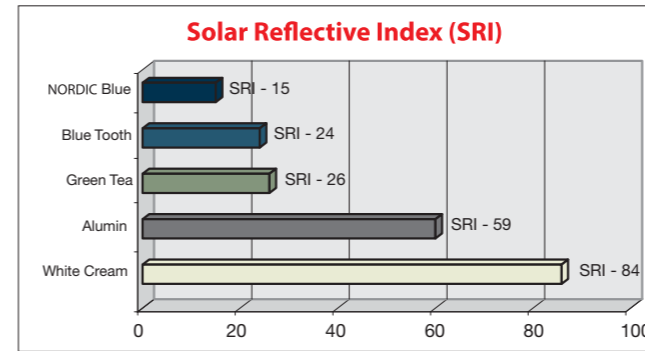
In moderate to hot climates, compared to roofing material of similar color with lower solar reflectance, NORDICLeed™ can reduce annual cooling energy consumption.

NORDICLeed™ reduces peak roof temperature by up to 5°C for White Cream Color.

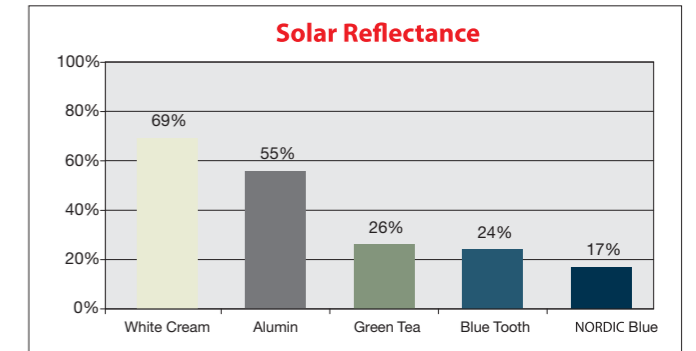
Greater comfort while using less energy helps to reduce cost and is friendlier to the environment.



NordicLeed™



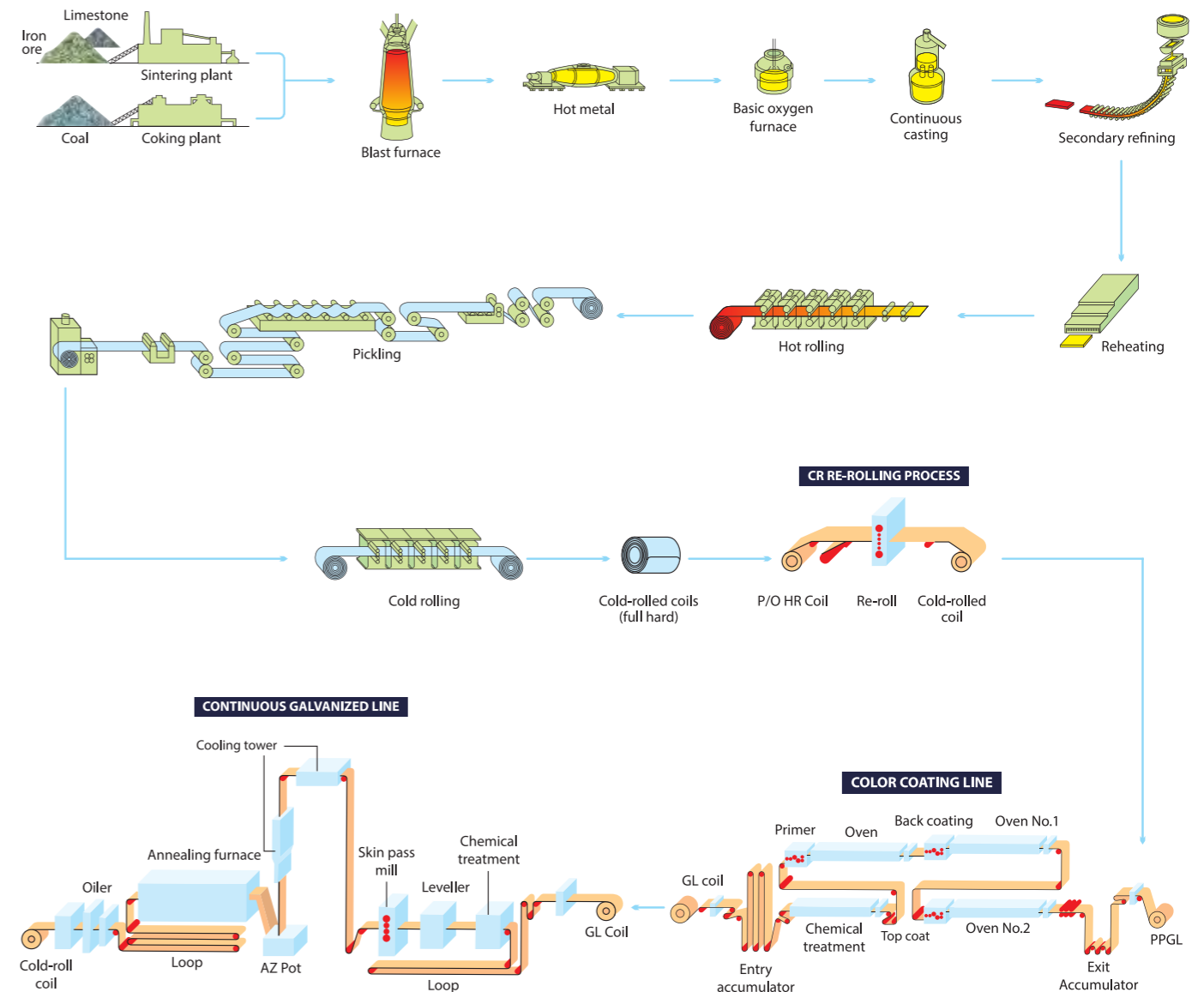
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COLORS CHOICES



Manufacturing Process by Japanese way



Source: Nippon Steel Group