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FeLuce™

A HAIRLINE FINISHED ELECTROLYTIC ZINC-NICKEL
ALLOY PLATED STEEL SHEET



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FeLuce™
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NIPPON STEEL CORPORATION

New potential in product design

Is the beauty inherent in materials compatible with the functionality that final products must have? We have pursued the answer to this question for many years in manufacturing steel sheets.

By appreciating the superior properties of the metal itself instead of adding decorations, we have created exquisite designed steel sheets that are without precedent in the market.

Toward realizing the additional potential of sheet materials with metallic texture, flexibility, and smoothness—we would like to introduce the novel light, FeLuce.

FeLuce™

Fe: Symbol for the element iron, Luce: "Light" in Italian





Exquisite, functional steel sheets— Available in two colors

Hairlines are applied directly to the plating layer to achieve beautiful metallic texture and various function of steel sheets.

By pursuing the “principle of no decoration,” we have succeeded in acquiring the combination of beauty and functionality.

We offer FeLuce in two standard colors. Black FeLuce provides high-quality and subdued atmosphere; silver FeLuce's rich reflection fits well into the surrounding space.

Both colors provide new possibilities for final products and everyday lifestyles.

Design by eliminate decoration

How to keep the beauty inherent in metal materials while achieving the functionality of final products without increasing cost—

This challenge always accompanies the work of product design.

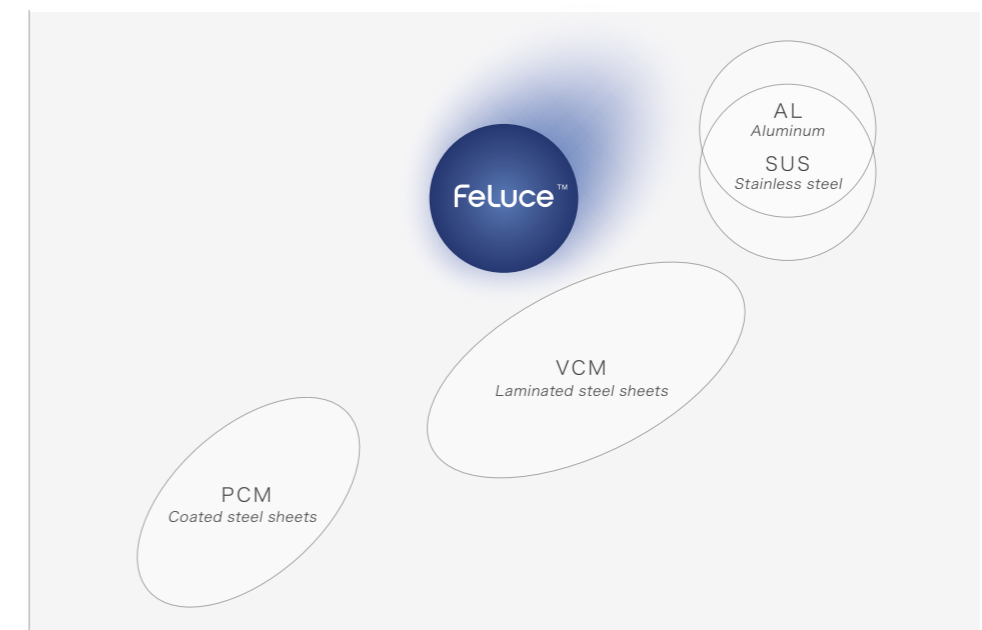
Instead of the conventional method that adds decorations to material surfaces, we invented a new production method that applies designs directly to plating layers to achieve corrosion resistance.

As a result, we developed a novel steel sheet that is superior in perceived quality, cost, and workability.

In our pursuit of steel sheets that respond to the market's various needs, FeLuce is one unique answer that we struggled to create.

FeLuce's positioning in the market

Perceived quality



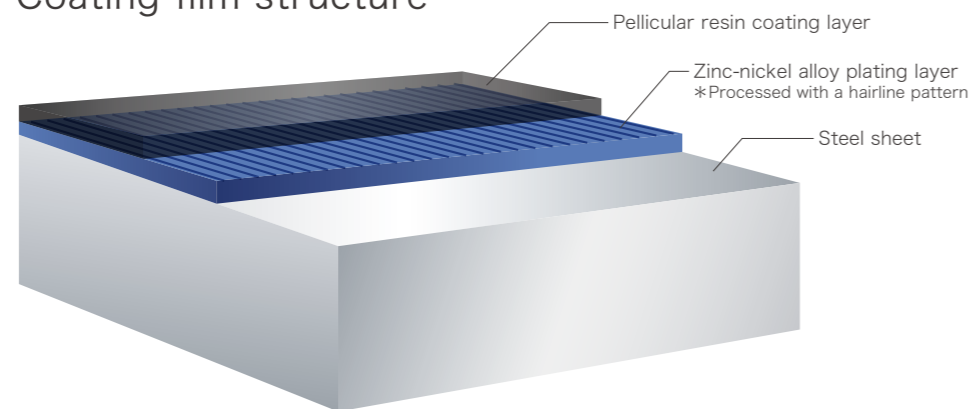
Price range

Splendor supported by superior design and technology

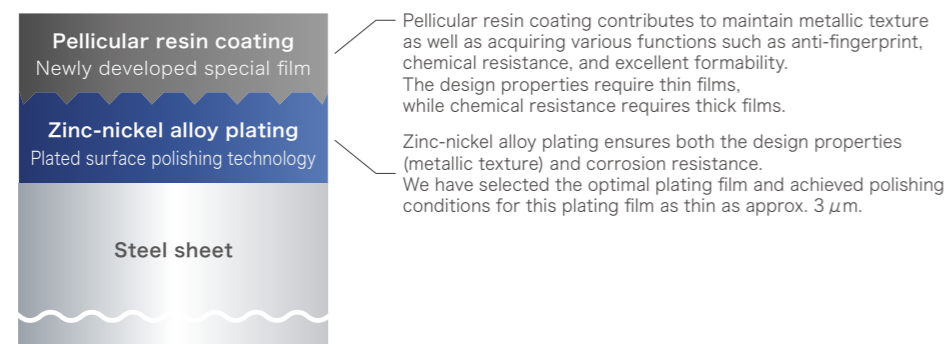
The splendor of FeLuce, zinc-nickel alloy electroplated steel sheet with hairline surface finish, is obtained by the hairline-finished plating layer which has a thickness as thin as approximately 3 μm. In addition, the newly developed special pellicular resin coating not only maintains the metallic luminance produced by the hairline surface but satisfies various other functional requirements.

This structure ensures both beauty and functionality as well as excellent workability for flexible, sophisticated steel sheets.

Coating film structure



Surface treatment technology



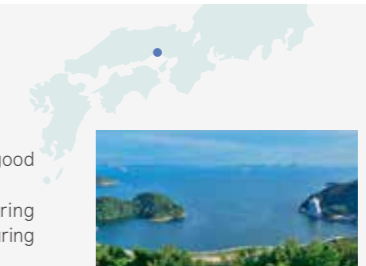
*Hairline finish is applied only to the front. The rear surface features a zinc-nickel alloy plating film and a primary rust-resistant film.

Manufacturing facilities for FeLuce™

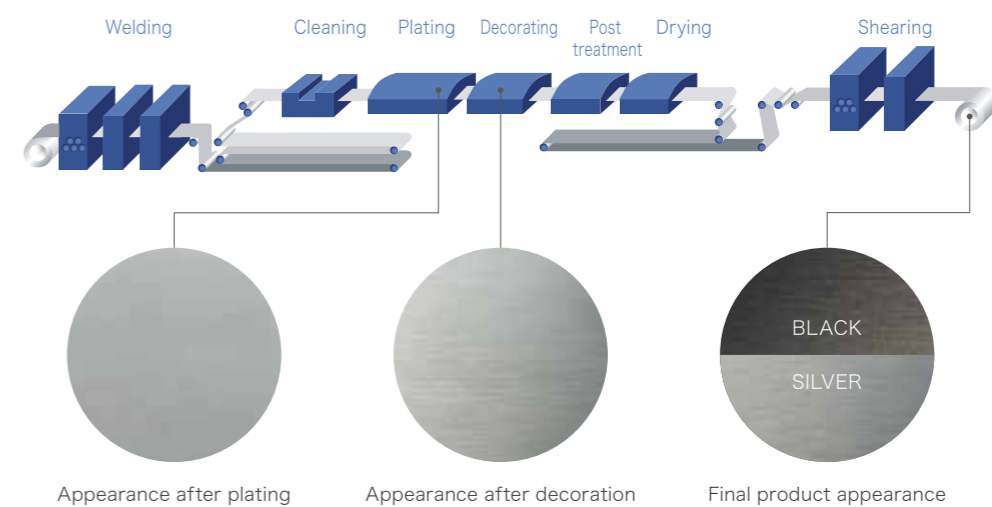
FeLuce is manufactured in the Hirohata Area of Setouchi Works, which is one of our important sites for supplying steel sheet products.

[Hirohata Area of Setouchi Works]

This facility is located in Setouchi Nishi-Harima, where "Tatara" ironmaking has flourished since ancient times. This resource-recycling mill dedicated to steel sheets enjoys good relations with the local community. The high-functionality and high-quality steel manufacturing site continues to strive to establish world-first manufacturing processes in order to respond to various market needs.



Manufacturing process



Performance

Excellent functionality in terms of corrosion resistance and fingerprint resistance

Item	Testing conditions	FeLuce™ BLACK	FeLuce™ SILVER	SUS304 (BA)	Aluminum (1050)
Surface hardness	Scratch hardness (pencil method) JIS K 5600-5-4 750 g	H	H	—	—
Corrosion resistance	Flat sheet (sealed on the edge and rear) Salt spray testing (compliant with JIS Z 2371) 72 h	No abnormalities	No abnormalities	No abnormalities	White rust generated
Fingerprint resistance	Dipped in 0.5%-Vaseline (20°C, 5 s) Color difference ΔE^*	1.5 Fingerprints not noticeable	0.4	3.7 Fingerprints conspicuous	3.4
Chemical resistance	Acid resistance Dipped in 1%-acetic acid at 20° for 24 h	No abnormalities	No abnormalities	No abnormalities	No abnormalities
	Alkali resistance Dipped in 1%-NaOH aqueous solution at 20°C for 24 h	No abnormalities	No abnormalities	No abnormalities	Material loss
Contamination resistance	Felt pen (red) Wiping off ink with ethanol 24 h after marking with a felt pen	No abnormalities	No abnormalities	No abnormalities	No abnormalities
	Felt pen (black) Wiping off ink with ethanol 24 h after marking with a felt pen	No abnormalities	No abnormalities	No abnormalities	No abnormalities
Thermal resistance	Cross-cut adhesion test with tape 70°C, 168 h	100/100	100/100	100/100	100/100
Weather resistance	SWOM 150-h color difference ΔE^* Gloss retention	≤ 1 65 to 70%	≤ 2 75 to 80%	—	—

*This data was obtained by testing FeLuce with a resin coat (see page 6), SUS304 (BA/no coating), and aluminum (1050/no surface treatment).

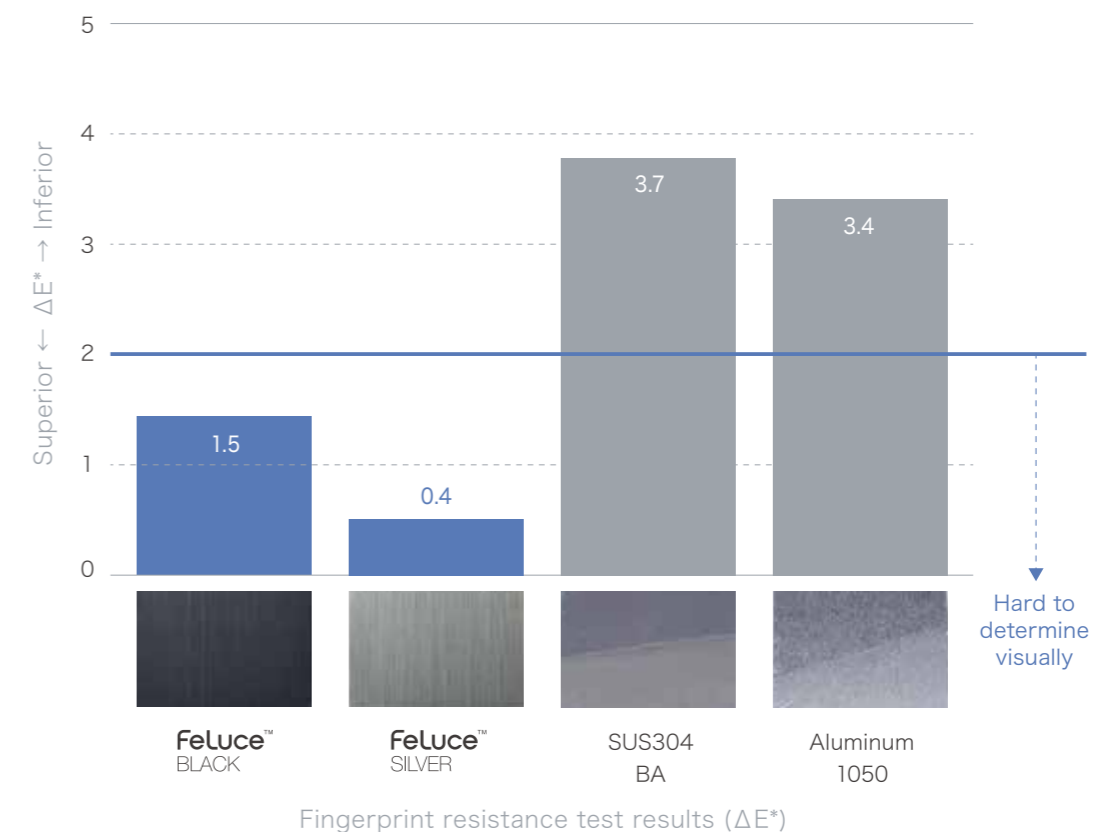
Corrosion resistance [Salt spray testing 72 h compliant with JIS Z 2371]

FeLuce exhibits good corrosion resistance under environments that corrode aluminum.



Fingerprint resistance [Dipped in 0.5%-Vaseline at 20°C for 5 s]

FeLuce exhibits good fingerprint resistance compared to SUS and aluminum, which show changes in color in dipped areas.



*This data was obtained by testing FeLuce with a resin coat (see page 6), SUS304 (BA/no coating), and aluminum (1050/no surface treatment).

Examples of processing (press-formed articles)



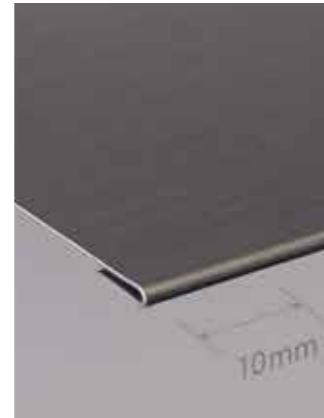
Drawing a rectangular shell

Sheet thickness: 0.6 mm
Outer radius R: 3.75 mm
Height of drawing: 15 mm



Cupping

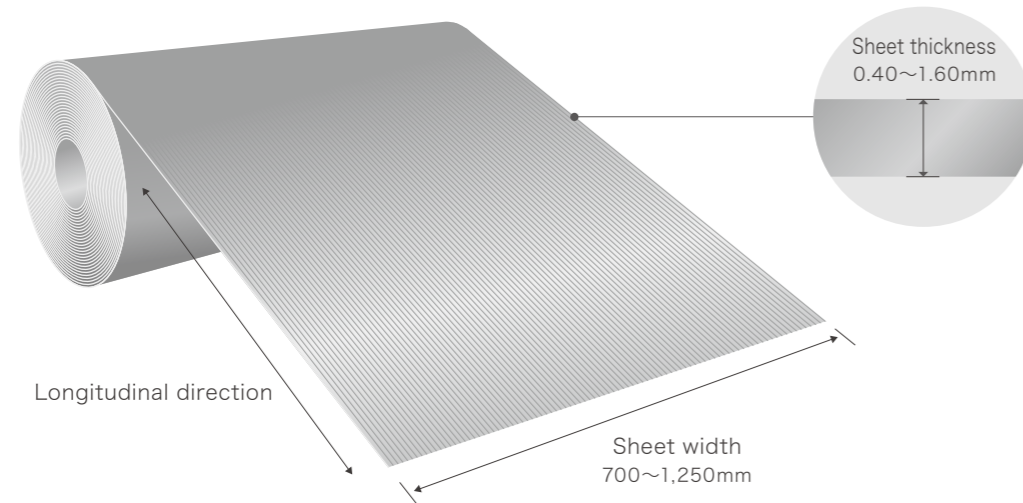
Sheet thickness: 0.6 mm
Drawing ratio: 2.1
Height of drawing: 36 mm



Hemming

Sheet thickness: 0.6 mm

Producible range



- Hairlines are formed perpendicular to the sheet width direction (longitudinal direction).
- For specifications outside the producible range, please contact us.

Related standards

Mechanical characteristics

Category	Standard code	Thickness (mm)	Yield point or yield strength (N/mm ²)	Tensile strength (N/mm ²)	Elongation (%)			
					Indicated thickness 0.40 mm or more and less than 0.60 mm	Indicated thickness 0.60 mm or more and less than 1.0 mm	Indicated thickness 1.0 mm or more and less than 1.6 mm	Indicated thickness 1.6 mm
For general use	NSNCC	0.4~1.6	—	—	—	—	—	—
For drawing	NSNC270D	0.4~1.6	—	270 or higher	36 or larger	38 or larger	39 or larger	40 or larger
For non-aging deep drawing	NSNC270E	0.4~1.6	—	270 or higher	38 or larger	40 or larger	41 or larger	42 or larger
For non-aging extra-deep drawing	NSNC270F	0.6~1.6	(175 or less)	270 or higher	—	45 or larger	46 or larger	47 or larger
For non-aging ultra-extra deep drawing	NSNC270G	0.6~1.6	(175 or less)	270 or higher	—	47 or larger	48 or larger	49 or larger

Coating

Code for coating	Minimum adhesion amount (single side)		For reference Plating film thickness (single side) (μm)
	Equal thickness plating (g/m ²)	Differential thickness plating (g/m ²)	
10	8.5	8	1.4
20	17	16	2.8
30	25.5	24	4.2

[Notice]

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- Measurement examples of other materials for comparison are based on our test results. They do not represent general performance.

- This product is not intended for use in salt-damaged outdoor areas. Pay attention to corrosion along the edges.

- Handle products with care. Do not damage the plating films or surface treatment films.