

# Newly Developed Porcelain Enamel Panel for Buildings "River Wall Metallic"\*

Hirohisa Koura\*\*

Hideaki Yoshimura\*\*\*

Hidefumi Takej\*\*\*\*

## 1 Introduction

Outstanding features of the newly-developed porcelain enamel panel for buildings, **River Wall Metallic**, are its multiple colors and the surface brilliance which it possesses as a porcelain product. River Wall Metallic has excellent durability and weather resistance and has already been successfully applied for numerous projects previously.

The developed **River Wall** came in 24 standard colors and also in a "Furnace Series" of native rock tones, but recently River Wall Metallic has been marketed to satisfy a wider range of user needs. River Wall Metallic is described below.

## 2 General Description of River Wall Metallic Series

The River Wall Metallic series is made by fusing at high temperature a special frit containing scaly mica to the porcelain surface of ordinary River Wall. By alternating the arrangement of the scaly mica, which has direct refractive indices, into the special frit as shown in Fig. 1, multiple reflections consisting of reflection and transillumination is obtained in the clear coat, thereby imparting a beautiful sparkling metallic appearance to the panel surface.

This metallic luster gives a feeling of higher-quality to the conventional River Wall, thereby enhancing its aesthetic value.

## 3 Manufacturing Process

The manufacturing process for the River Wall Metallic series is shown in Fig. 2, and the construction of River Wall Metallic is shown in Fig. 3.

As can be clearly seen in Fig. 2, the River Wall

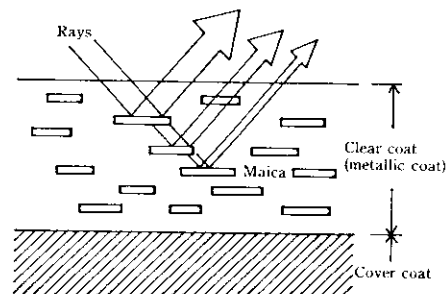


Fig. 1 Schematic illustration of multi-reflection

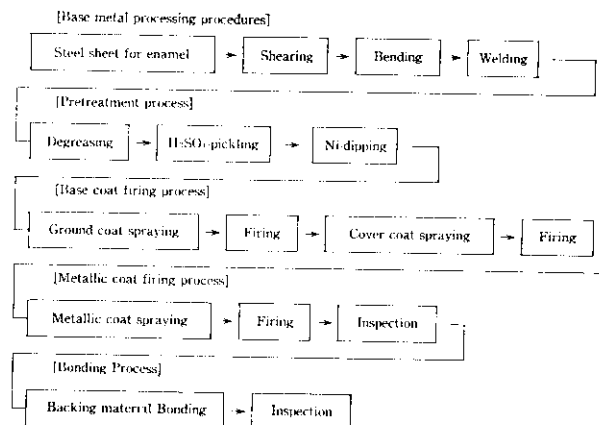


Fig. 2 Manufacturing process of River Wall Metallic

Metallic series is manufactured by spraying and firing a special metallic frit on the conventional River Wall surface, and thus has one top coat over the ordinary River Wall surface. The reflection and transillumination of light by scaly mica which is contained in the pure-transparent porcelain frit in this top coat layer gives a metallic-tone surface.

\* Originally published in *Kawasaki Steel Giho*, 20(1988)4, pp. 356-357

\*\* Assistant Manager, Research & Development Dept., Narashino Works, Kawatetsu Metal Industry Co., Ltd.

\*\*\* Assistant General Manager, Porcelain Enamel Product

Sec., Narashino Works, Kawatetsu Metal Industry Co., Ltd.

\*\*\*\* Assistant General Manager, Building Materials Dept., Kawatetsu Metal Industry Co., Ltd.

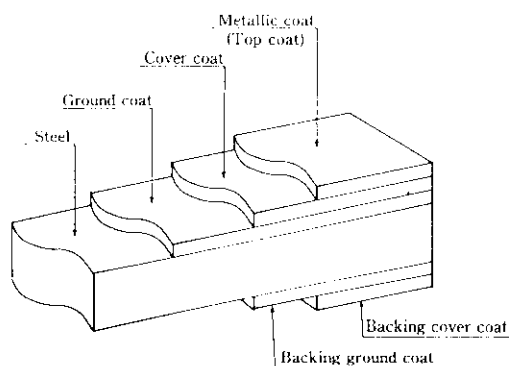


Fig. 3 Construction of River Wall Metallic

#### 4 Product Specifications and Applications

Product specifications and applications of River Wall Metallic are shown in **Table 1**. Six standard colors are available, as shown in **Photo 1**, but for special orders, a considerable range can also be produced. An example of the use of River Wall Metallic as an architectural facing material is shown in **Photo 2**.

Table 1 Specifications of River Wall Metallic

Steel	Porcelain Enamel Steel
Thickness	1.6 mm
Max. width	1 450 mm
Max. length	3 800 mm
Standard color	6 Colors
Backing board	Asbestos calcium silicate board 10 mm, 12 mm
Use	Panel for building, design panel etc.



Metallic white    Metallic ivory    Metallic gold  
Metallic ocher    Metallic blue    Metallic gray

Photo 1 Standard colors of River Wall Metallic



Photo 2 Application of River Wall Metallic to outer walls for buildings (Ginza Iwasaki Building)

#### 5 Properties of River Wall Metallic

River Wall Metallic combines the proven performance of River Wall, with a porcelain surface offering sparkling reflectiveness and brilliance. The properties of River Wall Metallic are shown in **Table 2**.

#### 6 Concluding Remarks

As mentioned above, the River Wall Metallic series is an excellent panel-type architectural facing material having a variety of performance characteristics, which will fully satisfy the needs of users.

#### For Further Information, Please Contact:

Kawatetsu Metal Industry Co., Ltd.

Head Office

Fax: 03 (851) 6525    Phone: 03 (5687) 2801

Narashino Works

Fax: 0474 (76) 4455    Phone: 0474 (76) 7111

Table 2 Properties of River Wall Metallic

	Test method	Results	Remarks
Acid resistance	10% citric acid, 15 min spot test	AA class	JIS A6516: >Class A
Alkali resistance	10% sodium carbonate, 15 min spot test	AA class	JIS A6516: >Class A
Salt dipping test	5% sodium chloride, 33~35°C, 48 h dip	No rust	JIS A6516: No rust
Impact resistance	200 g steel ball, drop height 1 000 mm	No cracks	JIS A6516: No cracks
Abrasion resistance	T-ber test meter, 1 kg, 1 000 rounds	0.2 mg/cm <sup>2</sup>	
Hardness	Morth hardness test	5.5	
Weather resistance	Sunshine weather meter, 1 000 h	No change	