SINCE 1955

ROVAL

www.rovalworld.com

# Hate Rust

# ROVALize it Now!

## Roval Cold Galvanizing Compound

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## Roval Cold Galvanizing Compound

ROVAL has a high 96% zinc content in its dry film and its anti-corrosion performance is equivalent to that of hot-dip galvanizing. Whether being used as an alternative to hot-dip galvanizing for the overall coating of steel structures, or being applied to the restoration and renovation of galvanized surfaces, ready-to-use ROVAL cold galvanizing has been widely used for more than half a century for the anti-corrosion protection of steel structure in various fields.

## Renovation of galvanized surfaces

Connection corridor between the buildings

Stereo garage

**ROVAL** can effectively extend the service life of galvanized sheets

## Restoration of galvanized surfaces

Cut surfaces

Welding parts

**ROVAL** is the best choice to repair the cutting surface, welding parts, and the galvanizing layers without zinc coating or with zinc coating falling off.

## An alternative to hot-dip galvanizing

Hall facilities

Weak parts that are easily deformed under high temperature

**ROVAL** can be used as an alternative to do anti-corrosion protection of larges parts that can't be put into the zinc-plating tank and of weak parts that are easily deformed under high temperature.

## Anti-corrosion protection to steels

Steel fence

Connection components

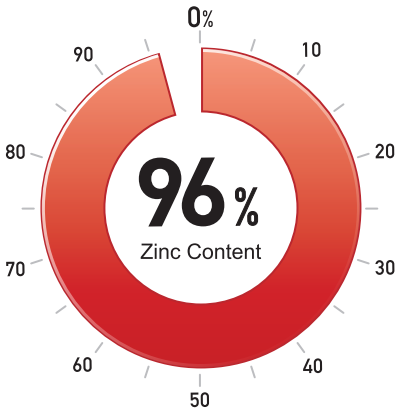
**ROVAL** can achieve the same anti-corrosion effect with that of hot-dip galvanizing by being directly coated on the surface of the steel to prevent the steel from rust.

# CONTENTS

## Ready-to-use single pack type cold galvanizing. Equivalent anti-corrosion performance to hot-dip galvanizing

# ROVAL

## Cold Galvanizing Compound




**With 96% zinc content in its dry film, ROVAL has the strongest anti-corrosion and the highest cost-effective performance among ROVAL product line.**

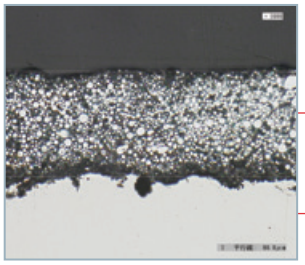
Anti-corrosion Effect ★★★★★

<Anti-corrosion Effect Sample>

Hot-dip Galvanizing ★★★★★

Normal Paints ★


Cross-sectional view of the ROVAL film




Paint film contains a large amount of zinc dusts. (×1000)

## Properties

### Single Pack Type

Easy to handle
No pot life or mixing required

### Color Fading

The paint color naturally weathers with exposure like that of hot-dip galvanized surfaces.

### Film Hardness

Hardness of the film improves with exposure.

420ml　2.5kg　10kg　25kg

| Type | Aerosol 420ml | 2.5kg | 10kg | 25kg |
|---|---|---|---|---|
| **Theoretical coverage** | 0.5m² | 5m² | 20m² | 50m² |
| **Dry to Touch Time (minute, @ 25℃)** | 20-30*1 | | | |
| **Recommended Film Thickness** | 80μm*2 | | | |
| **Packaging** | 24 / case | 4 / case | 1 / case | drum |

*1: At 40μm
*2: Two 40μm coats (Total film thickness: 80μm)

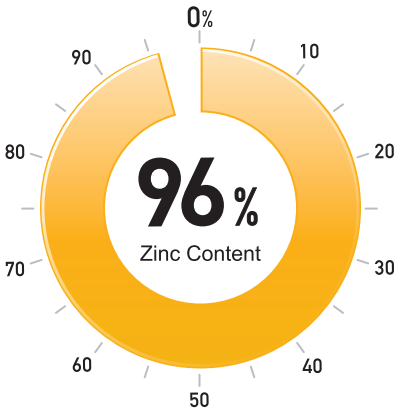
**RoHS** Compliance with the EU Regulations on Organic Chemicals

## Matching

ROVAL Thinner 0.8kg / 14kg
**The special thinner for R,Rα and RS**
Match with R, Rα, RS


**ROVAL MC Color Matching Metallic Spray 420ml**
Match with R


**ROVAL ZC Galvanizing Repair Metallic Spray 420ml**
Match with R




## Better heat resistance and solvent resistance

## Achieve high-quality coating system by using together with top coat

# EPO ROVAL

Cold Galvanizing Compound

**Anti-corrosion Effect** ★★★★★

<Anti-corrosion Effect Sample>

Hot-dip Galvanizing ★★★★★

Normal Paints ★


**Heat Resistance**

**Solvent Resistance**


25kg


2.5kg


EPO ROVAL THINNER ※1

0.8kg / 14kg

### Single Pack Type

Easy to handle
No pot life or mixing required.

### Color Fading

The paint color naturally weathers with exposure like that of hot-dip galvanized surfaces.

### Film Hardness

Hardness of the film improves with exposure.

### Heat Resistance

24 consecutive hours without abnormal situation at 300℃.
(The highest instantaneous temperature is 450℃)

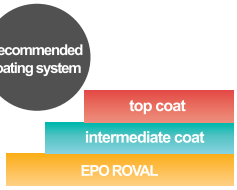
| Type | 2.5kg | 25kg |
|---|---|---|
| **Theoretical coverage** | 5m² | 50m² |
| **Dry to Touch Time (minute, @ 25℃)** | 20-30 *1 | |
| **Recommended Film Thickness** | 80μm *2 | |
| **Packaging** | 4 / case | drum |

*1: At 40μm
*2: Two 40μm coats (Total film thickness: 80μm)

**RoHS** Compliance with the EU Regulations on Organic Chemicals

※1 EPO ROVAL THINNER is an exclusive product for fixing viscosity of EPO ROVAL. DO not use ROVAL THINNER. Dilution rate must be less than 5% (weigh ratio)

## EPO ROVAL can be used together with top-coat from other companies




Constructing Site
Top coat is being applied on EPO ROVAL

## Coating process of iron surface

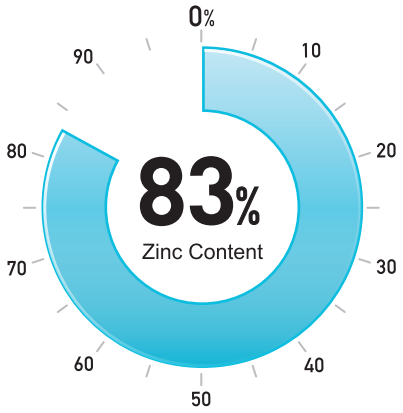
| Process | Paint | Coating interval |
|---|---|---|
| pretreatment | Prepare the metal surface by sandblasting or with appropriate power tools to remove all contamination on the surface | |
| primer 1 | EPO ROVAL | ≥ 30 mins |
| primer 2 | EPO ROVAL | ≥ 24 hours |
| intermediate coat | Modified Epoxy paint ※2 | Time specified by paint manufactures. |
| top coat | Urethane or Fluorine paint | |

※2 Serious blistering may occur after some coatings are applied, please do mist coat treatment.
Note: Do not use phthalate, alkyd and other oil-based paint, because they will cause the film peeling off.

## Suitable for repairing old galvanizing surfaces or as a topcoat for ROVAL Cold Galvanizing Compound

# ROVAL SILVER

Zinc Rich Compound




## Properties

### Contains Aluminum

Aluminum pigments provide barrier protection to a metal.

### Single Pack Type

Easy to handle
No pot life or mixing required.

### Color Fading

The paint color naturally weathers with exposure like that of hot-dip galvanized surfaces.

### Film Hardness

Hardness of the film improves with exposure.


**Anti-corrosion Effect** ★★★

<Anti-corrosion Effect Sample>

Hot-dip Galvanizing ★★★★★

Normal Paints ★


420ml　1. 5kg　7kg　20kg

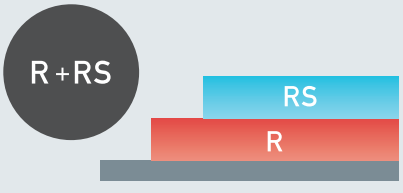
| Type | Aerosol 420ml | 1.5kg | 7kg | 20kg |
|---|---|---|---|---|
| **Theoretical coverage** | 0.4m² | 3m² | 14m² | 40m² |
| **Dry to Touch Time (minute, @ 25℃)** | 20-30*1 | | | |
| **Recommended Film Thickness** | 80μm*2 | | | |
| **Packaging** | 24 / case | 4 / case | 1 / case | drum |

*1: At 40μm
*2: Two 40μm coats (Total film thickness: 80μm)

**RoHS** Compliance with the EU Regulations on Organic Chemicals

## Use ROVAL as primer for better anti-corrosion performance.

To achieve the best anti-rust effect,ROVAL Cold Galvanizing Compound is highly recommended to be used as primer when using ROVAL SILVER Zinc Rich Compound to do anti-corrosion pretreatment of steel, large-area coating or in severe corrosive environment. If applying ROVAL SILVER Zinc Rich Compound alone without primer,the thickness of the coating film must be larger than 80um.



## Galvanizing Repair Metallic Spray

# ZC

**Anti-corrosion Effect** ★★

69% Zinc Content



| | |
|---|---|
| Practical coverage | 1m² |
| Dry to Touch Time | 20-40 minutes |
| Recommended Film Thickness | 40μm |
| Packaging | 24 / case |

### Properties

***Power Up!***
Reinforce anti-corrosion performance as a topcoat to ROVAL.

**Repairing Spray**
Suitable for touch-ups of damaged or thinly galvanized surfaces.

**Temporal Sheen**
Silver sheen color weathers with exposure like that of hot-dip galvanized surfaces.

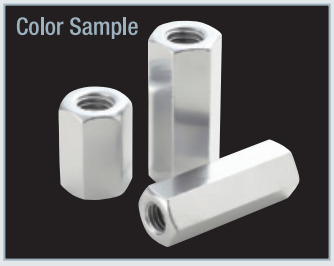
**Anti-corrosion protection**
Contains 69% zinc as well as aluminum compounds to do effective anti-corrosion protection.

Application

## Color Matching Metallic Spray

# MC

**(No Anti-corrosion Effect)**


| | |
|---|---|
| Practical coverage | 3m² |
| Dry to Touch Time | 15-30 minutes |
| Recommended Film Thickness | 10μm |
| Packaging | 24 / case |

**Spray MC after applying ROVAL R on cut profiles, welds, and non-plated areas for maximum protection.**

**No anti-corrosion effect.**

Weathering is slowed by excessively thick film.
Exposure conditions will affect the weathering rate.

**Before application**

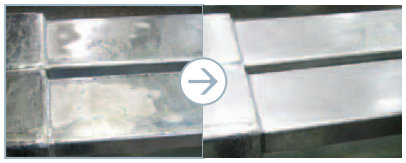
**After application**
MC applied at the lower left

**After 6 months exposure**

MC has a metallic sheen color and the silver sheen color weathers with exposure like that of hot-dip galvanized surfaces, it is the perfect match to color of galvanizing and it is particularly suitable for gray coating touch-up.

Application

**Gray Coating Touch-Up**



Before　　After

**Topcoat for ROVAL R**

Apply ROVAL R　　Apply MC for color matching

# ROVAL has the distinctive property to stop rust creeping under the film.

We have proven results from a 36-month atmospheric exposure test concluded at Japan Weathering Test Center in Miyako-jima Island testing ROVAL and other companies' paints for anti-corrosion performance.

These results and pictures prove that ROVAL protects steel surfaces from rust creepage with its electrochemical reaction, whereas other paints allowed the rust to spread from the cross-cut areas.

＜Miyakojima Island Testing Ground＞

Miyakojima Island is located the far southern portion of Japan, with roughly the same latitude as Florida, U.S.A. The island is surrounded by a lot of deteriorating factors such as high temperature, high humidity, strong sunshine, and a salt-rich atmosphere.
The environment is known to be the best for accelerating film deterioration.

## Results of Comparison Tests: ROVA

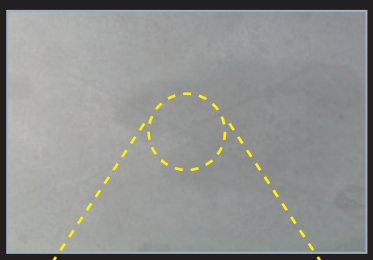
**ROVAL**
(80$\mu$m)

Before exposure

After 36 months exposure

No rust is found.

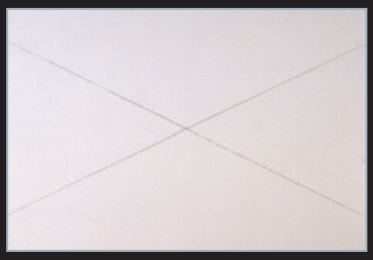
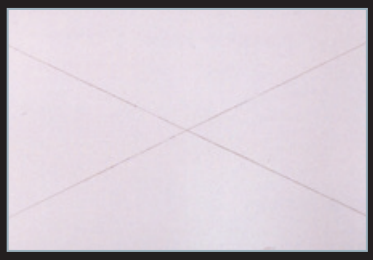
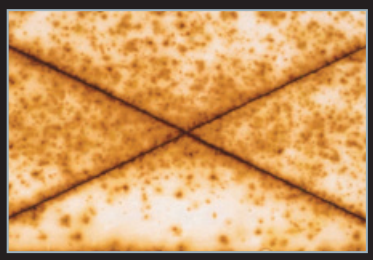
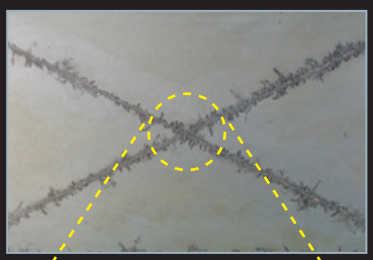
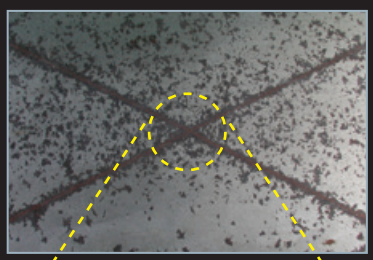
Expose the steel substrates



Enlarged photo (cross-cut part)

**Rust does not spread from cross-cut.**

## AL vs Other anti-corrosion paints

| Epoxy paint + Urethane topcoat | Epoxy paint + Fluoropolymer topcoat | JIS anti-corrosion paint + Phtalic topcoat |
|---|---|---|
|  |  |  |
|  |  |  |
| Rust from cross-cut. | Rust from cross-cut. | Rust spread over the substrate. |
|  |  |  |
| Enlarged photo (cross-cut part) | Enlarged photo (cross-cut part) | Enlarged photo (cross-cut part) |
|  |  |  |
| **Rust from cross-cut spreads.** | **Rust from cross-cut spreads.** | **Rust is found other than cross-cut.** |

# Anti-corrosion performance of ROVAL is equivalent to the highest grade of hot-dip galvanizing available in Japan.

In order to compare the anti-corrosion performance of ROVAL with those from the hot-dip galvanizing process, corrosion accelerating tests were conducted by the Japan Paint Inspection and Testing Association in accordance with Japanese standard "*JIS H8502-1999".
The results and pictures from the test show that ROVAL has an equivalent anti-corrosion performance to hot-dip galvanizing.
ROVAL has been certified to have equivalent anti-corrosion performance as hot-dip galvanizing by the Council for Construction Technology Review and Certification in Japan

＜Salt Spray Test＞

Accelerated corrosion testing by spraying salt water.

＜Cyclic Corrosion Test＞

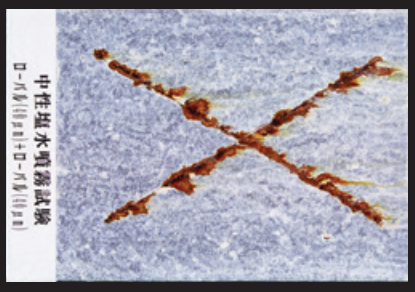
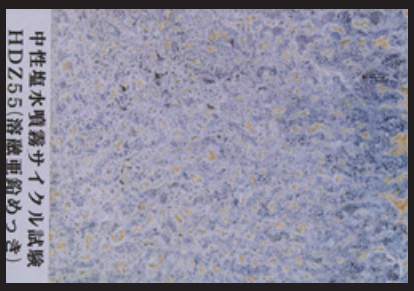
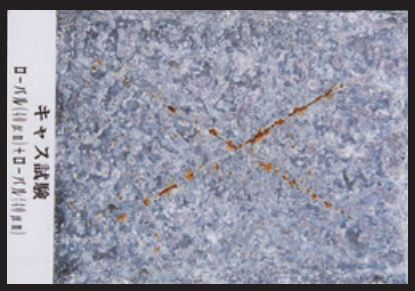
Accelerated corrosion testing involving cyclic exposure to salt fog, dry and wet conditions.

＜CASS Test＞

Copper accelerated acetic salt spray test.

*JIS H8502-1999 is base on ISO standards: 4540, 4541, 8407, 8565, 9227, and 10062.

## Results of Comparison Test: ROVAL vs Hot-dip galvanizing

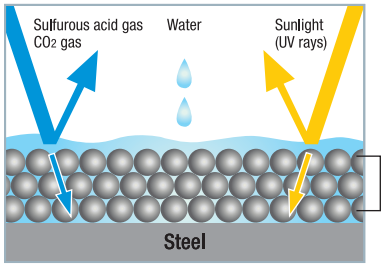
| | **ROVAL** (80$\mu$m) | **Hot-dip galvanizing** (Zinc 550g/m$^2$) |
|---|---|---|
| Before testing |  |  |
| Salt Spray Test 2256hrs |  |  |
| Cyclic Corrosion Test 1512hrs |  |  |
| CASS Test 168hrs |  |  |

# ROVAL vs Normal paints

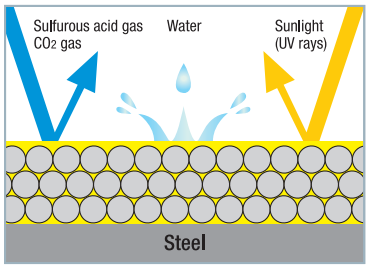
## ROVAL
(Anti-corrosion by electrochemical reaction)

## Normal paints
(Anti-corrosion by barrier protection)

## Mechanisms of Anti-corrosion

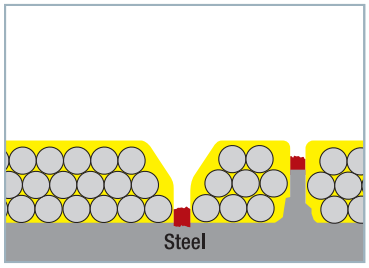



Water may penetrate through the zinc dusts on the steel surfaces, but the steel is protected by the electrochemical reaction of zinc.



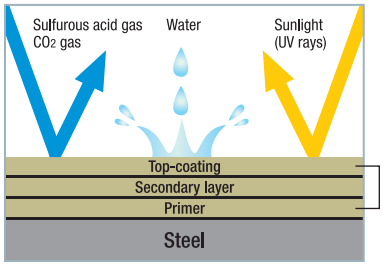

The oxidization of zinc forms corrosion products which act as a protective barrier against air and moisture improving anti-corrosion performance.

Corrosion product



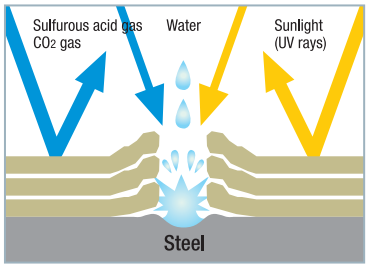

If rust should develop on damaged or thinly covered surfaces, electrochemical reaction prevents rust from creeping under the paint film.

Rust

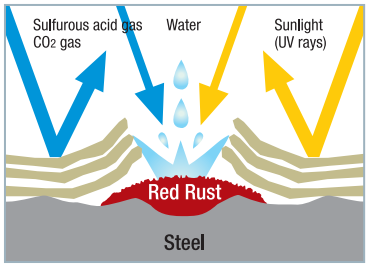



Paint film provides protection to a metal surface by shielding it from water/air.

Normal paints

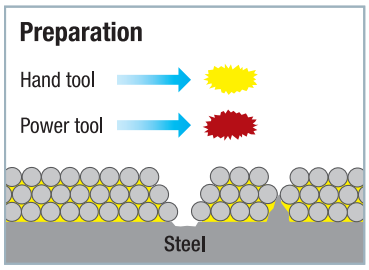



A protective barrier deteriorates with exposure.



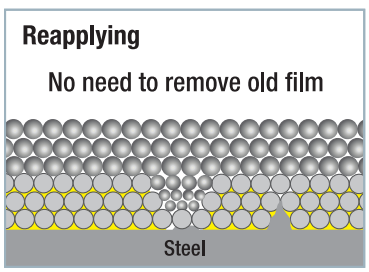

Rust will develop and creep under the paint film.

## Maintenance



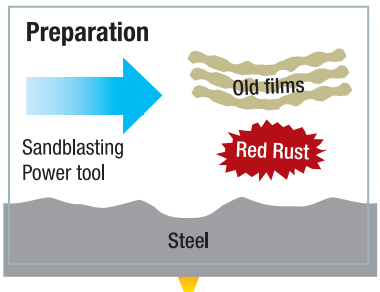

After removing white rust with hand tools, reapply ROVAL to the existing film.
(In case of red rust, remove with power tools.)

Low cost



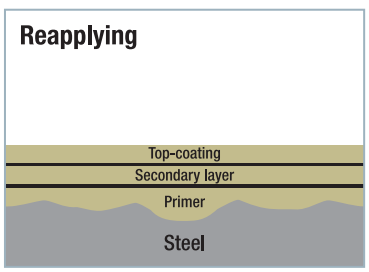

Easy application

New ROVAL film
Old ROVAL film




After completely removing all old film and red rust with sandblast or power tools, apply primer, intermediate coat, and topcoat.

High cost




Complex application

# Color weathering of Roval products

The film of Roval products weathers the same as galvanized materials by exposure.
This characteristics makes repaired unapparent.


* Deviations can occur between the samples shown, the delivered products and the standard references due to differences in shooting angle, light, and the surroundings.

## User Guides

＜Tips＞

# ROVAL has to be applied DIRECTLY to metal surfaces.

The direct contact between the zinc and the metal surface will result in cathodic reaction.

# ✕ Never use primers.

Primers will compromise the performance of Roval products.

### 3 important points

**Point 01 Surface Preparation**

Prepare the metal surface by sandblasting or with appropriate power tools.
Remove all contamination on the surface such as moisture, oil, mill scale, rust, and old paints.

**Point 02 Adequate Agitation of Product**


Agitate the products well to obtain uniform density.
**Dilution is not required.**

* Only when the product thickens, use aromatic thinner such as Xylene. (Within 5% of paint weight)

**Point 03 Sufficient Film Thickness**

**Apply two coats. (Each coat: 40μm)**
**Total dry film thickness = more than 80μm (Coating interval:30 min)**
**Do not spread the paint too thin.**
Anti-corrosion performance is proportional to DFT.

### Application methods

**Brush**

E.g. Soft brush

**Roller**

E.g. Long haired-roller

**Conventional/air-less spray**

**The importance of Surface Preparation**

**Surface pretreatment directly affect the anti-corrosion performance and service life of coating film.**

To get the best anti-corrosion performance, surface pretreatment is very important.

Brushing only after the clean and bare metal surface is exposed out by using sandblasting or power tools to remove the contamination on the meal and galvanizing surfaces.

**Results of salt spray experiments under different surface preparation conditions**


## ⚠ Wrong Application

Applying product to rusted surfaces

Applying products to painted surfaces

## Applications

From ordinary to extreme
Various ways to use the Roval products

Bridges

Marine equipment

Buildings

Gratings

Un-galvanized areas

Bolts

Steel Recycling Project

What if the steel structure becomes old?

# Restore it with ROVAL!

Before

After

Before

After

Before

After

Applying ROVAL on worn galvanized surfaces prolongs a life of steel structures.This property leads to the sustainability of steel resources.
It is time to switch from “Scrap & Build” to “Recycle.”
**Let’s kick start with ROVAL!**

| Global Website |

**rovalworld.com**

| Product & Technical Inquiry |

**global@roval.cn**

**ROVAL has obtained ISO9001 quality management system and ISO14001 environment management system**

SINCE 1955

ROVAL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