A high-quality cold galvanizing compound with the equivalent anti-corrosion performance of hot-dip galvanizing.

Single pack type

96% zinc content

Top-coating or primer not required

Reduces construction time and maintenance cost

Low maintenance

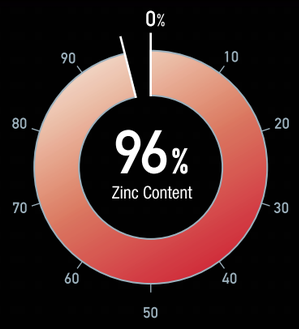
## Galvanizing with paint

ROVAL has a high 96% zinc content in its dry film and its anti-corrosion performance is equivalent to that of hot-dip galvanizing. Unlike the high temperature treatment for hot-dip galvanizing, ROVAL cold galvanizing performs at room temperature. Ready-to-use ROVAL cold galvanizing has been used for more than half a century in Japan as an alternative to hot-dip galvanizing for the restoration of worn hot-dip galvanized surfaces, and the anti-corrosion protection of steel structures.

## Cold Galvanizing Compound

# ROVAL

Anti-corrosion Effect ★★★★★




R

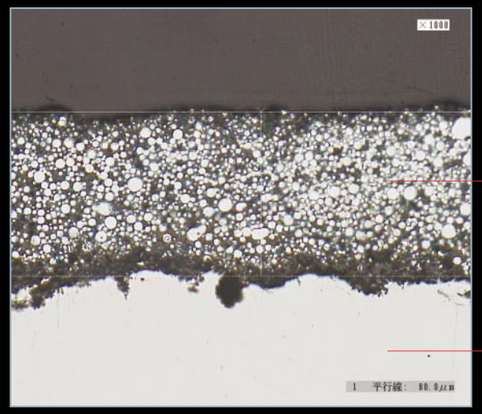
Ready-to-use single pack type cold galvanizing.
Equivalent anti-corrosion performance
to hot-dip galvanizing.


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

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

Color Sample

### Cross-sectional view of the ROVAL film




(×1000)

Paint film contains a large amount of zinc dusts.

### 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.

**Electrical Conductivity**
ROVAL film conducts static electricity.



## Silver Zinc Rich Compound

# ROVAL SILVER

83% Zinc Content

Anti-corrosion Effect ★★★


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

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

**Use ROVAL as a primer for better anti-corrosion performance.**


Color Sample

### 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.

**Electrical Conductivity**
ROVAL film conducts static electricity.

## Galvanizing Repair Metallic Spray

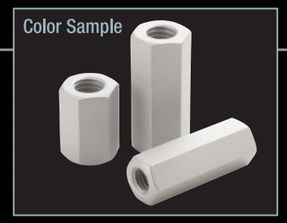
# ZC

Anti-corrosion Effect ★★

69% Zinc Content


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

Color Sample

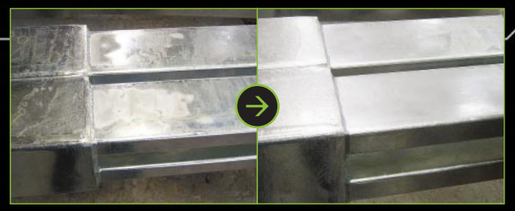


### Properties

**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.



Before After

**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.

## Color Matching Metallic Spray

# MC

(No Anti-corrosion Effect)

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


Color Sample

# ROVAL cold galvanizing demonstrates high anti-corrosion performance through electrochemical reaction property of zinc.

## Mechanisms of Anti-corrosion

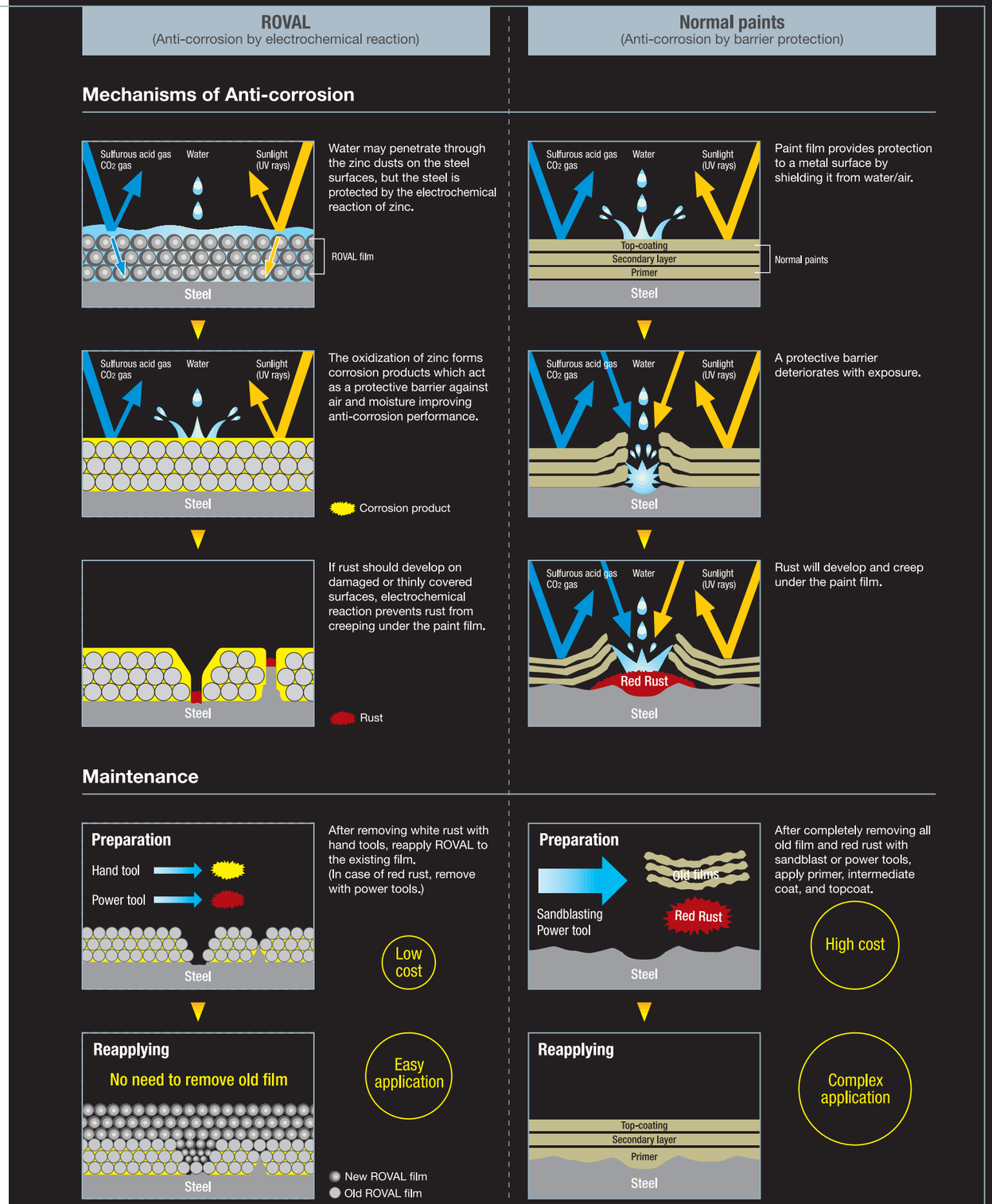
ROVAL protects steel from rusting by electrochemical reaction property of zinc. Zinc dusts result in a self-sacrificing cathodic protection to a metal surface upon direct contact. If rust should develop on damaged or thinly covered surfaces, electrochemical reaction prevents rust from creeping under the ROVAL film.

On the contrary, normal paints provide protection to a metal surface by shielding it from water/air. However, once the film is damaged or peeled, rust will develop and creep under the paint film.

## Maintenance

Reapplying ROVAL directly onto existing ROVAL film reduces construction time and cuts cost.





## 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.

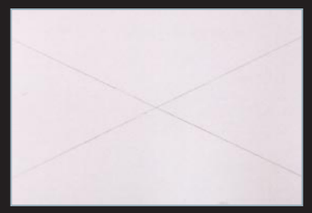
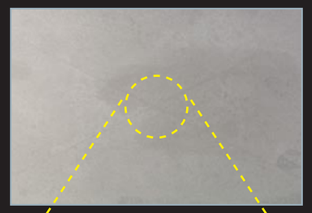
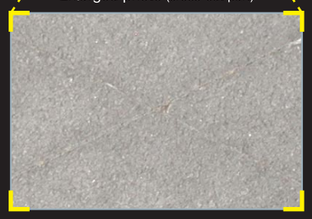
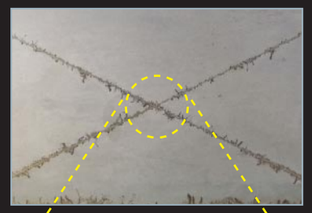
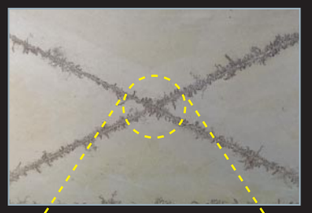
These results and pictures prove that ROVAL protects steel surfaces from rust creepage with its electrochemical reaction, whereas other paints allowed the rust to spread from the cross-cut areas.

＜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: ROVAL vs Other anti-corrosion paints

| | ROVAL (80μm) | Epoxy paint + Urethane topcoat | Epoxy paint + Fluoropolymer topcoat | JIS anti-corrosion paint + Phtalic topcoat |
|---|---|---|---|---|
| Before exposure |  |  |  |  |
| After 36 months exposure |  No rust is found. |  Rust from cross-cut. |  Rust from cross-cut. |  Rust spread over the substrate. |
| Expose the steel substrates |  Enlarged photo (cross-cut part)  **Rust does not spread from cross-cut.** |  Enlarged photo (cross-cut part)  **Rust from cross-cut spreads.** |  Enlarged photo (cross-cut part)  **Rust from cross-cut spreads.** |  Enlarged photo (cross-cut part)  **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＞

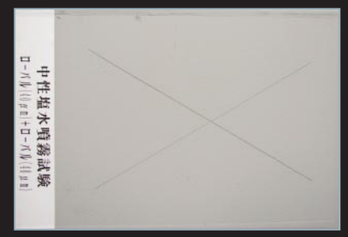
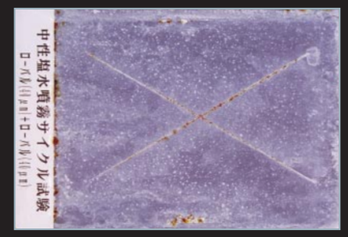
Accelerated corrosion testing involving cyclic exposure to salt fog, dry and wet conditions.

＜CASS Test＞

Copper accelerated acetic salt spray test.

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

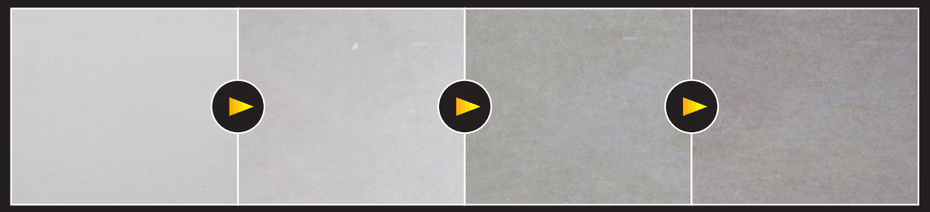
## Results of Comparison Test: ROVAL vs Hot-dip galvanizing

| | ROVAL (80μm) | Hot-dip galvanizing (Zinc 550g/m²) |
|---|---|---|
| Before testing |  |  |
| Salt Spray Test 2256hrs |  |  |
| Cyclic Corrosion Test 3024hrs |  |  |
| CASS Test 1008hrs |  |  |

# Color weathering of Roval products

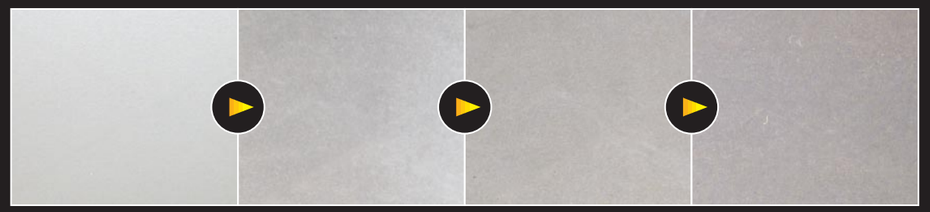
The film of Roval products weathers the same as galvanized materials by exposure.
This characteristics makes repaired unapparent.

ROVAL



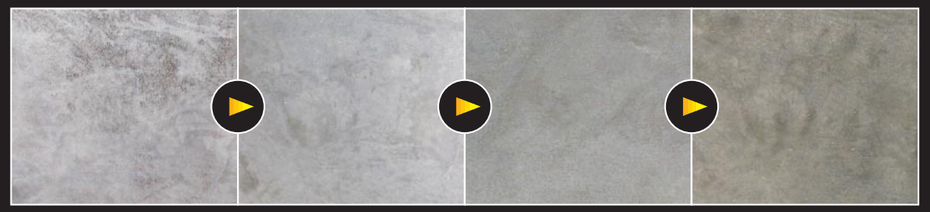
Before exposure　After 3 months　After 6 months　After 12 months

ROVAL SILVER



Before exposure　After 3 months　After 6 months　After 12 months

Hot-dip galvanizing



Before exposure　After 3 months　After 6 months　After 12 months

## ROVAL FAQ

**Q How should mill scale be treated?**

A Remove mill scale and rust completely, otherwise the film may result in peeling and blistering.

**Q Does ROVAL need primer before application?**

A Do NOT use primer before applying ROVAL. Galvanic action occurs when ROVAL contacts with steel or galvanized surfaces directly. Do not use any primers or ordinary paints before applying ROVAL.

**Q Is top-coating necessary on ROVAL?**

A ROVAL does not require any top-coating. ROVAL can demonstrate highly protective film without top-coating.

**Q Is it effective to apply ROVAL on the old ROVAL film applied more than half a year ago?**

A Yes. Thick film reinforces anti-corrosion performance. For surface preparation, remove white rust with hand tools. In case of marine salt, clean the surface by high-pressure washing.

**Q Is ROVAL applicable on a new galvanized surface?**

A Yes. Although ROVAL is suitable as touch-up paint for galvanized surfaces, it can be used for reinforcement of galvanizing layers.

**Q Is it possible to apply ROVAL on a film of other zinc rich paint?**

A Possible if the film contains more than 90% of zinc dust. In case the zinc content is not clear, remove all the film and apply ROVAL on the clean metal surface.

**Q Does ROVAL work well if complete removal of rust is difficult?**

A It depends on the degree of rust. We do not recommend applying ROVAL on rusted surface because it will compromise the anti-corrosion performance, however, ROVAL has high zinc content, so the rust will not creep under the ROVAL film.



## User Guides

＜Tips＞

### ROVAL has to be applied DIRECTRY 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, mil scale, rust, and old paints.

**Point 02 Adequate Agitation of Product**


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

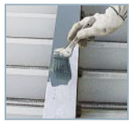
*Only when the product thickens, use aromatic thinner such as Xylene.

**Point 03 Sufficient Film Thickness**

**Apply two coats. (Each coat: 40μm)**
**Total dry film thickness = more than 80μm**
**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**

＜Conventional Spray＞
Tips Orifice: 1.5～2.0mm
Atomized Air Pressure: 0.29MPa

＜Air-less Spray＞
Tips Orifice: abobe 0.48～0.63mm
Atomized Air Pressure: 10MPa
Pump: 30:1Ratio

### Wrong Application

Applying product to rusted surfaces

Applying products to painted surfaces

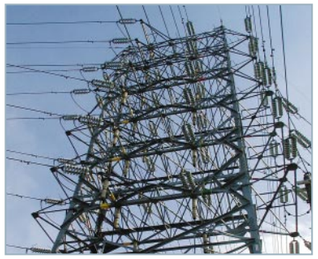
# Applications

From ordinary to extreme
Various ways to use the Roval products


Roads


Bridges


Marine equipment


Power stations


Pedestrian bridges


Buildings


Catwalks


Lighting towers


Steel frames


Pipes


Ducts


Pipelines

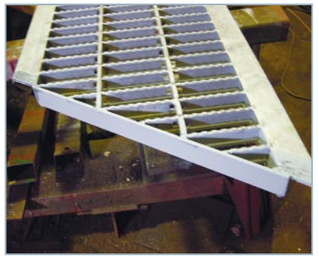

Gratings


Lightning rods


Steel frames




Un-galvanized areas


Cut surfaces


Welds


Bolts


Ditch covers


Greenhouses

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!**