

Organic Zinc-Rich Primers

3.9.1

What are Organic Zinc-Rich Primers?

Organic zinc-rich primers contain **metallic zinc particles** encapsulated in a variety of resins, the most common being epoxy resin. They are used as primers in multi-coat systems, providing outstanding protection to steel surfaces in a wide range of environments.

The cost-effectiveness, ease of application, effectiveness as a barrier to salts, water and oxygen and high bond strength to blast cleaned steel of **organic zinc-rich primers** makes them **excellent choices** in corrosion protection, and, when considering the overall advantages in comparison to painted HDG ("duplex" systems), certainly make them very attractive alternatives where the steel is to be painted.

In fact, where the intention is to paint the steel, there is little point in galvanizing first, as an organic zinc rich coating can offer better economics (prepare, prime and topcoat in the one shop) a more technically compatible system (less likely to delaminate), and corrosion resistance that is at least equal to hot dip galvanising.ⁱ



Benefits of Organic Zinc-Rich Primers

Benefits of using organic zinc-rich primers for the protection of steel against corrosion:

- Painting over organic zinc-rich primers is easier than over hot dip galvanising (which demands costly and specialised pre-treatmentsⁱⁱ) and provides a more cohesive system; independent research shows that the adhesion of a coating over HDG drops with time, whereas adhesion of a coating over a zinc-rich primer remains high throughout service life.ⁱⁱⁱ
- Preparation and painting of steel in the one shop, rather than hot dip galvanising in one location, and then transporting the steel to another location saves both time and money, and reduces the likelihood of damage due to transportation.
- Faster drying than inorganic zinc silicates and faster recoat times
- Atmospheric conditions are not as critical when applying organic zinc-rich primers compared with inorganic zinc silicates
- Formulated with less zinc is than for inorganic zinc silicates due to an assumption that additional corrosion protection provided by intermediates and topcoats. An economical use of zinc.
- Greater choice of topcoat finishes – organic zinc rich primers accommodate a wider range of coating types.
- Maintenance of painted steelwork primed with organic zinc-rich primers is easier if than over painted HDG steelwork.
- Our approved Dulux protective coating systems conform with the **Australian Standard AS/NZ 2312:2002, Guide for the Protection of Iron and Steel against Exterior Atmospheric Corrosion**^{iv}, for long term corrosion protection. "Long term" is defined as 10 to 20 years.



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When Should You Use Organic Zinc-Rich Primers?

Organic zinc-rich primers should be used for all steelwork:

- Where the primer forms part of a coating system. In this capacity it can deliver a very long service life. (Refer AS2312 Table 6.3 – most of the systems offering long-term corrosion protection in high corrosivity environments include an organic zinc-rich primer in the first coat column)
- In UV-protected areas such as internal structural steel, not exposed to view
- That is properly prepared by abrasive blast cleaning (Refer to Dulux Protective Coatings Tech Note 1.1.2 – Mild Steel Surface Preparation)
- That is welded on site. (Refer to Dulux Protective Coatings Tech Note 1.1.2 – Mild Steel Surface Preparation under “Treatment of Welds”.)



Organic zinc-rich primers can be used for touch-up of damaged hot-dip galvanised steel; for example, a “cold galv” primer such as **Dulux[®] Metalshield[®] Cold Galv Primer** is ideal for this use.

When Should You Not Use Organic Zinc-Rich Primers?

Good surface preparation of steelwork is important for organic zinc-rich primers to perform as designed. The zinc needs to be in direct contact with cleaned steel, not millscale or other contaminants. Organic zinc-rich primers are **not ideal** for steel that **cannot be abrasive blast cleaned**, such as thin-gauge plate-steel.

Current Organic Zinc-Rich Primers

Dulux[®] Protective Coatings currently manufactures a range of organic zinc-rich primers:

Two Packs

- **ZINCANODE[®] 202** (heavy duty epoxy)
- **ZINCANODE[®] 402** (heavy duty epoxy)

Single Packs

- **ZINC RICH 1P** (phenoxy)
- **METALSHIELD[®] Cold Galv Primer** (chlorinated rubber)

For more information on each, please visit the **Dulux[®] Protective Coatings Website** and contact your Dulux Protective Coatings Technical Consultant.

ⁱ <http://www.zrcc.asn.au/downloads/IOZVgalvanizing.pdf>

ⁱⁱ Painting Over Hot Dip Galvanized Steel, Thomas J. Langill.

www.galvanizeit.org/resources/files/AGA%20PDFs/paintsteel.pdf

ⁱⁱⁱ “Performance Evaluation Of Metallic Zinc Based Coating Systems Through Accelerated Testing”, K Lofhelm, et al.

www.scaa.asn.au/SCAA_APMF_2007/Paper_Performance_Evaluation_of_Metallic_Zinc_Based_Coating_Systems_Through_Accelerated_Testing_Szokolik.pdf

^{iv} www.standards.com.au/catalogue/script/Details.asp?DocN=AS179952311967