

# Info Sheet – Care & Storage Recommendations for Zinc-coated Steel Products

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To reduce the incidence of white rust precautions should be taken when receiving the product and storing it, addressing each of the conditions that cause it, as outlined below.

## Delivery:

- ▶ Loads should be covered to prevent rain ingress
- ▶ Product unloaded undercover during rain
- ▶ Inspect zinc-coated product to confirm it is in a dry condition and free of white rust.
- ▶ Deliveries should be rejected if inspection reveals signs of wet storage stain or if packs are wet or moist with condensation.

## Storage:

- ▶ Packs of zinc coated steel should be stored undercover promptly, to ensure that they are not exposed to unnecessary moisture.
- ▶ Store away from open doors, windows or louvres to avoid exposure to moisture-laden air, salt contamination and condensation.
- ▶ If cutting it is important to maintain corrosion and bactericide inhibition levels in water-based cutting fluid systems. Residual fluids and swarf left inside the pack will result in accelerated corrosion if not removed.

If there is no alternative but to store packs outside, with minimal protection from the elements, then it is essential that the pack be broken open and individual lengths stacked with plastic dividers between each layer, as shown in the diagram below:

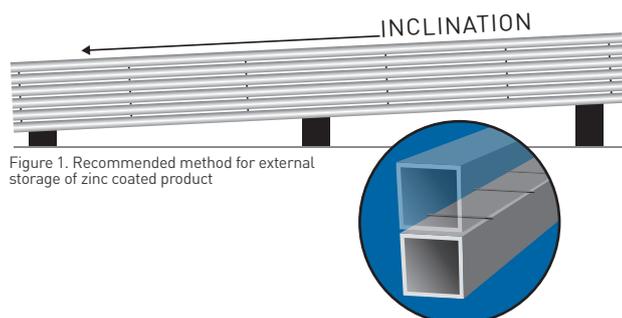


Figure 1. Recommended method for external storage of zinc coated product

To reduce the severity of any white rust the product should be stored at an incline of 5mm for every 1m length. This ensures that water drains freely from exposed surfaces. Straps should be cut and spacers inserted between each layer to eliminate entrapment of moisture between contacting surfaces. Separators and dunnage used should be free draining and complementary material to avoid local spot stains occurring.

## Additional recommendations in mind when deciding how to store your products:

- ▶ Product stored outside should be provided with cover for protection from the rain; a low-cost under-roof shelter (i.e. roof and no walls) offers increased protection from moisture and increases the longevity of the zinc coating.
- ▶ Use of a tarpaulin unless fully tented is **not advised** as there is increased risk of condensation which will exacerbate the formation of the white rust.
- ▶ Surfaces can be treated with proprietary water repellent or barrier coatings which prevent contact with moisture on galvanised surfaces.
- ▶ Dunnage used in direct contact with zinc surface should be clean and dry, plastic or seasoned timber. Direct contact of with damp, treated or green timbers (soft or hard) should be avoided.

## Wet packs:

If product arrives wet or is exposed to water while in storage, the easiest way to avoid corrosion is to ensure that it can dry out.

Wet lengths in the pack must be separated as soon as possible to allow all surfaces to dry out thoroughly. Wet lengths could also be blown down with a leaf blower, for example.

Early onset white rust may simply be wiped away, scotch-brite and vinegar may be required; if it is more developed further action may be required to address (see case study).

Standard precautions apply for all zinc-coated steel; for details please refer to Appendix E of AS4750: Electro-galvanised coatings on ferrous hollow and open sections.

## Conditions Determining White Rust Formation

There are several key factors that determine the speed of the white rust formation process:

- ▶ Storage method
- ▶ Storage place
- ▶ Air circulation
- ▶ Climate

## Storage Method

The white rust problem is often exacerbated when packs of tube and pipe are stored flat, one on top of the other or “nested”.

## Storage Place

Storing the steel outdoors, exposed to moisture and the other elements will always increase the likelihood of white rust formation.

## Air Circulation

If the packs of steel are strapped together, this restricts air flow around the product, reducing the chance for moisture to evaporate and increasing the chances of corrosion.

## Climate

In areas of high rainfall and humidity, like tropical and sub-tropical areas, moisture can get trapped between individual surfaces and wet storage stain can result. In most climates condensation on surfaces also occurs naturally, seasonally and varies due to design and local topography. It occurs when the air is at 100% relative humidity and a surface temperature is less than the dew point. Condensation typically occurs after dusk or on still mornings as the sun rises and can cause white rust. If condensation occurs and white rust is a problem it is important to promote air flow by improving ventilation or using fans in the storage location.

## Summary

Prevention is better than cure with white rust. Learning how to check delivery of product for any signs of moisture and storing it in the optimal conditions to prevent the onset of corrosion can save a lot of time, money and hassle.

Taking the right steps to provide a suitable storage area, preferably inside, with adequate air circulation and the minimum possible exposure to moisture or condensation will ensure your coated steel products live up to your expectations.