



# General Guide for Using Zinga

To be read in conjunction with the Zinga Technical Data Sheet

Our intention with this document is to assist users, particularly those new to Zinga, with tips to help ensure they achieve an understanding of how to use the product to provide durable protection of steel assets. It complements the TDS by providing an introduction to Zinga and additional detail on the recommended cleaning, surface preparation and application of available systems for a range of surfaces.

Zinga is a one pack coating that contains 96% zinc in the dry film and provides cathodic protection similar to hot dip galvanizing. It can be applied in the workshop or on site by brush, spray or roller\* to a correctly cleaned and prepared surface in a wide range of atmospheric conditions. Zinga can be applied in atmospheric conditions where the relative humidity is up to 95%.

\*Roller is not to be used for first coat, only subsequent coats.

## **Components of Zinga:**

- Zinc powder (electrolytic zinc)
- Aromatic hydrocarbon
- Binder

Colour: Grey (colour darkens over time with atmospheric exposure) – Patination may occur

Like most protective coating systems there are some rules that need to be followed to ensure the system performance is not compromised. It is very important to carry out the process in the following order:

1. Perform preliminary cleaning of the surface to ensure it is free of all contamination including chlorides (salts)
2. Carry out specified surface preparation method ensuring the specified surface profile exists
3. Stir and dilute Zinga to the manufacturer's specifications according to application method
4. Chloride levels (salt) testing
5. Applying Zinga to specified number of coats and specified DFT

## **Preliminary Cleaning:**

Before surface preparation the areas to be coated must first be thoroughly cleaned to remove all contamination. Firstly, solvent washing/wiping with Zingasolv will be necessary to remove contaminants such as oil and grease if present. If other contaminants such as soluble chlorides (salt), industrial pollutants etc are present/remain further cleaning will be necessary.

Methods of cleaning include but are not limited to the following:

1. Hot water washing at 80° C with a minimum of 2,200 psi at the nozzle head.
2. Steam cleaning.
3. Cold water can be used with a minimum of 3,000 psi at the nozzle head. Ensure sufficient water flow, typically, 30 litres per minute.

### **Surface preparation:**

All preliminary cleaning should be carried out prior to all methods of surface preparation.

Wet or dry abrasive blasting carried out to the appropriate standards as specified are the recommended surface preparation methods. Vapour blasting (air assisted wet abrasive blasting) is successful. Residual blast media must be removed, and the surface allowed to dry prior to coating application. When abrasive blasting is not practical, not permitted or not available, power/hand tool preparation can be considered as an option. This less than perfect surface preparation may compromise the performance of Zinga.

Power tool cleaning generally produces a better result than hand tool preparation.

The preferred power tool is an MBX Bristle Blaster as it will produce a surface profile comparable to Sa 2½ abrasive blasting. This method is normally recommended for small applications or patch repairs.

Rotary power tools with appropriate sanding discs can also be considered to achieve a surface profile in such a way to produce a cross hatch pattern (≡) as the outcome.

Needle guns are a practical solution for removal of excess rust but are not effective for producing the required surface profile because as soon as the needles become blunt, they produce a smooth, peened surface.

Power wire brushing is not acceptable as it will burnish (polish) the substrate.

Hand tool surface preparation is not a preferred method and should be limited to small areas or spot repairs.

The best hand tool option, if no other options are practical, is clean wire brushes used in conjunction with appropriate grit paper using a cross hatch method to achieve the specified surface profile.

### **Stirring and dilution of Zinga:**

If diluting Zinga, add ZingaSolv while carrying out the stirring process.

As Zinga is highly zinc rich, the zinc settles in the bottom of the can. It must be correctly stirred as per TDS prior to and during application to ensure the zinc is not left in the can. Inverting the cans a few days before use will make stirring easier.

Zinga has an unlimited shelf life when stored in accordance with the TDS, but for extended storage periods of 2 years or more it is recommended to agitate in a mechanical agitator.

Use only Zingasolv for diluting Zinga.

### **Chloride (salt) testing:**

Chloride testing is required immediately prior to coating application. Atmospheric corrosivity zones C1 to C4 categories allowable level 70 mg/m<sup>2</sup>.

Atmospheric corrosivity zones C5 and CX categories allowable level no greater than 50 mg/m<sup>2</sup>.

Test results shall not exceed allowable levels when tested in accordance with AS 3894.6. For existing structures areas not naturally subject to rain washing shall be included in areas tested for chloride levels.

### **Number of coats and specified DFT:**

The Zinga stand-alone system is applied in 1 or 2 coats of Zinga to specified DFT.

The Zinga multicoat systems are a maximum of 1 coat of Zinga to specified DFT + compatible topcoat/s.

### **WFT readings and measurement:**

Wet film combs are used to measure WFT.

Care must be taken when measuring the second coat of Zinga as the second coat relieves the first coat soon after application, so this method may then measure WFT of both coats. An appropriate technique needs to be employed.

### **DFT readings and measurement:**

The DFT range always relates to the DFT above the surface profile height. Measurements of DFT should only be taken when the zinc coating is fully dried.

### **DFT acceptance Criteria (80/20 Rule):**

The 80/20 rule states that 80% of all DFT readings of the coating system must be greater than, or equal to, the absolute minimum of the specified figures, and none of the remaining 20% of readings can be below a minimum of 80% of the specified figures.

### **Application by Brush:**

Zinga can be applied by brush as a normal paint. The first layer should have sufficient dilution to penetrate in the rough surface profile (5 m%).

Care should be taken to achieve a consistent film thickness as per specification.

### **Stripe Coating:**

Stripe coating is compulsory when using Zinga.

All edges should ideally have a minimum radius of 2 mm. Stripe coating can normally be carried out as part of the full coat of Zinga, depending on the size of the section being coated. A stripe coat is applied by brush to edges at the beginning of each coat being applied. It is intended to give these areas sufficient film build. All edges, welds, holes, crevices, nuts and bolts etc must be stripe coated.

For larger areas it may be necessary to apply it as a separate coat, and it is very important to respect the minimum recoat times before applying the full coat. Ensure all surfaces are a consistent light grey before applying the next coat to avoid any solvent entrapment.

## **Zinga systems and recommended methods of surface preparation:**

### **1. Zinga stand-alone (unique) system:**

This system is highly recommended because of the ease of future maintenance, which is usually lost with the introduction of one or more topcoats over Zinga. Eventually, as the Zinga sacrifices itself, the surface will need to be correctly cleaned and a new layer of Zinga applied to recharge the previous Zinga layer.

The stand-alone Zinga system should normally be applied with a minimum of two coats to a total DFT range of 120µm to 150µm.

Depending on the method of application, ventilation, and ambient air temperature the second coat can usually be applied between one and two hours after the first coat is touch dry.

The preferred methods of surface preparation for this system, after preliminary cleaning, include but are not limited to the following:

#### **Dry abrasive blasting:**

Dry abrasive blast clean to a minimum of Sa 2½, in accordance with AS1627.4 and AS 1627.9.

The blasted steel surface shall have a jagged angular surface profile with a profile height of Rz 50-100 µm when measured using replicate tape in accordance with AS 3894.5.

#### **Wet abrasive blasting:**

The wet abrasive blasted surface shall comply with SSPC-VIS 5 Class WAB-10 with a grade of flash rusting that does not exceed "light".

The blasted steel surface shall have a jagged angular surface profile with a profile height of Rz 50-100 µm when measured using replicate tape in accordance with AS 3894.5.

Please be aware that due to the possibility of flash rusting occurring more rapidly on wet abrasive blasted surfaces than dry abrasive blasted surfaces it can be important that the structure is blasted and coated in smaller sections so that the Zinga coating can be applied before flash rusting exceeding "light" has a chance to occur.

### **2. Zinga as a primer in a 2-coat system:**

Recommended where there is a requirement for a specific colour or the environment is not suitable for the Zinga stand-alone system, eg pH range outside the parameters for Zinga.

Zinga can be top coated with a range of compatible topcoats.

### **3. Zinga as a primer in a multi-coat system:**

To reduce the risk of the influence of solvents causing issues with, and for the degassing of the Zinga primer, i **seal coat must be applied** between the Zinga primer and the topcoat **to reduce the risk of any compatibility issues between the Zinga primer and the top coat.**

The Zinga prime coat should only be applied in one coat with a DFT range of 60 µm to 80 µm. It should never exceed 100 µm. The surface of the Zinga should be clean, free of zinc salts and any other contamination before applying the seal coat.

The seal coat and topcoat should be applied using a mist/full coat technique as outlined below.

The mist coat can be applied 4 hours after the Zinga primer coat is touch dry by applying 25 µm to 40 µm as a continuous layer. This allows any bubbles easy passage through the film layer.

The full coat can then be applied 2 hours after the mist coat is touch dry to the specified DFT, less the 25 µm to 40 µm of the mist coat. This seal coat creates a barrier for any aggressive solvents that may be in the topcoat.

The topcoat can then usually be applied 2 hours touch dry of the seal coat.

If any contamination occurs between any coats preliminary cleaning will have to be repeated. The above recoat times are based on Zingametall seal coat "Zingalufer" @ 25°C. Recoat times for different ambient air temperatures are provided in the Zingalufer TDS.

### **Guidelines for different surfaces to be coated:**

#### **New steel or previously painted steel:**

Once the preliminary cleaning and surface preparation have been correctly carried out as outlined above in this document, apply a minimum of two coats of Zinga to the total specified DFT.

#### **New hot dip galvanizing or arc metal-sprayed zinc:**

Once the preliminary cleaning has been correctly carried out the galvanized surface will require a sweep blast as outlined below.

Sweep blasting of new galvanizing must be done at a reduced blast pressure of around 50 psi maximum, the angle of blasting is to be 45° and it is to be performed fairly quickly from side-to-side while progressing forward.

This is intended to minimize the removal of the existing sound galvanizing, whilst providing the specified surface profile, and also to remove passivation applied by the galvanizers. Ensure the surface is dedusted and that no blast media remains embedded in the profile before coating application. Ensure all zinc corrosion products (ZCP's) are fully removed if present. Apply Zinga to the necessary number of coats and total DFT.

The coating system will increase the service life of the original new galvanizing as the Zinga layer becomes the anode, and when its service life ends the original galvanizing layer becomes the anode offering cathodic protection.

#### **Aged hot dip galvanizing or arc metal-sprayed zinc:**

##### **1. Areas of sound galvanizing with <5% well dispersed light pinpoint rust:**

Wet or dry abrasive sweep blast clean the areas of sound galvanizing in accordance with AS 1627.4 and AS1627.9. Ensure removal of existing sound galvanizing is minimal.

The blasted surface shall have a jagged angular surface profile with a profile height of at least Rz 25 µm when measured using replicate tape in accordance with AS 3894.5

Ensure all zinc corrosion products (ZCP'S) are fully removed if present.

Any areas where the steel substrate has been exposed due to sweep blasting will require a full blast to Sa 2½. The blasted surface shall have a jagged angular surface profile with a profile height of Rz 50-70 µm when measured using replicate tape in accordance with AS 3894.5.

The coating system will increase the service life of the original galvanizing as the Zinga layer becomes the anode, and when its service life ends the original galvanizing layer then become the anode offering the cathodic protection.

**2. Areas of >5% pinpoint rust, general rust, minor corrosion pitting, moderate to heavy ZCP, and/or lack of residual HDG:**

Wet or dry abrasive blast clean to a minimum of Sa 2½, in accordance with AS 1267.4 and AS 1627.9. The blasted surface shall have a jagged angular surface profile with a profile height of Rz 50-100 µm when measured using replicate tape in accordance with AS 3894.5. Apply Zinga to the necessary number of coats and DFT.

**Inspection, touch-up, maintenance, and repairs for Zinga stand-alone systems:**

Third party project inspection to ensure specification compliance is strongly recommended and carried out well will help ensure the expected performance of the Zinga system is achieved. It is good practice to have a defect inspection and rectification within 12 months of project completion. Later inspection and touch up can then be left considerably longer than traditional coating systems as Zinga, properly applied to a correctly prepared surface, does not allow under-creep of corrosion.

This reduces asset owner costs. Another benefit of leaving the inspection for some years is to be able to monitor the thinning of the coating system when inspection is eventually performed and thus predict the timing of rejuvenation.

Zinga has a reversible binder, so when fresh Zinga is applied to previously applied Zinga (that is clean and free of zinc salts and carbonates) it will momentarily reliquify the existing coating regardless of its age, forming one, homogeneous film - without layering like many traditional coatings. This provides significant life-cycle cost advantages and is one of the key attractions of Zinga. It also means that Zinga is quick and easy to touch up, repair or recoat. To test if the previously applied Zinga coating is free of zinc salts and carbonates and ready to accept another coat wipe the test area with a white lint free rag soaked in ZingaSolv and lightly rub the area, about 4 rubs, and if the rag turns grey it is ready to accept another Zinga coat. If there is no change of colour the surface will require further preparation as outlined below:

Methods of further preparation include but are not limited to the following and can vary due to time delay between previous and subsequent applications and exposure category:

1. Vigorous scrubbing with stiff nylon brush and clean potable water.
2. HP water washing. Pressures may need varying.
3. Abrasive sweep blast using fine/light blast media.

**Abrasive blast media:**

The abrasive must have angular shape to provide the appropriate surface profile.  
Abrasives; Copper slag, steel grit, chilled iron, Korund, Garnet

**Acceptable pH levels:**

Acceptable pH range for Zinga in immersion: Between 5.5 pH and 9.5 pH. Acceptable pH range for Zinga in atmospheric: Between 3.5 pH and 12.5 pH.

**Electrical potential:**

Accelerated consumption of Zinga, like any galvanic coating, may occur when exposed to electrical potentials outside the range of -950 to -1050mV.

**General comments:**

This document must be read in conjunction with the Zinga Technical Data Sheet.

Compromising the recommended preliminary cleaning and surface preparation may result in less than expected performance results and even coating failure in extreme cases.

Only fresh potable water shall be used in cleaning and surface preparation procedures.

**Zinga Product and Project Warranties:**

Contact [info@zinga.com.au](mailto:info@zinga.com.au) or call (+61) 417821508 for further information or assistance if required.