ZINKY 13 Inorganic Zinc Rich Primer

Application Notes

Purpose

The purpose of the guidelines is to ensure that the product, as applied, provides adequate protection against corrosion.

Performance of a coating system depends upon both the correct choice of product(s) and the adoption of the correct guidelines for surface preparation and paint application.

The responsibilities for achieving the specific standards and performance of the coating system very much depends on the surface preparation and paint application, which rest with the Contracting Company. Under no circumstances do these responsibilities rest with Nippon Paint. We will generally provide for the presence of a Technical Service Representative at key stages during the project stage. The role of the Nippon Paint Technical Service Representative is advisory only unless otherwise specified in the terms and conditions of the contract.

Surface Preparation

New Construction

To achieve optimum performance, use of abrasive grit blasting or an appropriate grit / shot to achieve a sharp angular profile is strongly recommended.

Abrasive blast cleaning to Sa2½ (ISO 8501-1:2007) or SPPC-SP10. If oxidation has occurred between blasting and application of Zinky 13, the surfaces should be re-blasted to the specified visual standard . Surface defects revealed by the blast cleaning process should be ground, filled, or treated in the appropriate manner. A surface profile of 50-75 microns is recommended. Lower than the recommended surface profile will reduce adhesion and increase the possibility of mud-cracking.

Damaged/Repaired Areas

All damaged areas should ideally be blast cleaned to Sa2½ (ISO 8501-1:2007) or SSSPC-SP10. However, small areas can be power tool cleaned to Pt3 (JSRA SPSS:1984) or SSPC SP11 , provided the area is not polished. Repair of the damaged area can then be carried out using a recommended zinc rich epoxy primer such as Zinky 22 or Zinky 23

Major Refurbishment/Repair

All damaged areas should ideally be blast cleaned to Sa2½ (ISO 8501-1:2007) or SSSPC-SP10. However, small areas can be power tool cleaned to Pt3 (JSRA SPSS:1984) or SSPC SP11 , provided the area is not polished. Repair of the damaged area can then be carried out using a recommended zinc rich epoxy primer such as Zinky 22 or Zinky 23

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Conditions for application

Minimum air temperature	While air temperature should be above 5°C (41°F), Zinky 13 may be applied at lower temperature so long as there is sufficient moisture in the air (65%) to achieve adequate curing
Minimum steel temperature	3°C (5°F) above dew point
Minimum relative humidity	65%

In the event if relative humidity less than 65%, the minimum overcoating time may be extended.

Relative humidity at less than 65% RH may retard the curing process, in which case, it may be necessary to tent the area and create a suitably warm, humid micro-climate, in order to accelerate and complete curing.

Mixing

Zinky 13 comprises of 2 parts, a liquid binder component ((Part A) and a Powder (zinc dust) component (Part B).

The Powder (Zinc dust, Part B) should be slowly added to the liquid Binder (Part A) whilst stirring with a mechanical agitator. Do not add liquid to powder as this will result in a heavy, powdery mass, which will be impossible to mix correctly and will result in the presence of lumps of zinc and subsequent high wastage. The mixed material should then be filtered prior to application and should be constantly agitated in the pot during spraying. Once the unit has been mixed it should be used within the working pot life specified.

Thinning

Under normal conditions, thinning of Zinky 13 is not required to obtain good airless spray application properties. At high temperature (typically above 28°C (82°F), it may be necessary to thin with Zinky-2000 Thinner. The amount of thinning required will depend upon local prevailing environmental conditions such as temperature, humidity, spray method, etc.

It is recommended that thinning does not exceed 10% by volume. If too high a level of thinner or the incorrect thinner is used, the drying and curing processes may be retarded. Where high levels of thinning are used, it is that mixed paint is re-circulated to avoid settling of zinc in the container or in the spray lines.

Working Pot Life

It should be noted that the viscosity of Zinky 13 increases very slowly and the material will remain liquid after the pot life times specified. However, the material should not be applied after the expiry of the pot life to avoid poor curing and mud cracking.

Pot Life : 4.0 hours at 25°C

Application Methods

Airless spray : Tip Size 0.015" to 0.023"
Pressure at Nozzle 120 to 150 kg/cm^2

Total output fluid pressure at spray tip: not less than 112 kg/cm^2 (1593psi). If the pressure is too high a 'pock marked' uneven surface may result.

Available air pressure and capacity for spray equipment should be at least 5.5kg/cm2 and 1.4m3/min (80psi) and 50cfm.

Prolonged application of zinc dust containing paints can lead to a build--up of material in the equipment, and ultimately blockages can occur due to “packing out” with zinc dust. To ensure longevity, the equipment should be cleaned at frequent intervals.

Application by brush or roller is recommended for small areas only. For best result, use airless spray. Care must be taken to achieve the specified dry film thickness.

Ensure all equipment is thoroughly cleaned before and after use.

Film Thickness Per Coat

Zinky 13 is typically applied at 50-75 microns dry film thickness, equivalent to 80-121 wet film thickness.

Theoretical coverage : 12.4m^2 / litre at 50 microns dry film thickness
8.2m2 / litre at 75 microns dry film thickness

It is most critical that Zinky 13 is not over applied and does not exceed 120 microns dry film thickness on any part of the substrate in order to eliminate the risk of mud cracking. Mud-cracking that is perceptible with normal vision is rejected, sanded back and touched up.

The recommended application procedure is to build up dry film thickness by application in a number of passes.

For areas of low dry film thickness below 45µm, a light sweep blast is carried out followed by application of Zinky 13 to specified DFT.

For areas between 45 and 120µm, including overlaps, these are considered suitable for general ambient temperature end use. For high heat service, it is recommended that the DFT is below 50µm.

For areas above 120µm, it is recommended to re-blasted to Saa2½ (SSPC--SP6) and the product reinstated to specified thickness regardless of whether mud-cracking is or is not present.

Wet Film Thickness Measurement

Checks shall be carried out during the painting operation to ensure that the required film thickness is being maintained. These shall be performed according to the procedure described in ISO 2808, Method No. 1A - Comb gauge.

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Dry Film Thickness Measurement

Coating dry film thickness (DFT) shall be measured by means of a thickness meter based on eddy-current or electromagnetic techniques, in accordance to ISO 2808, methods 7B (magnetic-flux), 7C (magnetic-induction), or 7D (Eddy-current). The coating thickness gauge shall be calibrated daily.

Drying Times

Drying times quoted refer to a single coat applied to give 50-75 microns dry film thickness and have been determined under laboratory-controlled conditions at 65% relative humidity. Drying times achieved in practice may show slight fluctuations. Higher level of relative humidity may result in faster drying time.

Substrate Temperature	25°C	40°C
Surface Dry	10 mins	5 mins
Though Dry	2 hours	1hours
Cured	4.5 hours	2 hours
Dry to recoat (min)	4.5 hours	2 hours
Dry to recoat (max)*	Extended	Extended

Data on drying time / times given are considered as guidelines only. The actual drying time / times may be shorter or longer, depending on film thickness, ventilation, humidity, underlying paint system and requirement for early handling, etc.

Where an "extended" overcoating time is stated, consult Nippon Paint Representative for recommended surface preparation to achieve optimal intercoat adhesion.

Curing

The presence of moisture in the atmosphere is integral to the curing mechanism for inorganic zinc silicate. Inadequate curing may retard the curing process, and satisfactory curing may not be achieved for several days, if at all.

To determine the degree of cure, a solvent rub test should be performed as outline in ASTM D4752, and using Methyl Ethyl Ketone as the solvent. Satisfactory curing for overcoating purposed is indicated by a value of 4 after 50 “double rubs”.

When top coats are applied to inadequately cured zinc silicate primers, detachment may occur

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Overcoating

For standard overcoating intervals, refer to Technical Data Sheet.Zinky 13 may be overcoated for an indefinite period, so long as the surface to be overcoated remains intact, clean, dry and free from all zinc salts, zinc corrosion products and all other contaminants.

To ascertain the minimum overcoating interval for Zinky 13 should be confirmed by carrying out a solvent rub test.

Application of thick top coats to zinc silicates that are not fully cured, or over-applied, can lead to splitting problems. This presents itself as an inability to blast damaged areas back to a sound edge during repair or eventual adhesion failure when high build epoxies have caused a high degree of stress in the system, and is the cause of failure of zinc silicate systems.

'Bubbling' of the topcoat may be experienced when applied over zinc silicate. A mist coat may be required and allowing the air to come out of the film before application of the full coat. Alternatively, for some applications, a 'sealer' coat such as HI-PON 20-03 can be applied over Zinky 13 prior to application of the topcoat.

The maximum overcoating time for Zinky 13 is indefinite, but when weathered, the zinc salt at the surface of the coating which can cause blistering and adhesion problems when overcoated. The salts can be removed but require sweep blasting or high pressure water washing with scrubbing as minimum surface preparation.

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