Surface Preparation and Application of Ronass Pipe Shield – 1319

Technical Support Procedure TP-9206-18

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PROTECTIVE COATINGS | MARINE COATINGS | DECORATIVE COATINGS

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Introduction

Ronass Pipe Shield – 1319 is a solvent-free two-component system based on Epoxy Coal Tar resin and reinforced by Micaceous Iron Oxide (M.I.O.) flakes, featuring excellent anti-corrosive properties, mechanical properties, as well as fresh and seawater, moisture and alkaline resistances.

Ronass Pipe Shield cures through a chemical reaction that occurs between its components, forming a tough and durable film that is highly resistant to abrasion and chemicals.

Uses

Ronass Pipe Shield is primarily used as a single-layer coating system to protect steel substrates in highly corrosive and challenging conditions. Some of this coating's main application areas include:

- Underground pipelines
- Exterior hulls of ships (under the waterline)
- Installations that are immersed in seawater such as docks, structural piles, offshore platforms and other underwater installations

Surface Preparation and Application

In order to ensure that Ronass Pipe Shield – 1319 is able to perform its expected capabilities, it is important to follow the surface preparation and coating application guidelines listed below. Please do not hesitate to contact our Technical Support Team via email at support@ronass.com should you have any further questions.

Please refer to the product's technical datasheet (TDS) for more information.

Inspection Prior to Coating Application

Prior to application of the coating, please inspect the following elements:

1. Materials:
    a. Paint and Thinner
    b. Abrasive Materials
2. Surface Preparation
    a. Degreasing
    b. Rust Removal
3. Application Equipment and Tools
    a. Inspecting Surface Preparation Equipment and Tools
    b. Inspecting Coating Application Equipment and Tools
4. Ambient Conditions

1. Materials

1 a. Paint and Thinner

Begin by inspecting the type of coating and thinner that you will be using. The type of coating you select will be based on expected service conditions, types and levels of corrosion expected during the coating's service life…

In this phase, it is important to ensure that the amount of paint and thinner required has been calculated correctly, and that the material has been stored in suitable conditions (please refer to the product's technical datasheet for a full explanation of recommended storage conditions). Please also ensure that the shelf life of the products you will be using have not expired, and that all packaging is still intact and in good condition.

Finally, inspect the materials (coating, hardener, thinner) to make sure that no settling has occurred.

1 b. Abrasive Materials

The quality and degree to which a surface can be cleaned and prepared through blasting is directly related to the type, size and geometric shape of the abrasive materials being used. The materials being used in blasting operations should pose no environmental or health risks.

Some of the factors and physical properties of abrasive materials that impact their quality include:

- Density
- Distribution of particle size
- Degree to which particles break down
- Presence of chlorine ions and other metals
- Geometric shape of particles.

2. Surface Preparation

Surface preparation is of absolute importance in the application of any coating, especially protective coatings. Some of the key parts of surface preparation are explained in detail below.

2 a. Degreasing

Some of the methods that degreasing of the surface can be completed according to SSPC-SP1 include:

- Cleaning the surface using organic solvents
- Cleaning and gently scrubbing the surface using detergents
- Degreasing using hot water or steam

2 b. Rust Removal

There are numerous methods suitable for rust removal. Some of these methods include:

- Surface preparation using hand tools
- Surface preparation using pneumatic or electrical power tools
- Surface preparation using flame cleaning
- Surface preparation using abrasive blasting (abrasive materials with compressed air)
- Surface preparation using abrasive blasting (abrasive materials with water)
- Surface preparation using hydroblasting
- Surface preparation using chemical cleaning

For Ronass Pipe Shield – 1319, rust removal and surface preparation with abrasive blasting (ie. Sandblasting) according to Swedish STD. Sa. 3 with a maximum surface roughness profile of 100 – 150 µm is highly recommended. Remove all dust and other contaminants once abrasive blasting is completed using compressed air or vacuum cleaning.

3. Application Equipment and Tools

3 a. Inspecting Surface Preparation Equipment and Tools

Begin by inspecting and assessing the surface preparation equipment you will be using. The most important pieces of application equipment typically used are the compressor and blasting equipment, and some of the pieces and factors that require inspection include:

- Compressor (ensure that the air being supplied by the compressor is clean and free of water and oil)
- Air hose, couplings and valves
- Abrasive materials storage tank / pot
- Blast hose
- Moisture separator
- Compressed air exiting the nozzle
- Personal Protective Equipment for the operator such as safety helmet and protective suit
- Air respirator for the operator
- Abrasive material

3 b. Inspecting Coating Application Equipment and Tools

This area includes controlling coating application equipment including brush, roller, conventional and airless spray systems, mixers… which need to be closely inspected and cleared for use prior to their use. Some of the areas and parts of application equipment that require inspection, particularly airless spray systems include:

- Spray equipment
- Pressure gauge and compressor
- Air control gauge (Manometer)
- Coupling and O-ring
- Spray hose
- Spray gun
- Nozzle tip

4. Ambient Conditions

Inspecting and controlling ambient conditions during surface preparation, as well as before, during, and after coating application are of great importance.

For Ronass Pipe Shield – 1319, make sure that the following conditions are met:

Relative Humidity	Min. ---	Max. 80%
Temperature	Min. +5°C	Max. +50°C
Substrate Temperature*	Min. +5°C	Max. +55°C

**Please note that the substrate temperature should be at least 5°C above the dew point*

Inspection During Coating Application

Ronass Pipe Shield – 1319 is a sensitive product. To ensure its correct application, please note the following two sections.

Application Conditions

1. Become completely familiar with the coating's technical datasheet (TDS) prior to its application, specifically the Application Details section
2. Ensure that the correct mixing ratio is used when mixing the components
   - ❖ Component A: 100 parts by weight | Component B: 15 parts by weight
3. Use 2 – 5% T-723 for thinning product down (if required)
4. Use strong electric or pneumatic mixers when mixing components together
5. Observe a maximum pre-reaction time of 5 minutes
6. This product has a short pot life (the time allowed for coating consumption after mixing the components) of maximum 30 minutes in 25°C
   - ❖ There is risk of gelling and poor adhesion if the pot life is exceeded
7. Please note when coating application operations begin
8. Please note when coating application operations end
9. Control the application equipment you are using to ensure that it is clean and fault-free
10. It is recommended to use an Airless Spray System for the application of Ronass Pipe Shield with the following settings:

Methods	Airless Spray
Nozzle Size	0.021" – 0.039"
Pump Ratio	68:1
Air Pressure	5 – 8 Bar
Thinning	2 – 5% T-723

11. Please adhere to the ambient conditions below:

Relative Humidity	Min. ---	Max. 80%
Temperature	Min. +5°C	Max. +50°C
Substrate Temperature*	Min. +5°C	Max. +55°C

**Please note that the substrate temperature should be at least 5°C above the dew point*

Prevention of Likely Issues and Faults

Mixing Ratio and Instructions

Please refer to the specific product's technical datasheet (TDS) for specific mixing ratios and instructions.

Mix component A well before using according to the product's technical specifications, then add component B slowly and continue to mix with an electric or pneumatic mixer for a maximum of 5 minutes until you are left with a completely uniform mixture. Use the prepared mixture within the span of its Pot Life (30 minutes at 25°C). If the pot life of the product is exceeded, there is a high risk of gelling and poor adhesion.

After mixing the components, wait for the initial reaction time (Pre-Reaction Time) for a maximum of 5 minutes.

Ronass Pipe Shield – 1319 is a solvent-free coating. However, if you are using an airless spray system with a pump ratio below 68:1, it may be helpful to add 2 – 5% T-723. If you choose to do so, wait until the pre-reaction time between the components has ended before thinning the product down.

Please note that the packaging size of the product's A and B components are proportional to its mixing ratio. Therefore, use a Can to Can ratio for mixing the two-components. In the event that you wish to mix an amount that is smaller than the amount provided in the packaging, please ensure that you use an accurate and precise scale to measure the amount of components required according to the mixing ratio provided in the technical datasheet (TDS) of the product.

Application Conditions

Prior to applying the coating, observe weather conditions, the speed and direction of wind, ambient temperature, ambient humidity, as well as the dew point. Apply the coating using high pressure Airless Spray (Pump Ratio 1:68), using a spraying angle that matches the type of surface and geometric shape of the parts being painted. Use a recommended nozzle size (0.021 " – 0.039") to apply the coating.

Application of High Film Thicknesses

To avoid blistering during curing, it is recommended to apply the coating in multiple layers, each with a dry film thickness of 350 µm.

It is imperative to observe the Recoating Interval (maximum interval between the application of layers) of the coating. This recoating interval for Ronass Pipe Shield – 1319 is 4 – 24 Hours.

Important Considerations

- The maximum recoating time for this product is 24 hours. In the event that the recoating interval has expired, it is recommended to carry out sweep blasting and a rough sander to develop suitable roughness on the surface of the paint.
- To fully protect the coating and ensure a complete and prolonged service life, it is important to prevent any mechanical damage to the coating or the parts being painted during coating application, as well as transportation, installation, and commissioning of the part.

Post-Application Inspections

It is recommended to carry out the inspections below to ensure that coating application has been carried out successfully:

1. Measurement of Dry Film Thickness carried out at various sections of the painted surface
2. Curing of the coating
3. Film formation quality and identification of potential defects

Once the coating has completely dried, due to the coating's high film thickness, it is recommended to carry out a Pull-Off Adhesion test (according to ASTM-D-4541). The minimum result that should be achieved in this test in 5 Megapascals (MPa).

High Voltage Holiday Detection

To ensure that no pinholes, holes or cracks exist in the coating film, it is recommended to carry out a High Voltage Holiday Detection test. In this test, electric current is produced between the equipment's

electrode and the painted surface, and areas with cracks, holes or pinholes where the electric current reaches the substrate create sparks. These areas can then be touched up and repaired to ensure that the coating protects the substrate and performs as it was intended to.

Safety recommendations

- Avoid coating application in close proximity to flames, electricity lines and electrical equipment.
- Avoid breathing gas and vapor during application time.
- Protect your skin, eyes and other vital parts from contact with coatings and thinners. Ensure that you are using personal protective equipment (hats, gloves, glasses, masks, etc.).
- In the event that coating application is occurring in a closed environment, proper ventilation is required.
- Avoid coating application in open air during rain and heavy wind.
- If you are left with excess coating (A and B Components mixed together) in the container, close and reseal the container to prevent drying and waste, as well as other possible risks and complications.
- Wash and clean the tools, equipment, spray guns and hoses after application with the solvents recommended in technical datasheets (TDS).

For more information, please refer to the technical specifications of the product you intend to use.