Non-skid Areas

Introduction

Specialty coating systems are often applied on decks etc to provide a non-skid surface. The rough non-skid surface is achieved through inclusion or coarse particles often called aggregate. These particles are too large to pass through ordinary spray nozzles. Three alternative application solutions will be described here:

- Spray application with special heavy duty equipment.
- Manual application with roller or squeegee.
- Airless application of regular products combined with hand spread of the aggregate.

Scope

The methods described here, concerns specialty products:

Hempadur Spray-Guard 35490 & Hempadur Spray-Guard 35493
Ready to use epoxy products with aggregate mixed in. Typically applied as 1x3000µm in accordance with Norsok M501, Eds. 6, system 4. May be combined with an optional blast primer (Hempadur 15590). For current approval status contact Hempel.

Hempel's Non-Skid 45710
A three component epoxy high build coating. The non-sparking aggregate 97730 is delivered as a separate component to avoid settling in the can. The aggregate has to be mixed into the paint just prior to application. Thoroughly mix base 45719. When homogeneous add the aggregate 97730 and mix until homogeneous. Add the curing agent 95570 and mix thoroughly again until homogeneous.

Hempel's Anti-Slint 67500 (or similar according to local availability)
Flame dried silica sand for hand spreading

Auxiliary products
Besides the abovementioned specialty products it is often recommended to use a blast/holding primer e.g. Hempadur 15590 or improve resistance to sun light and prevent chalking by overcoating the non-skid system with a UV resistant topcoat such as Hempathane or Hempaxane.

Safety

Always use adequate personal safety equipment, follow sound procedures and provide adequate ventilation. Refer to safety data sheets for the relevant product(s).

Surface preparation

It is recommended to check the specification for pre-treatment prior to application and/or the technical guidelines for surface preparation. For non-skid areas the mechanical stress is typically high and it is particularly important to ensure a sharp, uniform roughness.

Spray application

Hempadur Spray-Guard 35490, Hempadur Spray-Guard 35493 & Hempel's Non-Skid 45710 cannot be applied by normal airless equipment. However they can be sprayed successfully with special 10:1 heavy fluid air assisted equipment such as Graco President, WIWA mortar 410 or similar

It is not possible to give precise parameters for all application situations and the following should be seen as examples or indications.

Application equipment:
- Heavy fluid hose: To minimize pressure loss in the hose with these thick viscous liquids, the length should be as short as possible and certain a minimum diameter may be necessary.
- Heavy fluid structure gun equipped with 3 way pressure relief valve.
- Gun nozzle 3-5 mm depending on work speed, temperature, required DFT and product (viscosity).
- Pump input pressure (10:1 pump) should be range of 1.2 – 3 bar, material temperature (15-20°C) is recommended.
- Pressure of the gun (set on the valve) is to be set according to requirements of the actual condition.

Pump handling
- Consult the operating manual of the equipment supplier.
- During start up, it is important to fill the hose with material using low pressure 1 – 1.5 bar input and open the 3 way valve. Use remote handle (gun handle) to activate the pump.
- Ensure that there is always sufficient material to keep a constant feed of the pump. The reason for this precaution is that the pump need of gravity assistance to ensure proper suction from the can.
- When the hose is filled and there is an even flow coming out the 3 way valve, close the valve and activate the gun. Adjust the pressure to obtain the flow needed.
- During breaks, release the pressure on the pump, and release pressure from hose by the 3 way valve, this will prevent build up pressure in the hose causing the pump to block.
- If the pot life of this material is rather short and the residence time in the hose long it may be recommended to flush the hoses for every five 20 litre sets of material that is applied.

DFT and finish related
Build-up thickness in one coat, to a closed film. Use medium to high atomization pressure, and a spray distance of around 40 – 50 cm. In case a rougher finish is required a second coat (wet in wet) can be applied at low atomization pressure and a spray distance of around 70 – 80 cm. As this second coat is applied atop a closed-film first coat and only supposed to add roughness a closed film does not need be attained.

Application requires a high degree of awareness and skill from the applicator. The air pressure may move material horizontally across the surface resulting wobbling of the surface and variations in film thickness.

Manual application

Manual application is possible with Hempel's Non-Skid 45710, it is not recommended for big areas, due to the application speed. Manual application can be done by roller and squeegee.

With this method the product is being equally distributed on the surfaced by using roller and squeegee, it is necessary to have a strict focus on the wet film thickness, as it can easily be in the low end.

Wetting of the surface can be difficult by using the roller and squeegee method, so it is important that the product is being worked well into to the substrate.

The easiest method is to mix the set and simply empty out the can on the surfaced and move it out by the hand tool, having a clear estimate of how many m^2 one can should cover, will make it easier to ensure the required dft.

Control of film thickness

Measurement of wet film thickness is difficult due to the rough surface. Correct film thickness can be achieved by this procedure.

1) estimate the surface area (A in m^2) to be covered.
2) calculate the required volume of paint (V in litres) by this formula

$$V = \frac{A \cdot DFT}{760}$$

Where DFT is the required dry film thickness of Hempel's Non-skid 45710 in µm.

3) Distribute the calculated volume of paint on the area and spread to achieve a uniform thickness.

For large surfaces it is recommended to subdivide into smaller areas and apply steps 1-3 separately to each area.

Airless spray and hand spreading of aggregate

Procedure
After surface preparation apply the first layer(s) according to specification and PDS of the product(s).

Upon application of the penultimate coat of the paint system and while the paint is still wet HEMPEL'S ANTI-SLINT 67500 should be sprinkled evenly on the surface. Consumption approximately 1.0 kg of HEMPEL'S ANTI-SLINT 67500 to 10 m^2.

When the paint is dry, sweep up loose surplus grit not adhering to the previous paint layer. Alternatively, this may be done with a heavy duty vacuum cleaner and the grit can be reused if a clean collection bag is used. Do not reuse contaminated grit.

Apply the final coat (topcoat) according to specification.

Painting of nuts/bolts, edges and overlapping on existing paint

For paint application in areas with on nuts and bolts it is recommended that they are masked of during application, and protected by means of the usual paint system for the structure. Additionally, overlapping on existing coating should be after proper cleaning of oil/grease, dirt, dust, loosely adhering matter and a proper roughening. And as we are talking overlap there is no need to build up to a to max dry film thickness.

Overcoating

Overcoating intervals according to PDS and / or Project specification, depending on areas and DFT.
If the maximum overcoating interval is exceeded, roughening of the surface is required to ensure intercoat adhesion. However due to the rough nature of the system this is not practical and it is strongly recommended to ensure any topcoat is applied before the overcoating interval is exceeded.

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