

APPLICATION INSTRUCTIONS

For product description please refer to data sheet

HEMPEL'S GALVOSIL* 15780

Scope:

This application instruction covers surface preparation, application equipment and application of HEMPEL'S GALVOSIL 1578.

The following are general rules, they may be supplemented with more detailed descriptions where needed, for instance for major new building/new construction or repair jobs.

Steel work:

All welds must be free of pinholes and must be of highest quality so that they can be protected by the paint - this means perfectly filled, smooth welds with a slightly wavy surface.

All welds must be complete and continuous to avoid cracks and fissures which give coating discontinuity.

All weld spatter must be removed.

All sharp edges must be rounded off or removed in such a way that the film thickness specified can be build up on all surfaces. Recommended radius of the rounding is approximately 1-2 mm.

The steel must be of first class quality and it should not have been allowed to rust more than corresponding to grade B of ISO 8501-1: 1988.

Note: Porous surfaces such as certain types of cast iron cannot be properly protected with zinc silicate. Deeply corroded steel may also be difficult to protect with a zinc silicate.

All steel work (including welding, flamecutting, grinding) must be finished before the surface preparation starts.

Surface preparation:

Prior to abrasive blast cleaning of the steel, remove oil and grease and other contamination with a suitable detergent followed by fresh water high pressure hosing. Alkali deposits on new welding seams as well as soap traces from pressure testing (tanks) are removed by fresh water wash (scrubbing with stiff brushes).

Grit blast to min. Sa 2½, ISO 8501-1: 1988, SSPC-SP-10.

Surface profile equivalent to Rugotest No. 3, min. BN 10a Keane-Tator Surface Comparator, G/S min 3.0 or ISO/DIS 8503/1 rough MEDIUM (G)

Use steel grit, silica sand, aluminium silicate or similar sharp edged abrasive of a good quality free of foreign matters, soft particles and the like. Control for absence of contamination according to separate guidelines.

The compressed air must be dry and clean. The compressor must be fitted with suitable oil and water traps.

Steel grit with a particle size of 0.2-1.0 mm or aluminium silicate of 0.4-1.8 mm will usually create the desired surface profile when the airpressure measured behind the nozzle is 6-7 bars/85-100 psi.

When blasting is completed, remove residual grit and dust by vacuum cleaning.

Note: Lower surface profile than specified will cause reduced adhesion and increased tendency to mudcracking. On the other hand too high surface profile (steel grit) should be avoided as this will introduce a risk of pin-point rusting.

Shopprimed surfaces:

If HEMPEL'S SHOPPRIMER ZS 1572 or other zinc silicate product is used for preliminary protection, abrasive sweep intact surface before final coating with GALVOSIL 1578 to remove accumulated dirt and zinc salt and to ensure adhesion.

Application:

GALVOSIL 1578 can be applied by conventional spray (pressure pot type), airless spray or brush.

Equipment:

Conventional Spray: Standard industrial spray equipment with mechanical agitator and pressure regulators, air filters and water traps.

Air hose: 10 mm (3/8") internal diameter.

Material hose: 13 mm (1/2") internal diameter.

Hoses should be as short as possible, preferably not longer than 10 metres (33").

Pot pressure: 2½-5 bar (37-72 p.s.i.)

Atomization pressure: 1½-2½ bar (22-37 p.s.i.)

Nozzle orifice: 1.8-2.2 mm (.070"-.085")

(Spray-data are indicative and subject to adjustment).

Thinning, if required: max. 50%. (See note below).

When spraying, the pressure pot must be placed at the same, or a higher level than the gun, due to the weight of the material. Alternatively a piston-pump (e.g. 10:1) may be used instead of the pressure pot. This will facilitate use of longer hoses or having the spraygun higher than the pump.

Maintain constant agitation of the mixture until the batch is depleted.

The spray gun should be kept at a maximum distance of 25-30 cm/1 foot from the surface. Hold the spray gun at a right angle to the surface making even parallel passes with about 50% overlap. Besides correct spray technique, the amount of thinner added must be carefully adjusted to secure optimum film formation. **The coating must be wet and smooth just after application.**

In case of painting undersides, the spray gun will need intermittent cleaning with THINNER 0870 to prevent clogging of the nozzle.

At short stops, prevent packing of zinc around the needle by placing spraygun in thinner, letting some air pass the gun. At longer stops, clean spraygun with thinner. After use the hole equipment is cleaned thoroughly with THINNER 0870.

Airless Spray: A large slow-working pump is preferred, e.g 30:1, with a pump capacity of 8-12 litres/minute. In-line filter 60 mesh.

Teflon gaskets.

Nozzle orifice: 019" through .023", 40° through 70°.

Nozzle pressure: 100-150 bar (1430-2100 p.s.i.).

Thinning, if required: max. 30%. (See NOTE below).

(Spray data are indicative and subject to adjustment).

After use, the whole equipment is cleaned thoroughly with THINNER 0870.

Note: The amount of thinning necessary will depend upon prevailing conditions: temperature, humidity, wind/ventilation, method of spraying etc.

In the case of a high level of thinning and long stops in application it might be necessary to recirculate the mixed paint to avoid settlement of zinc particles in the spray hoses.

The coating **must** be wet and smooth just after application. Besides correct spray technique the amount of thinner added must be selected securing this optimum film formation.

Select small nozzles for spray application of complicated structures, bigger nozzles may be used for regular surfaces.

Too little thinning will typically lead to dry-spray and too much thinning to sagging and settling of zinc particles in the can.

Wet film thickness must be checked immediately after application, but can be used as a rough guidance only because of the fast drying.

Mixing:

- a. Do not open packings until immediately before use. The entire content of the packings must be used for each batch to ensure a correct mixture. Left-overs in the packings cannot be used later. Protect the ZINC DUST against moisture before mixing.
- b. Before mixing, shake or stir the GALVOSIL 1578 LIQUID very thoroughly.
- c. Pour the ZINC DUST slowly down into the LIQUID, with constant mechanical stirring. Do not mix in reverse order. Continue stirring until mixture is free of lumps.
- d. Strain the mixture through a screen, 60-80 mesh (250-160 DIN Norm. 4188).

Pot life:

12 hours (20°C/68°F)

Temperature of paint:

In a hot climate it is important that the cans with LIQUID are kept out of the sun and that the temperature of the liquid is kept below 30°C/86°F in order to avoid excessive dry spray.

Stripe coating:

All places difficult to cover properly by spray should be stripe coated with brush immediately before spray application - if necessary also after spray application.

Microclimate:

(Actual climatic conditions at substrate).

During application: minimum surface temperature -10°C (14°F). Maximum recommended temperature approx. 40°C (approximately 104°F), but higher steel temperatures will be possible provided dry-spray is avoided by extra thinning and proper spray application. In extreme cases reduction of dry film thickness may also be necessary.

Steel temperature has to be above the dew point. As a rule of thumb a steel temperature 3°C (5°F) above the dewpoint can be considered safe. At temperatures below the freezing point extra care should be taken, in this case measurement of relative humidity has to be done with a capacitive RH-meter.

In confined spaces, supply an adequate amount of fresh air during application and drying to assist solvent evaporation. Ventilation for this purpose is recommended to be a minimum corresponding to a few air shifts per hour along all surfaces. However, avoid ventilators blowing directly onto the freshly applied paint.

After application until complete curing: minimum steel temperature -10°C (14°F), relative humidity minimum 65%.

Curing time:

Curing is dependent on (steel) temperatures and relative humidities.

At 20°C/68°F and 75% RH, curing requires approximately 3 days. At lower temperatures and relative humidity, curing time will increase considerably. Please contact Hempel for further instructions.

The coating will resist light showers after 1-2 hours at 20°C (68°F) and 75% relative humidity.

To accelerate curing at lower humidity hose down surface with water 4 hours after application and keep surface constantly wet until curing is complete.

Complete curing can be checked by rubbing the coating with a rag soaked in THINNER 0870. If the coating remains unaffected, the curing is complete and ready for recoating.

Also scraping with e.g. a knife must only give a bright mark, leaving some loosened zinc dust, but no irregular detachment. Full hardness will first be obtained after weathering for some time.

Film thickness:

Permanent protection, with topcoat:

50 micron (2 mils) dry; 75 micron (3 mils) wet, undiluted, or
75 micron (3 mils) dry; approximately 125 micron (5 mils) wet, undiluted is recommended.

Special care should be taken to ensure proper thickness on welding seams, edges, corners, ribs, etc.

**Extra coat
(recoating with self):**

Within 48 hours at 20°C/60% RH (24 hours at 20°C/75% RH) after application too low film thickness can be made good by applying an extra coat of diluted GALVOSIL 1578.

There is a risk of mudcracking or peeling with overthick coats (more than approx. 125 micron/5 mils dry film thickness).

Spreading rate:

	Micron	(Mils)	m ² /litre
Theoretical:	50	(2)	12.4
(on smooth surface):	75	(3)	8.3
Practical (consumption	50	(2)	6.9
factor 1.8):	75	(3)	4.6

**Recoating
(with other paints):**

For recoating advanced paint systems shall be used, e.g. HEMPADUR.

In specifications with high total film thickness the GALVOSIL 1578 film thickness can advantageously be kept at 50 micron (2 mils).

Recoating is expected to take place within 6 months after application of GALVOSIL 1578.

Recoating interval:

When fully cured (see CURING TIME).

Non-weathered zinc silicate coating are porous, and popping may occur in the subsequent coat. The best way to avoid popping is to apply a mist coat in the first pass of the topcoat. Let the air escape and apply the rest of the topcoat.

Some of HEMPEL's products will substantially reduce the risk of popping when applied directly on top of the zinc silicate. Refer to the product data sheets for HEMPEL'S SHOPPRIMER E 1528 and HEMPADUR HI-BUILD 4523.

Topcoating procedures depend on the condition of the surface as described below:

1. Intact zinc silicate with sporadic formation of "white rust".

- a. Remove oil, grease, dirt etc. by detergent wash.
- b. Remove "white rust" by high pressure water jetting with fresh water (250-300 bar (3625-4350 p.s.i.) at a nozzle distance of 15-20 cm (6-8")).

If the surface is only slightly contaminated, corresponding to 1-2 months of exposure in a mild climate, hosing down of the surface and scrubbing with stiff brushes (nylon) may be more practical.

Make sure that the film is through dry before recoating.

2. **Zinc silicate surface with extreme formation of “white rust” which cannot be removed as described above.**

- a. Remove oil, grease and dirt by a detergent wash (or solvent wash).
- b. Sandsweeping for removal of contaminants. Thorough removal of dust by vacuum cleaning.
- c. Touch up with any solvent borne GALVOSIL quality or HEMPADUR ZINC 1536/ HEMPEL'S ZINC PRIMER 1649.

3. **Damaged areas, burns, weld spatter, etc.**

- a. Remove oil, grease and dirt by a detergent wash (or solvent wash).
- b. Remove weld spatters.
- c. Blasting to min. Sa 2½, thorough removal of dust by vacuum cleaning.
- d. Restore the zinc layer with any solvent borne GALVOSIL quality or HEMPADUR ZINC 1536/HEMPEL'S ZINC PRIMER 1649.

Safety:

Handle with care. Before and during use, observe all safety labels on packaging and paint containers, consult HEMPEL Material Safety Data Sheets and follow all local or national safety regulations. Harmful or fatal if swallowed; immediately seek medical assistance if swallowed. Avoid inhalation of possible solvent vapours or paint mist, as well as paint contact with skin and eyes. Apply only in well ventilated areas and ensure that adequate forced ventilation exists when applying paint in confined spaces or when the air is stagnant. Always take precautions against the risks of fire and explosions.

This Product Data Sheet supersedes those previously issued. For definition and scope, see explanatory notes to applicable Product Data Sheets.

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