

...STACGALVA...

1-component "active" steel coating, ultra rich in zinc, for optimal "cold" galvanisation..

Description

STACGALVA is the "active" steel coating par excellence, based on ultra fine pure zinc powder. The dry layer contains ≥ 92 % zinc, what guarantees a perfect cathodic protection. This "cold" galvanisation has at least the same durability as "hot-dip" galvanisation.

The 1-c (1-component) system needs no additives, has no potlife and is ready for application by brush, roll, spray or dip.

STACGALVA can also be applied as a primer under a "passive" topcoat (duplex system). Cathodic protection combined with high chemical protection (e.g. **STACCOAT-V**), results in a very long life span, in aggressive environments.

Its advantages are

1. It's not a paint

- The only resemblance with a paint is its application: by brush, roll or pistol.
- Composition is different from traditional anti rust paintings: contains ≥ 92 % pure zinc in the dry layer.
- Protection technique is differently from traditional anti rust paintings: "active" electrochemical (cathodic) protection.
- No additives needed and no potlife.

2. "Cold" galvanisation

- Because it's applied at ambient temperature, it's called "cold" galvanisation.
- "Active" electrochemical (cathodic) protection or "galvanisation", happens with a protection layer that contains very high % zinc. **STACGALVA** has ≥ 92 % pure zinc in the dry layer.
- The cathodic protection is at least as good as: "hot-dip" galvanisation (hot-dip), metallisation and electrolytic galvanisation.
- Protection is superior compared to traditional anti rust paints.

3. Optimal "cold" galvanisation

- **STACGALVA** has a low level of solvents (VOC ± 350 g/dm³) and binders.
- As a consequence, the density of the product is very high ($\pm 3,15$ kg/dm³) and a zinc concentration of ≥ 92 % in the dry layer is obtained.
- In spite of the above, the zinc powder remains extremely long in suspension in the closed packaging.

4. Triple protection

- Cathodic protection: the electrochemical corrosion of a base metal (e.g. iron, steel) is stopped by covering it with a more basic metal (e.g. zinc). Even if the protection layer is damaged, zinc will provide, in a wet environment, the required protection up to a certain

distance (± 4 mm), because it "sacrifices" itself. Zinc is more anodic than the anodic places of the metal.

- Rust inhibitor: neutralises remaining rust and transforms it so that it cannot extend any more its destroying action.
- Top layer: **STACGALVA** contains binder that appears partially at the surface. This postpones the zinc oxidation and extends the lifetime.

5. Quadruple economics

- **STACGALVA** is at the same time a full "active" cathodic protection and a "passive" paint protection.
- The lifetime of **STACGALVA** is at least the same as the one of "hot-dip" galvanisation (10 to 50 years).
- Duplex system: by applying a topcoat above **STACGALVA**, the lifetime can be increased up to 2,5 times!
- Maintenance of steel constructions can happen without dismantling. **STACGALVA** can be applied on an old layer, even on an old "hot-dip" galvanisation layer, and "reloads" it. The old layer and the new **STACGALVA** layer will "melt" together.

6. Can be applied on rust

- A thin rust layer is acceptable: transformed in iron hydroxide, it forms the electric connection for the required cathodic protection.
- Can be applied without intensive chemical processes such as pickling, passivation, phosphatation, etc... Only mechanical cleaning is necessary: brushing (with steel brush) or grit blasting. Of course all forms of pollution, such as oil, grease and mud, must be removed.

7. Very good adherence on steel and top layer

- In contrast to "hot-dip" galvanisation, **STACGALVA** follows the temperature dilations and deformations of steel.
- **STACGALVA** does not risk to crack or separate from the metal. It is shrink-free and sufficiently elastic to remain intact during the deformation of steel.
- A compatible top layer (e.g. **STACCOAT-V**) can be applied without any surface preparation, except for cleaning with water.

8. High corrosion resistance

- **STACGALVA** has passed the salt spray test of 2.000 hours and the enforced aging test of 1.300 hours, without any problem.
- A comparative test in a very aggressive environment: wet and alternating acid and alkaline. **STACGALVA** remained intact after 3 years, whereas all the other so-called "anti rust" coatings failed after maximum 8 months.
- A 2nd comparative test gave the same astonishing results with 25 "anti rust" coatings. **STACGALVA** remained perfectly intact during the complete test of 30 months, where the others resisted only 4 to 6 months.

9. On “hot-dip” galvanisation or metallisation:

- > **New “hot-dip” galvanisation** can be touched up with **STACGALVA** to “reload” the cathodic protection. The product can be applied without any surface preparation. Damage from drilling, cutting or welding can be repaired in accordance with the ASTM standard A 780.
- > **Old “hot-dip” galvanisation** starts to rust when the zinc layer is worn out. The cathodic protection is then no longer active. **STACGALVA** can revamp this:
 - × “melts” perfectly with the old galvanisation or metallisation layer
 - × can be introduced directly on old layer, after it is cleaned with a brush and water (high pressure water jet) to remove all dirt and zinc salts
 - × will “reload” the cathodic protection
 - × will never come loose or peel off.

The steel construction does not have to be dismantled, 2 times transported and rebuild, to get a new galvanisation.

Application fields

STACGALVA protects steel constructions in several industries: chemical, petrochemical, pulp and paper, fertiliser, cement factories, metallurgy, utilities, breweries, refrigerating halls, etc...

STACGALVA is used with large success for the protection of ships, on- and offshore platforms, marine constructions and harbour facilities.

STACGALVA is preferred above “hot-dip” galvanisation for steel constructions with light profiles or plates because “hot-dip” galvanisation deforms these structures.

STACGALVA can also be applied as a primer under a “passive” top layer (duplex system). Cathodic protection combined with high chemical protection (e.g. **STACCOAT-V**), results in a very long lifetime, in aggressive environments. Also decorative top layers are possible.

Properties liquid STACGALVA *

Density	± 3,15 kg/dm ³
Volume solids	± 55 %
DFT (dry)	as primer 40 to 80 µm (1 to 2 layers) as coating 40 to 160 µm (1 to 4 layers)
WFT (wet)	as primer 78 to 156 µm (1 to 2 layers) as coating 156 to 312 µm (1 to 4 layers)
Coverage (per 40 µm DFT)	
Theoretical	± 245 g/m ² (± 78 ml/m ²)
Practically (e.g. +30 % spray)	± 315 g/m ² (± 100 ml/m ²)
Viscosity (20 °C)	± 3.700 mPa.s
VOC (Volatile Organic Compounds)	± 350 g/l
Standard colour	Grey

Properties cured STACGALVA *

Density	± 5,0 kg/dm ³
Zinc content (weight)	≥ 92 %
Zinc purity	99,995 %

Temperature resistance	- 40 to + 250 °C
Adhesion to steel	Perfect
Adhesion to old hot dip (ASTM D3359)	Perfect 5 (on a scale of 1 to 5)
Cathodic protection	Perfect
Elasticity	Excellent (allows dilation and deformation of steel, without cracking or peeling)
Weldability	Excellent (layer up to 40 µm can be welded without influencing the weld (X-ray))
Lifetime	≈ “hot-dip” galvanisation (dependent on the layer thickness and exposition)
Lifetime duplex system	≈ “hot-dip” galvanisation duplex system
Abrasion resistance	Excellent
Impact resistance	Excellent
Conductivity	Excellent

*: under standard conditions (test methods are available on request)

Chemical resistance

STACGALVA is resistant against all kinds of chemicals up to high temperatures. Some examples:

- > Outdoors atmosphere: very good
- > Soft water: very good (up to 95 °C)
- > Sea water: exceptional good
- > Acids: good down to pH 4,5
- > Bases: good up to pH 9,5

For strong acids, bases and/or solvents, a highly resistant top layer is applied: **STACCOAT-V Systems**.

Surface preparation

Clean with steam, water (e.g. with sodium triphosphate) and/ or solvent, to remove all contaminants (e.g. oil, grease, lubricants, mud). When dry, blasting and/or power tooling. Blast DAB (Dry Abrasive Blast) or WAB (Wet Abrasive Blast) with hard angular grit or UHP (Ultra High Pressure Water Jet). In the two latter cases, additional degreasing may be required. Next vacuum clean to dust-free and coat directly.

1. New carbon steel and cast iron

DAB or WAB to Sa 2 (for non-immersion or atmospheric service) or Sa 2,5 (for immersion or severe service) to remove mill scale and rust. Steel profile ≥ 25 µm with rough anchor.

2. Old carbon steel

Brush to St 3 to remove loose flakes (mill scale, rust, old paint, etc...). DAB or WAB to Sa 2,5 (or UHP to WJ 2) with steel profile ≥ 25 µm with rough anchor.

3. Carbon steel with old paint layer

Overcoat: when old layer meets minimum requirements (e.g. good state and adhesion, compatible). Brush to St 2 (to remove loose rust, mill scale and old paint) and sweep blast to a sound adhered edge.

Good practice: Do always a practical test to determine coating adhesion and/or compatibility.

Recoat: else, remove old layer completely by brushing to St 3 and/or DAB or WAB to Sa 2,5 (or UHP to WJ 2) with steel profile $\geq 25 \mu\text{m}$ with rough anchor.

4. New galvanised or metallised

a. Mechanical damaged areas, due to transport, drilling, cutting or welding, have to be cleaned to St 2 or 3.

b. Topcoat needed: Lightly sweep blast or chemically etch, to remove zinc salts and weathered profile.

5. Old galvanised

Water cleaning (HP WC) $> 50 \text{ MPa}$ (500 bar).

Extra brushing to St 3 on very corroded areas.

For further information, contact a STAC representative.

Product preparation

STACGALVA is a **1-component** system and ready for use. Just before the utilisation, homogenize the canister by mixing ± 1 minute, with a low speed hand mixer (± 200 rpm) or manually with a spatula.

- > Do NOT add non-prescribed additives
- > Do NOT allow moisture into can (e.g. sweating)

1. Thinning

Standard not required.

Spray: Add 0,6 to 1,2 % weight (2 to 4 % volume) **STACGALVA-Thinner** and mix well. NO other thinners.

Application

1. Conditions during application

Standard application is possible when the surface temperature is from -5 to $+45 \text{ }^\circ\text{C}$, $\geq 3 \text{ }^\circ\text{C}$ above dew point, and the air humidity as low as possible ($< 90 \%$).

STACGALVA may be applied on a damp surface but preferably visible dry (free from condensate and/or ice crystals).

2. Primer

Standard not required.

***STACGALVA** can be used as primer in a duplex system.*

3. Application in general

STACGALVA can be applied, making use of:

- > Paint brush: with natural hair
- > Paint roll: with short hair or mohair
- > Spray pistol:
 - × **Airless:** nozzle with \varnothing of 380 to 510 μm (15 to 20 mil) en pressure of $\pm 15 \text{ MPa}$ (150 bar).
 - × **With gravity cup:** nozzle with \varnothing of 1,8 to 2,2 mm (71 to 87 mil) and pressure of $\pm 0,4 \text{ MPa}$ (4 bar).
 - × **Compressed air barrel:** nozzle with \varnothing of 1,4 to 1,8 mm (55 to 71 mil) and pressure of $\pm 0,3 \text{ MPa}$ (3 bar).

Spraying in the approved professional manner (e.g. fluent alternating 2-D movements, spray angle of 40 to 80°).

Avoid excessive dry film thickness ($> 100 \mu\text{m}$), because it will require longer cure times and may cause poor adhesion, cracking, and/or gas entrapment and may require remedy.

STACGALVA has to be applied immediately after the surface conditioning.

A standard application, on a well conditioned surface, consists of 2 layers of each 40 μm (dry). Taking into account the solids content, 5 % spillage, etc... the anticipated theoretical consumption is, per layer of 40 μm , is $\pm 245 \text{ g/m}^2$ ($\pm 4,1 \text{ m}^2/\text{kg}$).

Recommendations

- > Use the "mist" coating technique before spraying the required thickness.
- > Saturate completely with soft water the dry **STACGALVA** end layer, in order to obtain an instant chemical hardening, giving a longer lifetime.

4. Curing time (40 μm DFT, at 50-90 % air humidity)

Temperature	10 °C	25 °C	35 °C
Tack free	40 minutes	20 minutes	10 minutes
Auto-Over-coatable	2 hours	1 hour	45 minutes
Topcoat Over-coatable	4 days	2 days	1,5 day
Full cure	10 days	7 days	5 days

5. Topcoat

Duplex system: **STACGALVA** is used as primer with a compatible topcoat.

- > Minimum overcoat time: 1,5 – 4 days, depending on depending on ventilation, temperature and humidity.
- > Compatibility test always required.

6. Cleaning equipment

Clean equipment regularly with **STACGALVA-Thinner** or White spirit, certainly when the temperature rises $\geq 35 \text{ }^\circ\text{C}$.

For further information, contact SHARPSHELL.

Safety

See the SDS of **STACGALVA**.

Storage

The shelf life is unlimited under standard conditions: in dry well ventilated place, between 5 and 25 $^\circ\text{C}$, away from source of heat or ignition, strong acids, strong bases, oxidising agents and direct sunlight. Keep canisters carefully sealed.

Packaging

- × **STACGALVA** 12,5 kg metal canister
- × **STACGALVA-Thinner** 5,0 kg PE bottle

On customer request, large industrial containers are available.

SHARPSHELL INDUSTRIAL SOLUTIONS

33 kelly road
Jet Park, Johannesburg, South Africa

☎ : +27 71 344 4699
☎ : +27 11 397 4023
✉ : info@sharpshell.co.za
🌐 : www.sharpshell.co.za

This datasheet represents our best knowledge of the System and its Components, based on laboratory tests and practical experience. Nevertheless, due to multiple parameters beyond our control during the application, the data can never be used to prove any responsibility of STAC. We reserve the right to change the Product specifications without notice.