

COLD GAVANISATION

Technical info

Presentation Clusta Febr 2017

CATHODIC PROTECTION

(PAINT) SCHIELDING

DUPLEX

SURFACE PREPARATION

APPLICATION

Cold Galvanisation min 92% Zn

Applicable with a brush, roller or by spraying



PURE ZINC 99,99%

cathodic effect
With Zn 92% min

BINDER

high performances
ultraviolet resistant, flexibility, ...

SOLVENT

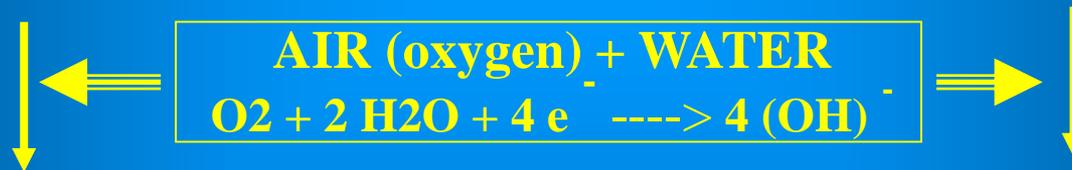
no xylene, toluene, ...

PROTECTION PRINCIPLE

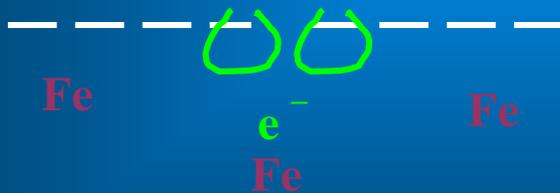
CATHODE
(Active system)



NON CATHODE
(Passive system)



Zn = RUST ANODE = Zn²⁺



Does not rust : Zn sacrifices itself
(Sacrificial anode)

Production of FeO (OH)

RUST

PROTECTION MODE AGAINST RUST

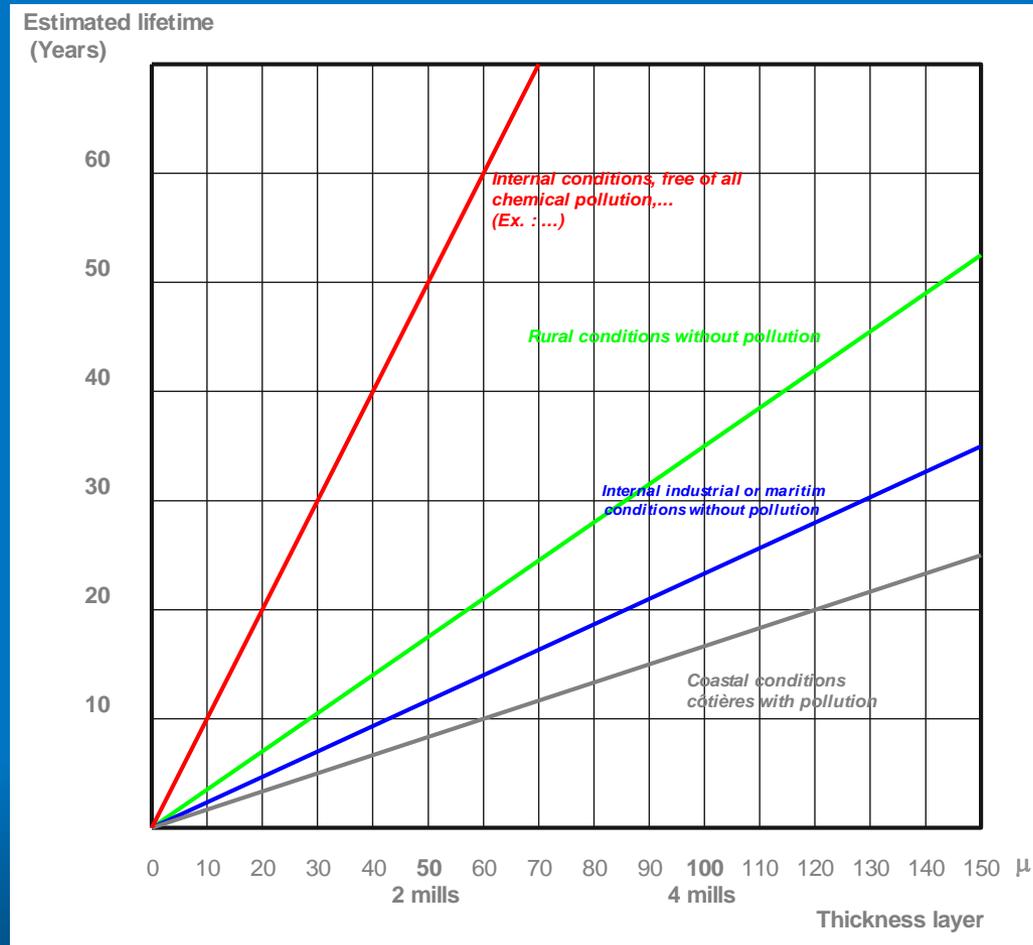
PROTECTIONS	SYSTEM	ADVANTAGES	DISADVANTAGES
Films	<ul style="list-style-type: none"> •Oil •Paraffin •Silicone 	<ul style="list-style-type: none"> •Fast •Fast •Fast 	<ul style="list-style-type: none"> •Very short lifetime
Anti-rust paints	<ul style="list-style-type: none"> •Minium of Lead •High-zinc paint 	<ul style="list-style-type: none"> •Easy at first application •Easy at first application 	<ul style="list-style-type: none"> •Cracking + high toxicity •Poor durability •Heavy maintenance •Cracking + toxicity •Middle durability •Heavy maintenance
Electrochemical	<ul style="list-style-type: none"> •Metallization •Hot dip galvanization 	<ul style="list-style-type: none"> •Lasting protection •Lasting protection 	<ul style="list-style-type: none"> •Not applicable on site •Not applicable on site and no hot retreatment possible
Painting and electrochemical	<ul style="list-style-type: none"> •Cold galvanization 	<ul style="list-style-type: none"> •Easy to apply •Lasting protection •Applicable on site •Withstands abrasion •No cracking •Easy to use 	<ul style="list-style-type: none"> •One color •In some case, needs finishing coating paint in case of direct contact with some solvent /grease and oil (Rust-Anode primer is resistant to all of these)

	Classical anti-rust paint	Cold Galvanisation
Type of product	Anti-corrosion paint with Minium of lead : high toxicity. See implemented regulation.	Pure zinc dust at 99,99% leaving on dry layer a pure zinc layer of about 95% allowing the galvanic effect. Not toxic after drying.
Solvent	Requires the use of very volatile solvents with high toxicity. Toxic solvent and paint.	Natural organic solvent extracted from citrus peel offering a reduced toxic product respectful of the workers and the environment.
Application	System requiring two different products. Cracks with time ; before applying new layers of coating, it requires brushing and grinding the parts to be treated. Heavy further maintenance.	Only one product No preparation between the application of different layers Easy further maintenance
Surface preparation	Required a very well cleaned surface without any rust spots (heavy sand blasting) nor humidity, otherwise the rust develops directly after application under the paint layer causing fast blistering or cracking. Surface needs to be well prepared and clean.	Can be applied on an oxidized and damp surface after a quick brushing because Rust-Anode neutralizes and transforms the possible remaining rust into a rust inhibitor at same time as it gives a galvanic protection. By rust inhibitor effect, the surface can be oxidized.
Protection against rust	Mechanical protection (surface primer)	<ul style="list-style-type: none"> •Protection by rust inhibition •Protection by galvanic effect giving the same protection as the hot-dip galvanization •Physical union between the surface and the zinc layer
Corrosion and aging	<ul style="list-style-type: none"> •In case of blow or scratch : development of rust under the layer of paint causing blistering and cracking. •Does not expand. Consequently, risk of quick cracking in case of important temperature fluctuation •No mass protection 	<ul style="list-style-type: none"> •Never cracks nor blisters •Follows the dilatation and deformation of the basic metal •Protection by mass effect as the sacrificial anodes used in the marine.
Maintenance	In case of a repair or a later retreatment, it requires the sandblasting of the surface to obtain good results, knowing the trouble to take off the old paint.	No longer requires sandblasting. It only requires to apply a new layer of Rust-Anode.. It is easy, fast and timesaving.

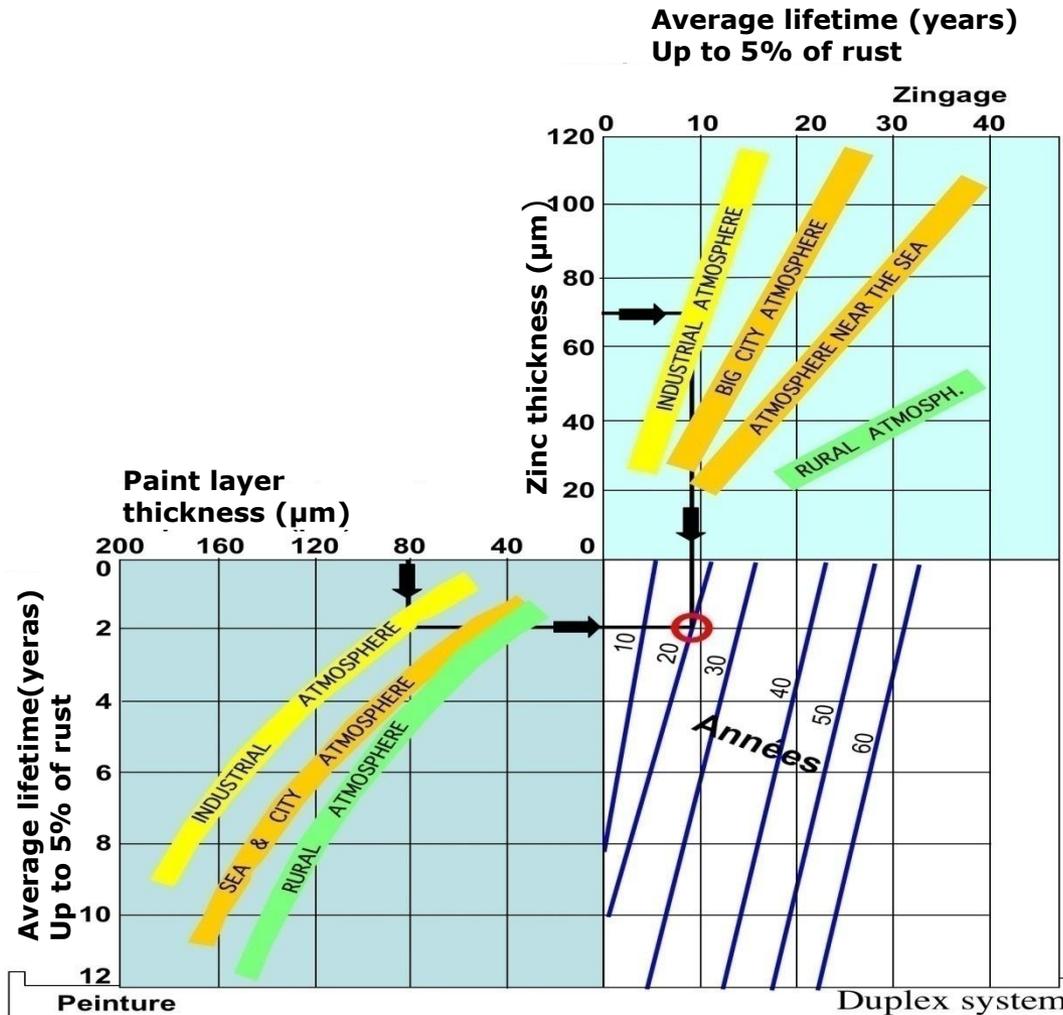
	Epoxy-zinc paint	Cold galvanisation
Type of product	Two component epoxy resin with zinc load does not offer any galvanic protection	Pure zinc dust at 99,99%, leaving on dry layer a pure zinc layer of about 95% allowing the galvanic effect
Solvent	Requires the use very volatile solvents with a high toxicity level	Natural organic solvent extracted from citrus peel offering a reduced toxic product respectful of the workers and the environment.
Use	Requires the preparation of mixture A and B to be used within the following hours (practically 4 to 8 according to temperature). Difficulty in realising a proper mixture beyond the quantities required by the kit (example: preparation of several kilos for small surfaces). Lifetime of 6 months for the separated elements A and B.	Rust-Anode is a ready to use process that can be used several times after opening of the pot. Lifetime superior to 3 years.
Surface preparation	Requires a well prepared support without any trace of rust (tight blasting), without damp to prevent rust from developing directly after the application under the layer resulting in blistering and chipping.	Can be applied on an oxidized and damp surface after a quick brushing because Rust-Anode neutralizes and transforms the possible remaining rust into a rust inhibitor at same time as it gives a galvanic protection. By rust inhibitor effect, the surface can be oxidized.
Protection against rust	Mechanical protection (Surface primer)	<ul style="list-style-type: none"> •Protection by rust inhibition •Protection by galvanic effect giving the same protection as the hot-dip galvanization •Physical union between the surface and the zinc layer •Protection by mass effect •Mechanical protection, at same time primer and final coating
Corrosion and aging	<ul style="list-style-type: none"> •In case of blow or scratch : development of rust under the epoxy zinc layer causing blistering and cracking. •Does not expand. Consequently, risk of quick cracking in case of important temperature fluctuation •No mass protection 	<ul style="list-style-type: none"> •Never cracks nor blisters •Follows the dilatation and deformation of the basic metal •Protection by mass effect as the sacrificial anodes used in the marine
Maintenance	In case of repair or a later retreatment, it requires the sandblasting of the surface to obtain good results, knowing the trouble to take off the old paint.	No longer requires sandblasting. It only requires to apply a new layer of Rust-Anode.. It is easy, fast and timesaving.

Life time expected :

1° Protection with cold galvanisation



2° Protection with cold galvanization + «DUPLEX» system (mio-aluminium or resin)



[Ref: Graphic British Standards]

Practical figures for a spread at measured dry thickness (DFT) per m²

(Airless spraying : Practical spreading rate)

Thickness Dry film DFT	Humid thickness	Practical spread (Airless spraying)	Practical spreading rate (Airless spraying)
40 µm	54 µm	6,20m ² /kg	0,16 kg/m ²
60µm	80 µm	4,13m ² /kg	0,24 kg/m ²
80µm	107 µm	3,10m ² /kg	0,32 kg/m ²
100µm (40+60µm)	2 layers	2,50m ² /kg	0,40 kg/m ²
120µm (2x 60µm)	2 layers	2,07m ² /kg	0,48 kg/m ²
160µm (2x 80µm)	2 layers	1,55m ² /kg	0,65 kg/m ²