APCZT Cold Galvanizing Compound

APCZT-RE-PD-02-A (12/09/05)

The film galvanising system APCZT is a one pack coating that contains 96% zinc in the dry film and provides cathodic protection to ferrous metals. It can be used as a unique system as an alternative to hot-dip galvanisation or metallisation, as primer in a duplex system or as a re-charging system for hot-dip galvanisation or metallisation. It can be applied by brushing, rolling or spraying on a clean and rough substrate in a wide range of atmospheric circumstances. APCZT is also available as an aerosol and is sold as APCZT 963 /9 .

Physical data and technical information

- **Wet product**

Components	- zinc powder - aromatic hydrocarbons - binder
Density	2,67 Kg/dm³ (± 0,06 Kg/dm³)
Solid content	- 80% by weight (± 2%) - 58% by volume (± 2%) according to ASTM D2697
Type of thinner	N2040
Flash point	≥ 40°C to < 60°C
VOC	474 g/L (EPA method 24) (= 178g/Kg)

- **Dry film**

Colour	matt metallic grey (colour darkens after contact with humidity)
Zinc content	96% (±1%) by weight, with a purity of 99,99% APCZT gives full cathodic protection and conforms to the standard ISO 3549 in regard to its zinc purity of 99,99 % and to the standard ASTM A780 in regard of its use as repair coating for hot-dip galvanisation.
Special characteristics	- atmospheric temperature resistance - minimum : -40°C - maximum : 120°C with peaks up to 150°C - pH resistance in immersion: from 5,5 pH to 9,5 pH - pH resistance in atmospheric circumstances: from 5,5 pH to 12,5 pH - excellent UV resistance
Non-toxicity	A dry layer of APCZT is not toxic and can be used in contact with potable water, according to the standard BS 6920.

- **Packing**

500 ml	aerosol
1/2 Kg	available as sample (on request)
1 Kg	available, packed in undividable boxes of 12 x 1 Kg
2 Kg	available, packed in undividable boxes of 6 x 2 Kg
5 Kg	available
10 Kg	available
25 Kg	available

- **Conservation**

Storage	store in a cool and dry place
Shelf life	unlimited In case of long time storage it is recommended to shake the unopened tin in an automatic shaker at least once every 3 years.

Application data

- **System recommendations**

Unique system	- APCZT is used as a stand-alone system, applied in 2 or 3 layers to obtain a total maximum DFT* of 120 to 180 µm. - This system is strongly recommended because of the easy maintenance. In time the layer will become thinner as the APCZT sacrifices itself due to the cathodic protection. A new layer of APCZT can be directly applied once the surface has been properly cleaned and it will re-liquidise and recharge the previous APCZT layer. The DFT of APCZT that should be applied depends upon the remaining APCZT layer. - The system APCZT 2 x 60 µm DFT conforms to the standards: NORSOK M-501 syst. 7 ISO 12944-6: 2 x 60µm DFT APCZT: C4-High, C5M-Medium and C5I-Medium 2 x 90µm DFT APCZT: C5M-High and C5I-High
Duplex system	- In a duplex system, APCZT should be applied in **one single application**, preferably by spraying, to obtain a maximum DFT of 60 to 80 µm. - The surface of the APCZT should be free of zinc salts and other contaminations prior to application of a topcoat. - APCZT can be topcoated with a wide range of compatible sealers and topcoats. To avoid pinholes when topcoated, use the **mist coat & full coat technique** (meaning a standard diluted coat of 25 to 30µm DFT followed by a full coat of the same product).
Stripe-coat	It is recommended to apply a stripe-coat of APCZT by brush on all sharp edges, nuts and bolts and weld areas before the application of the first full layer of APCZT.
Recharging system	APCZT can be applied on top of a hot-dip galvanising layer, a metallisation layer or an old APCZT layer in order to renew or enhance the cathodic protection. The DFT of APCZT that should be applied depends upon the existing galvanising layer.

*DFT & WFT : dry film thickness and wet film thickness ; to be measured **above the peaks** of the roughness profile

- **Coverage and consumption**

Theoretical consumption	- for 60 µm DFT : 0,28 Kg/m² or 0,10 L/m² - for 120 µm DFT : 0,55 Kg/m² or 0,21 L/m²
Theoretical coverage	- for 60 µm DFT : 3,62 m²/Kg or 9,67 m²/L - for 120 µm DFT : 1,81 m²/Kg or 4,83 m²/L
Practical coverage	depends upon the roughness profile of the substrate and the application method

- **Environmental conditions during application**

Ambient temperature	- minimum -15°C - maximum 40°C
Relative humidity	- maximum 95%
Surface temperature	- minimum 3°C above the dew point - no visual presence of water or ice - maximum 60°C
Product temperature	During application the temperature of the APCZT liquid must remain between 15 and 25°C. A lower or higher temperature of the product will influence the smoothness of the film when drying.

- **Drying process and overcoating**

Drying process	APCZT dries by evaporation of the solvent. The drying process is influenced by the total WFT, the number of coats applied, the ambient air and surface temperatures and the air circulation.
Drying time	for 40 µm DFT at 20°C in a well-ventilated environment: - touch-dry: after 10 min. - dry to handle: after 1 hour - fully cured: after 48 hours - ready for immersion: after 2 hours
Overcoating	- with a new layer of APCZT : - brush : 2 hours after touch dry - spray gun : 1 hour after touch dry - with a compatible paint : after 6 to 24 hours depending on the drying conditions
Reliquidisation	Each new layer of APCZT reliquidises the former APCZT layer so that both layers form one homogeneous layer.

Instructions for use

- **Surface preparation**

Cleanliness	- The most common method to obtain a clean (and at the same time rough) surface for the application of APCZT is: The metal substrate should first be **degreased**, preferably by **steam-cleaning** at 140 bar at 80°C. After that it should be **grit-blasted** or **slurry-blasted** to cleanliness degree Sa 2,5 according to the standard ISO 8501-1 or to the cleanliness degree described in the standards SSPC-SP10 and NACE nr 2. This means that the surface must be free from rust, grease, oil, paint, salt, dirt, mill scale and other contaminants. Once the grit-blasting is completed the surface should be **de-dusted** with non contaminated compressed air according to the standard ISO 8502-3 (class 2) or in case of slurry-blasting the surface should be **dried** with non-contaminated compressed air. - Another method to obtain a clean surface is **UHP water-jetting** to cleanliness degree WJ2 according to the standards NACE nr 5 and SSPC-SP12 level SC1. But keep in mind that this method does **not** create surface roughness. - This high degree of cleanliness is not needed when APCZT is applied on a hot-dip galvanisation or a metallisation layer, or when it is applied on top of an existing APCZT layer. Please consult with the APCZTmetall representative. - For substrates that will not be immersed APCZT can be applied on mild flash rust (FWJ-2) occurring in the allowed time limit. For applications that will be immersed APCZT can only be applied on an SA 2,5 prepared surface with contaminants to NACE No5/ SSPC SP-12 level SC1 unless otherwise agreed with the APCZTmetall representative. - On small areas or on non-critical applications APCZT can be applied on a surface that is manually prepared to degree St 3 according to ISO 8501-1. Please consult with the APCZTmetall representative.
Roughness	- APCZT should be applied on a metal substrate that has roughness degree Rz 50 to 70 µm (for total DFT < 280 µm) or Rz 60 to 80 µm (for total DFT > 280 µm) according to the standard ISO 8503-2. This can be obtained by **grit-blasting** (with sharp particles) but not by shot-blasting (with spherical particles). Make sure that the surface is degreased **before** the grit-blasting. - This high degree of roughness is not needed when APCZT is applied on a hot-dip galvanisation or a metallisation layer, or when it is applied on top of an existing APCZT layer. Please consult with the APCZTmetall representative. - On small areas or on non-critical applications APCZT can be applied on a surface that is manually prepared e.g. with a needle gun or a grinding disk, in order to obtain an adequate roughness for APCZT. Please consult with the APCZTmetall representative.

Maximum time to application	Apply the APCZT as soon as possible on the prepared surface. - in dry circumstances : depending on the location - in case of water-cleaning or if the relative humidity is close to 80%: max. 4 hours waiting time If contamination occurs before coating, the surface must be cleaned again as described above. Flash rust can be removed by means of a wire brush.

- **Special instructions**

Stirring	- APCZT must be thoroughly stirred to achieve a homogeneous liquid before application. After a maximum of 20 min. re-mixing is necessary. - During the spraying application, the product must be stirred continuously.

Dilution	APCZT can be diluted with 0 to 5% (volume on volume) of APCZTsolv when using airless spray equipment and 0 to 25% for air supported applications. The APCZTsolv must be added whilst stirring.
Rinsing of tools and equipment	Before and after using the spraying equipment, it must be rinsed with APCZTsolv. Brushes and rollers should also be cleaned with APCZTsolv. Never use White Spirit.
Special demands for spraying equipment	- Pour the APCZT through a filter of 100 mesh (150 µm) into the drum. - For the spraying of APCZT, it is better to remove all filters from the pistol and from the drum to avoid blockage. - The spray gun must be equipped with reinforced needle springs.

- **Application by brush and roller**

Viscosity	APCZT is ready for use when applied by brush or roller. Do not dilute
First layer	The first layer must never be applied by roller, only by brush, in order to fill the cavities of the roughness profile and to wet the surface.
Type of brush and roller	- short hair roller - industrial round brush

- **Application by conventional spray-gun**

Dilution	0 to 25% (volume on volume)
Spray viscosity	25 to 35 sec. Ford cup nr. 4 at 20°C
Pressure at the nozzle	2 to 4 bar
Nozzle opening	2,2 to 2,5 mm
Remark	Make sure APCZT is stirred frequently so the zinc in APCZT cannot settle to the bottom.

- **Application by conventional spray-gun with pressure pot**

Dilution	0 to 25% (volume on volume)
Spray viscosity	25 to 35 sec. Ford cup nr. 4 at 20°C
Pressure at the nozzle	3 to 4 bar
Pot pressure	0,8 to 1,5 bar
Nozzle opening	1,8 to 2,2 mm

- **Application by airless spraying**

Dilution	0 to 5% (volume on volume)
Pressure at the nozzle	± 150 bar
Nozzle opening	± 0,023 inch

- **Other application methods**

Please consult with the APCZT metall representative.

For more specific and detailed recommendations concerning the application of APCZT, please contact the APCZTmetall representative. For detailed information about the health and safety hazards and precautions for use, please refer to the APCZT **safety data sheet**.

Waiver*

* The information on this sheet is merely indicative and is given to the best of our knowledge based on practical experience and testing. The conditions or methods of handling, storage, use or disposal of the product cannot be controlled by us and are therefore outside our responsibility. For these and other reasons we retain no liability in case of loss, damage or costs that are caused by or that are linked in any way to the handling, storage, use or disposal of the product. Any claim concerning deficiencies must be made within 3 months upon reception of the goods quoting the relevant batch number. We retain the right to change the formula if properties of the raw material are changed. This data sheet replaces all former specimens.