Datasheet – electroplated zinc

Electroplated zinc is a surface treatment process where steel items are given a 5-30 µm metallic zinc surface coating. This method is used to protect steel items against corrosion. The zinc protects the steel, also in places where the coating might be slightly flawed or incomplete.

In most cases, Midtjydsk Fornikling (MFF) gives the zinc coating an additional treatment with passivation and, if relevant, a sealer. This provides further protection against corrosion and retains the appearance of the zinc coating for some time, depending on the type of passivation and sealer.

Specification
MFF specifies electroplated zinc in accordance with the *DS/EN ISO 19598* and *DS/EN ISO 2081* standards. As an example, a steel item subjected to electroplated zinc with a minimum layer thickness of 12 µm, yellow passivation with sealer, is marked as follows:
DS/EN ISO 2081 – Fe/Zn12/C/T2.

Table 1 lists more examples, where X is the desired minimum thickness. Table 1 also lists the ISO minimum requirements to protection against the formation of white and red rust in a salt spray test.

Subsequent powder painting or painting of the electroplated zinc coating should be stated when placing the order with MFF.

Table 1 – List of passivation types offered by MFF

Colour	Specification	Designation	Type	*Minimum test hours*			
				White rust	Red rust		
					5 µm	8 µm	12 µm
ISO standard DS/EN ISO 19598:2016							
Blue	Fe//ZnX//An//T0	Electroplated zinc, blue passivation w/o sealer	Drum	8	48	72	96
			Hanging	16	72	96	120
Black	Fe//FnX//T0	Electroplated zinc, black passivation w/o sealer	Drum	24	48	72	96
Black	Fe//FnX//T2	Electroplated zinc, black passivation w/ sealer	Hanging	120	192	264	360
Silver	Fe//ZnX//Cn//T0	Electroplated zinc, silver passivation w/o sealer	Drum	72	144	216	288
			Hanging	120	192	264	336
	Fe//ZnX//Cn//T2	Electroplated zinc, silver passivation w/ sealer	Drum	120	192	264	360
			Hanging	168	264	360	480
ISO standard DS/EN ISO 2081:2018							
Yellow	Fe/ZnX/C/T0	Electroplated zinc, yellow passivation w/o sealer	Drum	72	144	216	288
			Hanging	120	192	264	336
	Fe/ZnX/C/T2	Electroplated zinc, yellow passivation w/ sealer	Drum	96	240	336	384
			Hanging	120	288	360	408

* Since passivation and sealer do not contain chrome 6, this is in compliance with the RoHS Directive.

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Corrosion protection
Due to recurrent impact from water and humidity, zinc coatings will change appearance with time. This change is caused by disintegration of the passivation layer with the effect that the zinc coating is exposed to corrosion. This is seen as white rust where the surface takes on a grey colour, in some cases with some white stains. Red rust develops in the same manner when the zinc coating disintegrates and the iron surface below is exposed to corrosion.

The required layer thickness or the required protection against white and red rust formation in corrosion testing must be observed at the significant surface of the item. If not otherwise agreed, this is made up by the part of the item which can be touched by a 20mm ball. This requirement concerns only the exposed surface of the items. This means that the requirement does not apply to internal surfaces in piping or internal cavities which are electrically shielded during plating and hence not plated with zinc.

MFF performs the salt spray test in accordance with *DS/EN ISO 9227* and tests the various coatings on a regular basis. For items coated by MFF, the lifetime is typically considerably longer than required by the standards.

For further information, please contact our technical department.

Table 2 – Zinc coating properties

Typical composition	100% Zn
Typical layer thickness	5 – 15 µm
Mol weight	65.4 g/mol
Density	7.1 g/cm³ @ 20°C
Fusing point	419°C
Suitability for subsequent painting	Yes, subject to prior notice

MFF offers to provide items in the sizes listed in Table 3 with electrogalvanization.

Table 3 – Maximum dimensions

	Facility no.	Max. item size	Max. weight
Hanging	25	3000 x 1500 x 750 mm	750 kg
	91	3750 x 1250 x 250 mm	400 kg
	92	2750 x 1150 x 550 mm	400 kg
Drum	14	Varying	Varying
	94	Varying	Varying

To arrange a non-binding visit by consultants please contact Midtjydsk Fornikling or call us for further information.

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