

Datasheet – zinc/iron



Zinc/iron is a coating where steel items are given a 5-15 µm zinc alloy surface coating. The coating protects against rust formation and the life of the corrosion protections is five times that of standard electrogalvanization.

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

The Zn/Fe coating was developed primarily with the automobile industry in mind where long life with outdoor usage is a focal point. However, this treatment is also suitable for fastening devices like the ones in the construction industry because the coating eliminates the need for additional treatment of holes and threads, which might otherwise be required following hot-dip galvanization and painting.

Specification

MFF specifies Zn/Fe in accordance with the *DS/EN ISO 19598* standard. As an example, the Zn/Fe coating on a steel item with a minimum layer thickness of 5 µm, black passivation with sealer, is marked as follows: *DS/EN ISO 19598 – Fe//ZnFe5//Fn//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.

Table 1 – List of passivation types offered by MFF and the salt spray test minimum requirements

Colour	Specification	Designation	Type	Minimum test hours			
				White rust	Red rust		
					5 µm	8 µm	12 µm
ISO standard DS/EN ISO 19598:2016							
Black	Fe//ZnFeX//Fn/T2	Zinc/iron passivation w/ sealer	Drum	120	192	264	360
			Hanging	168	264	360	480
Silver	Fe//ZnFeX//Cn/T0	Zinc/iron passivation w/o sealer	Drum	96	168	240	312
			Hanging	168	240	315	384
	Fe//ZnFeX//Cn/T2	Zinc/iron passivation w/ sealer	Drum	144	216	288	384
			Hanging	216	312	408	528

* Since passivation and sealer do not contain chrom6 this is in compliance with the RoHS Directive.

Corrosion protection

Due to recurrent impact from water and humidity, surface coatings will change appearance with time. This change is caused by disintegration of the passivation layer with the effect that the Zn/Fe 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 Zn/Fe 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 Ø20mm 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 standard.

For further information, please contact our technical department.

Table 2 – Zn/Fe coating properties

Typical composition	0.3 – 1.0% Fe / 00.7 – 99.0% Zn
Typical layer thickness	5 – 15 µm
Mol weight	65.35 g/mol
Density	7.14 g/cm ³ @ 20°C
Hardness	150 ± 20 HV0.1
Fusing point	400°C
Heat stability	180°C permanently
Suitability for welding	Good
Suitability for subsequent painting	Good, according to type of paint

MFF offers to provide items in the sizes listed in Table 3 with Zn/Fe coatings.

Table 3 – Maximum dimensions

	Facility no.	Max. item size	Max. weight
Hanging	92	2750 x 1150 x 550 mm	400 kg
Drum	95	Varying	Varying

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