



Operation and maintenance

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Hot-dip galvanized items corrode over time. The rate of corrosion depends on the environment and mechanical impacts to which the items are exposed. The life of a hot-dip galvanized surface under different types of corrosion exposure from C1 to C5 is prescribed in Table 1.

TABLE 1: THE LIFE OF THE ZINC COATINGS IN CORROSIVITY CATEGORIES C1-C5 IS BASED ON THE MEAN ZINC LAYER THICKNESS ACCORDING TO EN ISO 1461:2009

ZINC LAYER THICKNESSES ACC. TO EN ISO 1461 ¹⁾		LIFE TIME OF ZINC COATING IN DIFFERENT CORROSION CATEGORIES				
Wall thickness t	Zinc layer thickness ³⁾ , µm	C1	C2	C3	C4	C5 ⁴⁾
Steel, 6 mm < t	85	100+	100-100+	40-100+	20-40	10-20
Steel, 3 < t ≤ 6 mm	70	100+	100-100+	33-100	17-33	8-17
Steel, 1,5 ≤ t ≤ 3 mm	55	100+	78-100+	26-78	13-26	6-13
Steel, t < 1,5 mm	45	100+	64-100+	21-64	11-21	5-11
Cast iron 6 mm < t	80	100+	100-100+	38-100+	19-38	10-19
Cast iron, t ≤ 6 mm	70	100+	100-100+	33-100	17-33	8-17
Steel, special requirement ²⁾ , 6 mm < t	115	100+	100+	55-100+	27-55	14-27
Steel, special requirement ²⁾ , 6 mm < t	165	100+	100+	78-100+	39-78	20-39
Steel, special requirement ²⁾ , 6 mm < t	215	100+	100+	100-100+	39-100+	26-51

NOTES:

¹⁾ The specified layer thicknesses apply to hanging items.

²⁾ Requirement for a particularly thick zinc layer which can be met only when the steel has a silicon content that is specified in detail.

³⁾ Mean zinc layer thickness acc. to EN ISO 1461:2009.

⁴⁾ In category C5 painting after hot-dip galvanizing may be necessary if a long service life is required.

It is recommended that the zinc layer be checked regularly at suitable intervals according to the expected life. Not least critical places involving risks of thermal bridges, wear, deformation, etc. The result of the first check should form the basis of a subsequent maintenance plan. Shorter intervals may be required. Special attention should be paid to places where repairs have been carried out as corrosion protection is often reduced in such areas. Critical areas are typically inspected at 1- to 5-year intervals, depending on the conditions described

Remember to fill in an inspection report for all identified focus areas and to plan subsequent actions for repairing damage, etc.

Repairing damage to hot-dip galvanized surfaces

If repair of a hot-dip galvanized surface is necessary, the Nordic Galvanizers branch organisation has published an information leaflet containing requirements and guidance in accordance with Danish Standards DS/EN ISO 1461:2009 for repair work. Section 6.3 of the Standard state that repairs can be carried out using the following methods:

- a) Metal spraying with zinc
- b) Application of zinc-rich paint
- c) Application of low-melting soldering zinc

Also see www.nordicgalvanizers.com.

Standarden angiver følgende krav til reparationerne:

1. Bare spots may not exceed 0.5% of the surface area of the individual item.
2. The size of the individual bare spot may not exceed 10 cm².
3. The repair work must comprise the cleaning and after-treatment required to ensure adhesion.
4. The coating of repaired areas must be able to protect the steel by means of cathodic protection.
5. The layer thickness on repaired areas must be at least 30 µm thicker than the requirement for the minimum local zinc layer thickness, acc. to DS/EN ISO 1461, if not otherwise agreed.

Repairing using zinc dust paint

Zinc flaking and damaged areas smaller than 4 cm² can be repaired using zinc dust paint: The repair work is carried out by grinding the damaged area and applying several layers of zinc dust paint to a dry film thickness of minimum 100 µm.

Repairing using zinc spray metallizing

This repair method is used for damaged areas exceeding 4 cm². Repair work is carried out by means of sandblasting and metallizing with zinc to a layer thickness of minimum 100 µm, acc. to DS/EN ISO 1461.

On surfaces where appearance is important, after-treatment with topcoat may also be required.

Damage requiring no repair

Damage such as small, circular areas of zinc flaking with a width up to 5 mm, which typically occurs on edges and corners of items, will be protected cathodically by the surrounding zinc coating which is why repair is not required out of consideration for the corrosion protection. The steel surface in lengthy zinc flaking with a width below 3 mm, which may occur on edges, etc., of items, will also be protected cathodically.

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