

SURFACE TREATMENT

ZINC ELECTROPLATING_THREADS

DSF 1.1.2

Description:

Zinc Electroplating acts as a sacrificial barrier by significantly reducing the corrosion rate when applied to ferrous metals. In a corrosive environment the zinc plating slowly corrodes forming a white protective powder coating. To delay the appearance of this 'white rust' a **TRIVALENT** Chrome conversion surface treatment (passivation) is added, which is RoHS compliant.

This DSF 1.1.2 Engineering Standard is based on BS EN ISO 2081: 2018 and BS 7371-8:201. Refer to these standards if more detail is required.

Appearance:

The zinc-plated article shall be free from visible plating defects such as blisters, pitting or un-plated areas. The plating will be smooth and adherent, clean and free from damage.

The adhesion is tested by rubbing the surface with a fragment of white paper on the tip of the finger, and then examining the rubbed surface. Failure is identified by the appearance of anything more than the faintest stain on the paper or by indications that the plated surface has been rubbed through.

NOTE:

The engineering drawing will indicate the material substrate and its surface hardness.

Electroplating does not give an even cover; thicker concentration of deposit occurs on corners, points, thread crests and thinner concentrations on thread flanks and roots. This may cause thread galling on coatings above 8 microns.

Higher tensile steel fasteners can be weakened by absorption of hydrogen during the plating process & will require baking before passivation to minimise embrittlement.

Definition:

All zinc plating will be protected by a **TRIVALENT** Chrome conversion coating (passivation) in accordance with RoHS and WEE directives. **HEXAVALENT** Chromium Passivation **must not** be used. Typically, this film is a complex combination of mixed metal oxides which are blended to achieve different corrosion performances (thickness) & colours.

The process of electroplating fasteners is called 'barrel plating' the thickness being optimised to ensure maximum protection without compromising assembly of threaded components. More details can be found in the following standard.

BS 7371-8:2011: "Coatings on metal fasteners - Specification for sherardized coatings."

Issue	01	02	03	04	05	06	07	08	09
DCR		7135	32165	44725	14/12/20				



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COATING TYPE		TYPICAL APPEARANCE	DRAWING CALLOUT a*
CODE	NAME		
A	CLEAR	Transparent, clear to bluish	DSF 1.1.2 CLEAR
Ba	BLEACHED	Transparent, with slight iridescence	
C	IRIDESCENT	Yellow iridescence	DSF 1.1.2 YELLOW

a* Note in the event of a supplier receiving a drawing from ASM specifying any DSF 1.1.2 drawing callout not shown in the table above the supplier must contact ASM for clarification using the following email address:

engineering_enquiries@asmpt.com

Chromate coatings described in the table above might not necessarily be specified for the improvement of the adhesion of paints and varnishes. All chromate coatings might or might not contain hexavalent chromium ions. **Codes A and C are the preferred company options with Code A as the default when DSF 1.1.2 CLEAR is called up on a drawing.**

a This is a two-stage process: yellow iridescent followed by a leaching/sealing solution for hexavalent chromium passivates or a thicker trivalent passivate (sometimes referred to as "heavyweight") than that used to produce a clear deposit.

Passivate Thickness:

More details can be found in BS 7371-8:2011: "Coatings on metal fasteners - Specification for sherardized coatings." Where Table 1 covers the Classification of coating and local coating thickness (see P5) and Annex A (informative) covers the "Selection of Coating" (see P9)

For typical applications within ASM the default should be a Coating Classification "Class 15" which is for a local coating thickness of 15µm which provides corrosion protection if continuously salt spray tested for 72 hours. It is also important to consider the plating type and thickness of the mating part to ensure maximum protection without compromising the assembly of the threaded components.

Properties:

- Low cost.
- Attractive appearance offering basic protection against corrosion.

ASM (DEK) Applications:

Exposed threads that require protection.

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