Electrolux

Zinc corrosion protection on Fastenings and Metal sheets

Test manuals
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Explanation of revision

- Update of the conversion table with respect to editorial changes on the notes numbers
- Highlight in document that while Fabric Care is still using the EHP-WET database an equal copy off the document will be stored there with the ID number 0609003.

Manual

Background

This standard has been written to meet the requirements in the EU directive “2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 January 2003”, and to secure a standard way of specifying corrosion protection on fastenings and metal sheets, free from Cr6+.

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1. Scope

This document specifies Zinc corrosion protection standards for iron and steel, free from hexavalent chromium, of:

- non-threaded parts
- threaded parts without special requirements of friction properties

While Fabric care is using the EHP-WET standard documentation data base an equal copy of this document will also be stored there with the ID number 060900300. The last two digits indicate the revision.

2. Definition

For this standard, the following definitions apply:

White rust: white porous corrosion product on zinc-alloyed surfaces

Red rust: corrosion of the base metal of coated objects

3. Documents quoted

The following documents are quoted in this document:

- ISO 2081: Metallic coatings. Electroplated coatings of zinc on iron or steel.
- EN ISO 4042: Fasteners. Electroplated coatings.
- ISO 4520: Chromate conversion coatings on electroplated zinc and cadmium coatings
- UNI 4721: Surface treatments of metallic materials. Classification, characteristics and tests of the electroplated coatings of zinc on ferrous materials (available only in Italian).
- ISO 9227: Corrosion tests in artificial atmospheres. Salt spray tests.
- 060900300: Copy of this document in the EHP-WET standard documentation data base

4. Corrosion standard classes and requirements

4.1 General requirements

The standard surface treatment classes, that replaces old standards is divided into two main groups: Preferred and Non Preferred. The preferred classes should be used as default. However if this is not possible non preferred classes can be used, but with care.

Preferred classes						
Standard Surface Treatment Class (Denomination)	Thickness [microm]	Colour	Allowed treatment solution	Corrosion resistance in salt spray 5% NaCl [h], ISO 9227		Revision history
				White rust	Red rust	
Metal sheet (flat) components						
SSTC 1-1	- [2]	White/Blue	N/A	6	96	
SSTC 1-2	- [2]	White/Blue	N/A	72	96	
~~SSTC 1-3~~	~~-~~ [2]	~~White/Blue~~	~~N/A~~	~~72~~	~~-~~ [1]	Replaced by SSTC 1-2
~~SSTC 1-4~~	~~-~~ [2]	~~White/Blue~~	~~N/A~~	~~72~~	~~-~~ [1]	Replaced by SSTC 1-2
~~SSTC 1-5~~	~~-~~ [2]	~~White/Blue~~	~~N/A~~	~~72~~	~~-~~ [1]	Replaced by SSTC 1-2
Fasteners						
SSTC 2-1	- [2]	White/Blue	N/A	6	48	
SSTC 2-2	- [2]	White/Blue	N/A	72	144	
SSTC 2-3	- [2]	White/Blue	N/A	24	96	
SSTC 2-9	- [2]	White/Blue	GEOMET, Zintek	N/A	300	

Non preferred classes - to be used with care						
Standard surface treatment class (Denomination)	Thickness [microm]	Colour	Allowed treatment solution	Corrosion resistance in salt spray 5% NaCl [h], ISO 9227		Revision history
				White rust	Red rust	
Metal sheet (flat) components						
~~SSTC 1-6~~	~~-~~ [2]	~~White/Blue~~	~~N/A~~	~~6~~	~~96~~	Replaced by SSTC 1-1
~~SSTC 1-7~~	~~-~~ [2]	~~White/Blue~~	~~N/A~~	~~48~~	~~96~~	Replaced by SSTC 1-2
~~SSTC 1-8~~	~~-~~ [2]	~~White/Blue~~	~~N/A~~	~~48~~	~~96~~	Replaced by SSTC 1-7
SSTC 1-9	- [2]	White/Blue	N/A	6	192	
SSTC 1-10	- [2]	White/Blue	N/A	48	192	
~~SSTC 1-11~~	~~-~~ [2]	~~White/Blue~~	~~N/A~~	~~48~~	~~192~~	Replaced by SSTC 1-10
Fasteners						
SSTC 2-4	- [2]	White/Blue	N/A	6	96	
SSTC 2-5	- [2]	White/Blue	N/A	48	96	
~~SSTC 2-6~~	~~-~~ [2]	~~White/Blue~~	~~N/A~~	~~48~~	~~96~~	Replaced by SSTC 2-5
SSTC 2-7	- [2]	White/Blue	N/A	6	192	
SSTC 2-8	- [2]	White/Blue	N/A	48	192	

Notes:

1) The norms ISO 2081, ISO 4520 do not indicate explicitly the resistance to red rust corrosion
2) The coating thickness is determined by the tolerances on the component and surrounding parts,as well as the corrosion resistance requirements defined by salt spray test 5% NaCl [h], ISO 9227. After surface treatment the total dimensions should not exceed the tolerances defined on the components or in the relevant international standards. A test of the component should be made by

assembly it together with surrounding parts.

ISO 2081: Metallic coatings. Electroplated coatings of zinc on iron or steel.
EN ISO 4042: Fasteners. Electroplated coatings.
ISO 4520: Chromate conversion coatings on electroplated zinc and cadmium coatings
UNI 4721: Surface treatments of metallic materials. Classification, characteristics and tests of the electroplated coatings of zinc on ferrous materials (available only in Italian).
ISO 9227: Corrosion tests in artificial atmospheres. Salt spray tests.

4.2 Specific requirements

4.2.1 Appearance

The significant surface of the surface coated part shall be free from clearly visible surface treatment defects such as blisters, pitting, rough surfaces, cracks or uncoated areas.

4.2.1 Environmental requirements

The treatments herein specified shall not contain substances that are banned according to Directive, 2002/95/EC, the RoHS Directive (Lead, Cadmium, Mercury, hexavalent Chromium, PBB and PBDE).

The treatments herein specified shall not contain substances classified as "Banned" or "Restricted" according to the Electrolux Restricted Materials List (RML).

5. Selection of standard surface treatment class

When selecting a standard class on a component the preferred classes should be used. If these standards classes can not be used, the other classes can be selected, but with care.

6. Indication in design-engineering documentation

When specifying corrosion protection on design-engineering documentation (drawings, family tables, other
specification, etc.) the following convention should be used:

Ex: Treated SSTC 2-1 TM2024

While Fabric Care is using the EHP-WET, where an equal copy of TM 2024 is stored with the ID number 060900300, the following should be used for specifying corrosion protection on design-engineering
documentation owned by Fabric Care.

Ex. Treated SSTC 2-1 0609003

Whenever applicable, a description of a specific surface treatment may be done in direct connection with this indication.

7. Conversion tables

Below conversion tables shall be used in order to translate old requirements specified on engineering documentation into the SSTC classes.

Conversion table - Fasteners								
Old-Old treatment (UNI 4721)			Old treatment (UNI ISO 4042)			New Treatment		
Denomination	White rust	Red rust	Denomination	White rust	Red rust	Denomination	White rust	Red rust
F.Zn 5 II	6	48	Fe/Zn 5c 1A	6	24	SSTC 2-1	6	48
F.Zn 5 III	48	48						
F.Zn 7 II	6	96	Fe/Zn 8c 1A	6	48	SSTC 2-1	6	48[3]
F.Zn 7 III	48	96	Fe/Zn 5c 2C	48	72	SSTC 2-3	24	96
F.Zn 12 II	6	192	Fe/Zn 12c 1A	6	72	SSTC 2-3	24	96[3]
F.Zn 12 III	48	192	Fe/Zn 8c 2C	72	120	SSTC 2-2	72	144[3]
			Fe/Zn 12c 2C	72	144	SSTC 2-2	72	144
			DACROMET			SSTC 2-9 (GEOMET/Zintek)	N/A	300
Fe/Zn 8c Bk	24	72	No longer available. Replaced by SSTC 2-3					
Fe/Zn 12c Bk	24	96						

Conversion table - Sheet metal (flat components)								
Old-Old treatment (UNI 4721)			Old treatment (UNI ISO 2081)			New Treatment		
Denomination	White rust	Red rust	Denomination	White rust	Red rust	Denomination	White rust	Red rust
F.Zn 7 II	6	96	Fe/Zn 8 c 1A	6	-	SSTC 1-1	6	96
F.Zn 7 III	48	96	Fe/Zn 8 c 2C	72	-	SSTC 1-2	72	96
F.Zn 12 II	6	192	Fe/Zn 12 c 1A	6	-	SSTC 1-9	6	192
F.Zn 12 III	48	192	Fe/Zn 12 c 2C	72	-	SSTC 1-10	48	192

Notes:

3) In the transformation from the old UNI 4721 standard a lowering in the red rust requirement is perceived to appear. However this lowering is not real since the current components used in production is delivered with the ISO 4042 requirement, while therequirement documentation is not updated.

Test report template

References