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STANDARD ISO 8501

Corrosion Protection of Steel Structures by Painting

1. Introduction

The performance and durability of any paint coating are significantly affected by the surface preparation carried out. This is even more important in the case of steel structures, where the selection of the method of surface preparation is crucial in any corrosion treatment.

Different types of surface preparation can be selected depending upon the condition of the substrate, the paint system selected, the exposure and required durability of the coating, economic and environmental considerations etc.

Below we outline some of the more common methods used on carbon steel with or without coating, galvanised steel, aluminium and light alloys, namely, dry blast cleaning, hand and power tool cleaning, water jetting, degreasing.

The practical performance of the paint coatings is significantly affected by the condition of the surface prior to painting. The main relevant factors are:

- Presence of rust and mill scale
- Presence of contaminants: salts, dust, oil and grease
- Surface profile

ISO 8501 provides a method of making a visual assessment of the cleanliness of surfaces and is commonly used to determine paint systems. This standard is divided into 4 parts.

- **ISO 8501-1:2007** – Rust grades and preparation of uncoated steel substrates and steel substrates after overall removal of previous coatings.
- **ISO 8501-2:2001** – Preparation grades of previously coated steel substrates after localised removal of previous coatings.
- **ISO 8501-3:2007** – Preparation grades of welds, edges and other areas with surface imperfections.
- **ISO 8501-4:2006** – Initial surface conditions, preparation grades and flash rust grades in connection with high pressure water jetting.

This document only refers to parts 1 and 2.

This information is merely a summary of the standard. For detailed information you must obtain the standard in addition to the IPQ document. The photographs of the rust and surface preparation grades cannot be used as representative photographic examples.

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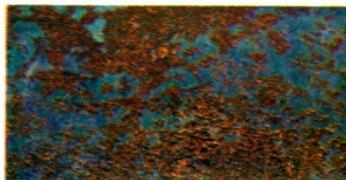
2. ISO 8501-1: Rust grades and preparation grades of uncoated steel substrates and steel substrates after overall removal of previous coatings.

This part of ISO 8501 identifies 4 rust grades which are normally found on uncoated steel surfaces and on stored steel surfaces (Figure 1).



A

Steel surface largely covered with adhering mill scale but little, if any, rust.



B

Steel surface which has begun to rust and from which the mill scale has begun to flake.



C

Steel surface on which the mill scale has rusted away or from which it can be scraped, but with slight pitting visible under normal vision.



D

Steel surface on which the mill scale has rusted away and on which general pitting is visible under normal vision.

Figure 1: Representative photographic examples of rust grades

ISO 8501-1 also identifies grades of visual cleanliness (known as preparation grades) after the preparation of the uncoated steel surface and surfaces from which previous coatings have been completely removed. Three preparation grades are described relating to the cleaning method used: “Sa”, “St” or “Fl” (Figure 2).

Blast-cleaning

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- Sa 1 Light blast-cleaning
- Sa 2 Thorough blast-cleaning
- Sa 2 1/2 Very thorough blast-cleaning
- Sa 3 Blast-cleaning to visually clean steel

Hand and power tool cleaning

- St 2 Thorough hand and power tool cleaning
- St 3 Very thorough hand and power tool cleaning

Flame cleaning, F1

Rarely used.

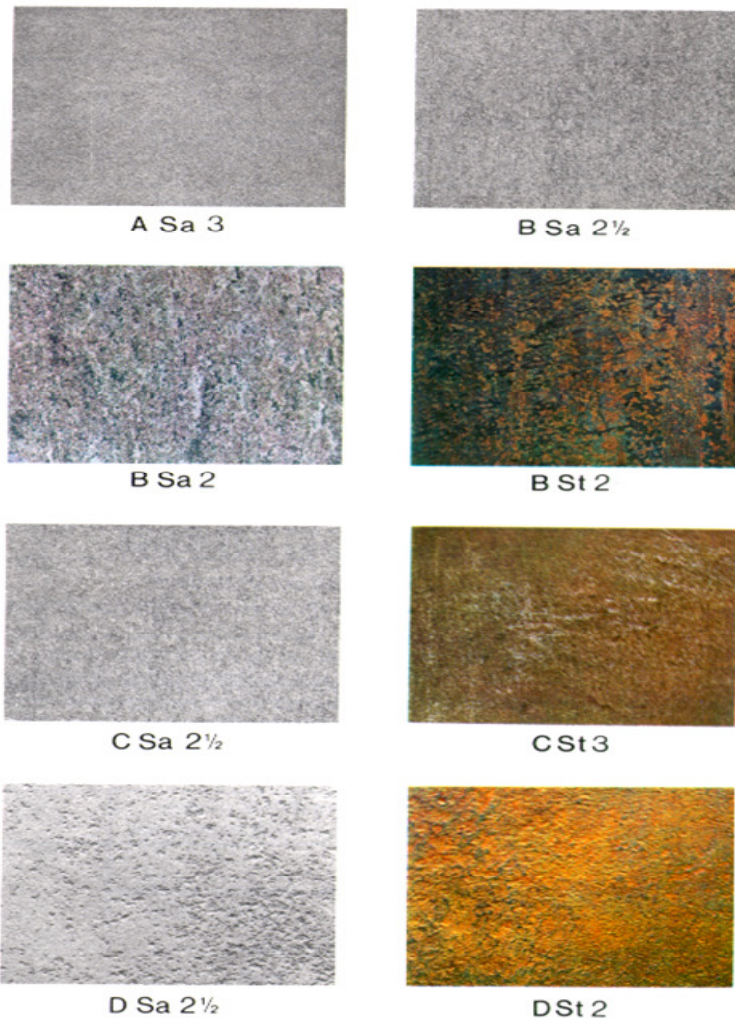


Figure 2: Representative photographic examples of surface preparation grades.

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3. ISO 8501-2. Preparation grades for previously painted steel substrates, after localised removal of previous coatings

This part of the standard is based upon the experience that total removal of previous coatings is not always necessary. This is especially true when maintenance work is carried out regularly. Each preparation grade is designated by the appropriate letters “Sa”, “St” or “Ma” to indicate the type of cleaning method used.

Localised blast-cleaning, P Sa

- P Sa 2 Thorough localised blast-cleaning
- P Sa 2 ¹/₂ Very thorough localised blast-cleaning
- P Sa 3 Localised blast-cleaning to visually clean steel

Localised hand and power tool cleaning, P St

- P St 2 Thorough localised hand and power tool cleaning
- P St 3 Very thorough localised hand and power tool cleaning

Localised mechanical abrasion cleaning, P Ma

- P Ma Localised mechanical abrasion

As in previous cases, the representative photographic examples are used as a reference.

CIN Protective Coatings recommends careful, thorough reading of the standard.
To obtain copies of the standards, contact :

International Organization for Standardization
ISO Central Secretariat
1, ch. de la Voie-Creuse
CP 56
CH-1211 Geneva 20
Switzerland

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