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INTERNATIONAL STANDARD

NORME INTERNATIONALE

ISO 8501-1

Second edition
Deuxième édition
2007-05-01

Preparation of steel substrates before application of paints and related products — Visual assessment of surface cleanliness —

Part 1:
Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings

Préparation des subjectiles d'acier avant application de peintures et de produits assimilés — Évaluation visuelle de la propreté d'un subjectile —

Partie 1:
Degrés de rouille et degrés de préparation des subjectiles d'acier non recouverts et des subjectiles d'acier après décapage sur toute la surface des revêtements précédents

Reference number
Numéro de référence
ISO 8501-1:2007(E/F)

ISO 8501-1:2007

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Published in Switzerland/Publié en Suisse

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 8501-1 was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Subcommittee SC 12, *Preparation of steel substrates before application of paints and related products*.

This second edition cancels and replaces the first edition (ISO 8501-1:1988). The main change is that the Informative Supplement ISO 8501-1:1988/Suppl.1994 has been included as Annex A.

ISO 8501 consists of the following parts, under the general title *Preparation of steel substrates before application of paints and related products — Visual assessment of surface cleanliness*:

— *Part 1: Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings*

— *Part 2: Preparation grades of previously coated steel substrates after localized removal of previous coatings*

— *Part 3: Preparation grades of welds, edges and other areas with surface imperfections*

— *Part 4: Initial surface conditions, preparation grades and flash rust grades in connection with high-pressure water jetting*

Introduction

The performance of protective coatings of paint and related products applied to steel is significantly affected by the state of the steel surface immediately prior to painting. The principal factors that are known to influence this performance are

a) the presence of rust and mill scale;

b) the presence of surface contaminants, including salts, dust, oils and greases;

c) the surface profile.

International Standards ISO 8501, ISO 8502 and ISO 8503 have been prepared to provide methods of assessing these factors, while ISO 8504 provides guidance on the preparation methods that are available for cleaning steel substrates, indicating the capabilities of each in attaining specified levels of cleanliness.

These International Standards do not contain recommendations for the protective coating systems to be applied to the steel surface. Neither do they contain recommendations for the surface quality requirements for specific situations even though surface quality can have a direct influence on the choice of protective coating to be applied and on its performance. Such recommendations are given in other documents such as national standards and codes of practice. It will be necessary for the users of these International Standards to ensure that the qualities specified are

— compatible and appropriate both for the environmental conditions to which the steel will be exposed and for the protective coating system to be used;

— within the capability of the cleaning procedure specified.

The four International Standards referred to above deal with the following aspects of preparation of steel substrates:

ISO 8501 — *Visual assessment of surface cleanliness*;

ISO 8502 — *Tests for the assessment of surface cleanliness*;

ISO 8503 — *Surface roughness characteristics of blast-cleaned steel substrates*;

ISO 8504 — *Surface preparation methods*.

Each of these International Standards is in turn divided into separate parts.

This part of ISO 8501 identifies four levels (designated as “rust grades”) of mill scale and rust that are commonly found on surfaces of uncoated erected steel and steel held in stock. It also identifies certain degrees of visual cleanliness (designated as “preparation grades”) after surface preparation of uncoated steel surfaces and of steel surfaces after overall removal of any previous coating. These levels of visual cleanliness are related to the common methods of surface cleaning that are used prior to painting.

This part of ISO 8501 is intended to be a tool for visual assessment of rust grades and of preparation grades. It includes 28 representative photographic examples.

Fourteen of these photographic examples show steel surfaces that have been subjected to dry blast-cleaning using quartz sand as the abrasive. The use of other abrasives may affect the appearance of the surface. Colour changes caused by different abrasives are shown in Annex A.

NOTE Twenty-four of the photographs originated from the Swedish standard SIS 05 59 00-1967, *Pictorial surface preparation standards for painting steel surfaces*. The other four photographs originated from the German standard DIN 55 928, Part 4, Supplement 1 (August 1978), *Protection of steel structures from corrosion by organic and metallic coatings; preparation and testing of surfaces; photographic standards*.