BS EN ISO 8503-1:2012

BSI Standards Publication

Preparation of steel substrates before application of paints and related products — Surface roughness characteristics of blast-cleaned steel substrates

Part 1: Specifications and definitions for ISO surface profile comparators for the assessment of abrasive blast-cleaned surfaces

This British Standard is the UK implementation of . It supersedes BS EN ISO 8503-1:1995 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee STI/21, Surface preparation of steel.

A list of organizations represented on this committee can be obtained on request to its secretary.

ISBN 978 0 580 63468 0

ICS 17.040.20; 25.220.10

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 March 2012.

Amendments issued since publication

Date	Text affected

EUROPÄISCHE NORM

February 2012

ICS 25.220.10

Supersedes EN ISO 8503-1:1995

English Version

Preparation of steel substrates before application of paints and related products - Surface roughness characteristics of blast-cleaned steel substrates - Part 1: Specifications and definitions for ISO surface profile comparators for the assessment of abrasive blast-cleaned surfaces (ISO 8503-1:2012)

Préparation des subjectiles d'acier avant application de peintures et de produits assimilés - Caractéristiques de rugosité des subjectiles d'acier décapés - Partie 1: Spécifications et définitions des comparateurs viso-tactiles ISO pour caractériser les surfaces décapées par projection d'abrasif (ISO 8503-1:2012)

Vorbereitung von Stahloberflächen vor dem Auftragen von Beschichtungsstoffen - Rauheitskenngrößen von gestrahlten Stahloberflächen - Teil 1: Anforderungen und Begriffe für ISO-Rauheitsvergleichsmuster zur Beurteilung gestrahlter Oberflächen (ISO 8503-1:2012)

This European Standard was approved by CEN on 14 February 2012.

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Ref. No. EN ISO 8503-1:2012: E

Foreword

This document (EN ISO 8503-1:2012) has been prepared by Technical Committee ISO/TC 35 “Paints and varnishes” in collaboration with Technical Committee CEN/TC 139 “Paints and varnishes” the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2012, and conflicting national standards shall be withdrawn at the latest by August 2012.

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

This document supersedes EN ISO 8503-1:1995.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 8503-1:2012 has been approved by CEN as a EN ISO 8503-1:2012 without any modification.

Contents

Page

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 8503-1 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 8503-1:1988), which has been technically revised.

ISO 8503 consists of the following parts, under the general title *Preparation of steel substrates before application of paints and related products — Surface roughness characteristics of blast-cleaned steel substrates*:

— *Part 1: Specifications and definitions for ISO surface profile comparators for the assessment of abrasive blast-cleaned surfaces*

— *Part 2: Method for the grading of surface profile of abrasive blast-cleaned steel — Comparator procedure*

— *Part 3: Method for the calibration of ISO surface profile comparators and for the determination of surface profile — Focusing microscope procedure*

— *Part 4: Method for the calibration of ISO surface profile comparators and for the determination of surface profile — Stylus instrument procedure*

— *Part 5: Replica tape method for the determination of the surface profile*

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

These International Standards do not contain provisions for the protective coating systems to be applied to the steel surface or for the surface quality provisions 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 provisions are found in other documents, such as national standards and codes of practice.

It is 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 is 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.

Irrespective of the procedures and the type of abrasive used for the preparation of steel substrates, the surface after blast-cleaning consists of random irregularities with peaks and valleys that are not easily characterized. Consequently, it was concluded that, because of this random nature, no method is capable of giving a precise value for the profile. Thus, it is intended that the profile be identified as either dimpled (where shot abrasives are used) or angular (where grit abrasives are used) and that it be graded as “fine”, “medium” or “coarse”, each grade being defined by the limits specified in this part of ISO 8503. These surface characteristics are considered to give sufficient distinguishing features for most painting requirements.

Particular attention, however, is drawn to the fact that the grades “fine”, “medium” and “coarse” represent different ranges in terms of roughness parameters, dependent upon whether these grades are applied to shot abrasive or grit abrasive blast-cleaned surfaces. In consequence, the effect produced on a given coating by a given grade “fine”, “medium” or “coarse” is determined not only by the specific surface character but also by the specific roughness value $\overline{R_{y5}}$ or $\overline{h_y}$ belonging to that grade. Where surface profile is particularly important, both the grade of the surface profile (“fine”, “medium” or “coarse”) and the type of abrasive which is to be used are to be specified.

This part of ISO 8503 specifies the limits for the “fine”, “medium” and “coarse” surface for both dimpled and angular profiles, and specifies the design of ISO comparators for reference purposes.

Requirements regarding the care of ISO surface profile comparators are given in Annex A.

ISO 8503-2 describes the method of using these ISO comparators. The many abrasive blast-cleaning procedures in common use are described in ISO 8504-2.

Preparation of steel substrates before application of paints and related products — Surface roughness characteristics of blast-cleaned steel substrates —

Part 1:
Specifications and definitions for ISO surface profile comparators for the assessment of abrasive blast-cleaned surfaces

1 Scope

This part of ISO 8503 specifies the requirements for ISO surface profile comparators, which are intended for visual and tactile comparison of steel substrates which have been blast-cleaned with either shot abrasives or grit abrasives. This part of ISO 8503 also includes definitions of the terms used in the ISO 8503 series and requirements for the care of ISO surface profile comparators.

NOTE 1 ISO surface profile comparators are used for assessing, on site, the roughness of surfaces before the application of paints and related products or other protective treatments.

NOTE 2 Where appropriate, these ISO comparators can be used for assessing the roughness profile of other abrasive blast-cleaned substrates and, in addition, their use is not restricted solely to surfaces that are to be painted.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 8501-1, *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*

ISO 8503-2, *Preparation of steel substrates before application of paints and related products — Surface roughness characteristics of blast-cleaned steel substrates — Part 2: Method for the grading of surface profile of abrasive blast-cleaned steel — Comparator procedure*

ISO 8503-3, *Preparation of steel substrates before application of paints and related products — Surface roughness characteristics of blast-cleaned steel substrates — Part 3: Method for the calibration of ISO surface profile comparators and for the determination of surface profile — Focusing microscope procedure*

ISO 8503-4, *Preparation of steel substrates before application of paints and related products — Surface roughness characteristics of blast-cleaned steel substrates — Part 4: Method for the calibration of ISO surface profile comparators and for the determination of surface profile — Stylus instrument procedure*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.