

Preparation of steel substrates before application of paints and related products - Surface preparation methods - Part 3: Hand- and power-tool cleaning (ISO 8504-3:2018)

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 8504-3:2018 sisaldab Euroopa standardi EN ISO 8504-3:2018 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 8504-3:2018 consists of the English text of the European standard EN ISO 8504-3:2018.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 12.12.2018.	Date of Availability of the European standard is 12.12.2018.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile [standardiosakond@evs.ee](mailto:standardiosakond@evs.ee).

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English Version

Preparation of steel substrates before application of paints  
and related products - Surface preparation methods - Part  
3: Hand- and power-tool cleaning (ISO 8504-3:2018)

Préparation des subjectiles d'acier avant application de  
peintures et de produits assimilés - Méthodes de  
préparation des subjectiles - Partie 3: Nettoyage à la  
main et à la machine (ISO 8504-3:2018)

Vorbereitung von Stahloberflächen vor dem Auftragen  
von Beschichtungsstoffen - Verfahren für die  
Oberflächenvorbereitung - Teil 3: Reinigen mit  
Handwerkzeugen und mit maschinell angetriebenen  
Werkzeugen (ISO 8504-3:2018)

This European Standard was approved by CEN on 27 October 2018.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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## European foreword

This document (EN ISO 8504-3:2018) has been prepared by Technical Committee IEC/TC 35 "NA" 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 June 2019, and conflicting national standards shall be withdrawn at the latest by June 2019.

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

This document supersedes EN ISO 8504-3:2001.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## Endorsement notice

The text of ISO 8504-3:2018 has been approved by CEN as EN ISO 8504-3:2018 without any modification.

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document 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 8504-3:1993), which has been technically revised.

The main changes compared to the previous edition are as follows:

- addition of rotary impact tool to types of power-tools;
- replacement of inspection with assessment in [Clause 6](#).

A list of all parts in the ISO 8504 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## 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.

ISO 8501 and ISO 8502 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 found in other documents such as national standards and codes of practice. The users of these International Standards should ensure that the qualities specified are:

- compatible with 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 three International Standards referred to above deal with the following aspects of preparation of steel substrates:

- ISO 8501 (all parts): visual assessment of surface cleanliness;
- ISO 8502 (all parts): tests for the assessment of surface cleanliness;
- ISO 8504 (all parts): surface preparation methods.

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

The primary objective of surface preparation is to ensure the removal of deleterious matter and to obtain a surface that permits satisfactory adhesion of the priming paint to the steel. It also assists in reducing the amounts of contaminants that initiate corrosion.

This document describes methods for hand- and power-tool cleaning. It should be read in conjunction with ISO 8504-1.

Hand- and power-tool cleaning are methods of surface preparation that generally provide a surface cleanliness which is inferior to that achieved by abrasive blast-cleaning. When a result similar to that of abrasive blast-cleaning is required, these methods need in most cases the use of more than one type of power tool, which makes surface preparation complicated and expensive. It is usually not possible to remove oil, grease and corrosion-stimulating substances such as chlorides and sulphates.

Power-tool cleaning will generally provide a better foundation for the priming paint than hand-tool cleaning, which results in better paint performance.

Hand- and power-tool cleaning are both suitable methods of surface preparation. Hand-tool cleaning particularly requires the use of priming paints having good surface wetting ability. Power-tool cleaning is appropriate when a higher-quality surface preparation grade is required and when blast-cleaning is not permitted or the interested parties decide that it is not feasible.

Representative photographic examples of St 2, St 3, PSt 2, PSt 3 and PMa are available (see ISO 8501-1 and ISO 8501-2) for assessing some new and previously coated steel surfaces cleaned using hand or

power tools. Because of the many different situations that arise in the preparation of surfaces, these photographs are not always sufficient to describe specific instances and it is recommended that special photographs of a treated reference area that are acceptable to the interested parties be produced for use as a basis for further surface preparation procedures.

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# Preparation of steel substrates before application of paints and related products — Surface preparation methods —

## Part 3: Hand- and power-tool cleaning

### 1 Scope

This document describes methods for hand-tool and power-tool cleaning of steel substrates before application of paints and related products. It is applicable both to new steelwork and to steel surfaces that have been coated previously and that show areas of breakdown requiring maintenance painting. It describes the equipment to be used and the procedures to be followed.

### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 8501-2, *Preparation of steel substrates before application of paints and related products — Visual assessment of surface cleanliness — Part 2: Preparation grades of previously coated steel substrates after localized removal of previous coatings*

### 3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

#### 3.1

##### **hand-tool cleaning**

method of preparing steel substrates by the use of hand tools, without power assistance

Note 1 to entry: Chipping hammers, hand scrapers, hand wire brushes, abrasive papers and plastic fleece with embedded abrasive are generally used. Hand-tool cleaning is sometimes carried out initially in order to remove relatively loose contaminants prior to the use of power tools.

#### 3.2

##### **power-tool cleaning**

method of preparing steel substrates by the use of power-assisted hand tools, but excluding blast-cleaning

Note 1 to entry: Rotary de-scalers, rotary wire brushes, rotary impact tools, sanding machines, sanding discs, rotary abrasive-coated paper wheels (flap wheels), abrasive grinders, plastic fleece with embedded abrasive, chipping hammers and needle guns, driven by electric or pneumatic power, or attached to a remote controlled or robotic equipment, are examples of equipment generally used.