



**SLOVENSKI STANDARD**  
**oSIST prEN ISO 8504-2:2019**  
**01-februar-2019**

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**Priprava jeklenih podlag pred nanašanjem barv in sorodnih premazov - Postopki priprave površine - 2. del: Peskanje z abrazivi (ISO/DIS 8504-2:2018)**

Preparation of steel substrates before application of paints and related products - Surface preparation methods - Part 2: Abrasive blast-cleaning (ISO/DIS 8504-2:2018)

Vorbereitung von Stahloberflächen vor dem Auftragen von Beschichtungsstoffen - Verfahren für die Oberflächenvorbereitung - Teil 2: Strahlen (ISO/DIS 8504-2:2018)

Préparation des subjectiles d'acier avant application de peintures et de produits assimilés - Méthodes de préparation des subjectiles - Partie 2: Décapage par projection d'abrasif (ISO/DIS 8504-2:2018)

**Ta slovenski standard je istoveten z: prEN ISO 8504-2**

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

### Part 2: Abrasive blast-cleaning

*Préparation des subjectiles d'acier avant application de peintures et de produits assimilés — Méthodes de préparation des subjectiles —*

*Partie 2: Décapage par projection d'abrasif*

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ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Fax: +41 22 749 09 47  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

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## ISO/DIS 8504-2:2018(E)

### 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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For an explanation on 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 the following URL: [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 third edition cancels and replaces the second edition (ISO 8504-2:2000), which has been technically revised.

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

- Normative references updated;
- Editorially revised.

ISO 8504 consists of the following parts, under the general title *Preparation of steel substrates before application of paints and related products* — *Surface preparation methods*:

- *Part 1: General principles*
- *Part 2: Abrasive blast-cleaning*
- *Part 3: Hand- and power-tool cleaning*

Further parts are planned.

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

## 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:

- the presence of rust and mill scale;
- the presence of surface contaminants, including salts, dust, oils and greases;
- 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 system 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. It will be necessary for the users of these International Standards to ensure 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 below 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.

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 steel. It should also assist in reducing the amounts of contaminants that initiate corrosion.

This part of ISO 8504 describes abrasive blast-cleaning methods. It should be read in conjunction with ISO 8504-1.

Abrasive blast-cleaning is a most effective method for mechanical surface preparation. It is widely applicable because this method of surface preparation has a number of versatile features listed below.

- a) The method allows a high production rate.
- b) The equipment can be stationary or mobile and is adaptable to the objects to be cleaned.
- c) The method is applicable to most types and forms of steel surface.
- d) Many different surface states can be produced, for example different preparation grades and surface profiles.
- e) Effects such as cleaning, peening, roughening, levelling and lapping can be produced.

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- f) It is possible to remove selectively partly failed coatings, leaving sound coatings intact.
- g) Abrasive ricochet (rebound) enables the cleaning of otherwise inaccessible areas.

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

## Part 2: Abrasive blast-cleaning

### 1 Scope

This part of ISO 8504 describes abrasive blast-cleaning methods for the preparation of steel surfaces before coating with paints and related products. It also contains information on the effectiveness of the individual methods and their fields of application. It describes the equipment to be used and the procedure to be followed.

ISO 8504 is applicable to new and corroded steel surfaces and to steel surfaces that are uncoated or have been previously coated with paints and related products. For limitations, see note 2.

NOTE 1 These methods are essentially intended for hot-rolled steel to remove mill scale, rust, etc., but could also be used for cold-rolled steel of sufficient thickness to withstand the deformation caused by the impact of abrasive.

NOTE 2 There are several items that should be included in the purchaser's procurement documents to supplement this part of ISO 8504. Items that should be considered as a part of surface preparation before coating are edge grinding, removal of grease and oil, porosity of welds, removal of weld spatter, removal of burrs and other sharp edges, grinding of welds, filling of pits and other surface imperfections that may cause premature failure of the coating system (see ISO 8501-3 for more information) and the removal of water-soluble contaminants.

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### 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 4628-3, *Paints and varnishes — Evaluation of degradation of coatings — Designation of quantity and size of defects, and of intensity of uniform changes in appearance — Part 3: Assessment of degree of rusting*

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*

ISO 8501-3, *Preparation of steel substrates before application of paints and related products — Visual assessment of surface cleanliness — Part 3: Preparation grades of welds, edges and other areas with surface imperfections*

ISO 8501-4, *Preparation of steel substrates before application of paints and related products — Visual assessment of surface cleanliness — Part 4: Initial surface conditions, preparation grades and flash rust grades in connection with high-pressure water jetting*

ISO 8502-2, *Preparation of steel substrates before application of paints and related products — Tests for the assessment of surface cleanliness — Part 2: Laboratory determination of chloride on cleaned surfaces*

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ISO 8502-3, *Preparation of steel substrates before application of paints and related products — Tests for the assessment of surface cleanliness — Part 3: Assessment of dust on steel surfaces prepared for painting (pressure-sensitive tape method)*

ISO 8502-9, *Preparation of steel substrates before application of paints and related products — Tests for the assessment of surface cleanliness — Part 9: Field method for the conductometric determination of water-soluble salts*

ISO 8503-1, *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 8503-2, *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 8504-1, *Preparation of steel substrates before application of paints and related products — Surface preparation methods — Part 1: General principles*

ISO 8504-3, *Preparation of steel substrates before application of paints and related products — Surface preparation methods — Part 3: Hand- and power-tool cleaning*

ISO 11124 (all parts), *Preparation of steel substrates before application of paints and related products — Specifications for metallic blast-cleaning abrasives*

ISO 11126 (all parts), *Preparation of steel substrates before application of paints and related products — Specifications for non-metallic blast-cleaning abrasives*

ISO 12944-4, *Paints and varnishes — Corrosion protection of steel structures by protective paint systems — Part 4: Types of surface and surface preparation*

### 3 Terms and definitions

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

#### 3.1

##### **abrasive blast-cleaning**

impingement of a high-kinetic-energy stream of abrasive on to the surface to be prepared

Note 1 to entry: The abrasive is typically propelled either by centrifugal force or by a high-velocity stream of fluid such as air or water to remove rust, mill scale, existing coatings and other contaminants and expose the substrate. The cleaned surface has a characteristic secondary profile dependent on the blast-cleaning conditions, the properties of the abrasive, the initial condition of the surface and the properties of the steel being blast-cleaned. The initial surface roughness or primary profile may be altered by the abrasive blast-cleaning procedure. Surface profiles are assessed using the method described in ISO 8503-2. When selecting a surface preparation method, it is necessary to consider the preparation grade required to give a level of surface cleanliness and, if required, a surface profile (roughness), such as coarse, medium or fine (see ISO 8503-1 and ISO 8503-2), appropriate to the coating system to be applied to the steel surface. Since the cost of surface preparation is usually in proportion to the level of cleanliness, a preparation grade appropriate to the purpose and type of coating system or a coating system appropriate to the preparation grade which can be achieved should be chosen.

#### 3.2

##### **blast-cleaning abrasive**

solid material intended to be used for abrasive blast-cleaning

#### 3.3

##### **shot**

particles that are predominantly round, that have a length of less than twice the maximum particle width and that do not have edges, broken faces or other sharp surface defects

### 3.4 grit

particles that are predominantly angular, that have fractured faces and sharp edges and that are less than half-round in shape

### 3.5 cylindrical particles

sharp-edged particles, having a diameter-to-length ratio of 1:1, cut so that their faces are approximately at right angles to their centreline

## 4 Abrasives

### 4.1 Materials and types

**4.1.1** A wide variety of natural and synthetic solid materials and several liquids are used for abrasive blast-cleaning. Solid materials commonly in use for the preparation of steel surfaces before coating are given in Table 1. Each material provides a characteristic performance and surface finish.

When selecting a blast-cleaning abrasive, the following factors relating to its initial condition shall be considered:

- sub-group and type (see [Table 1](#));
- indication of chemical composition;
- range of particle size (see [4.1.2](#));
- particle hardness (for example Vickers, Rockwell or Mohs, or as measured by another appropriate method). International Standards for metallic and non-metallic blast-cleaning abrasives are listed for information in [annex A](#).

**4.1.2** The size and shape of the particles of an abrasive may change during use or re-use and this change can affect the resultant surface texture of the blast-cleaned steel.

**Table 1 — Commonly used blast-cleaning abrasives for steel substrate preparation**

Type			Abbrevia- tion	Initial parti- cle shape (see <a href="#">Table 2</a> )	Compara- tor <sup>a</sup>	Remarks
Metallic (M) blast-cleaning abrasives <sup>c</sup>	Cast iron	Chilled	M/CI	G	G	Mainly for compressed- air blast- cleaning
	Cast steel	High-carbon	M/HCS	S or G	S or G <sup>b</sup>	Mainly for centrifugal blast-clean- ing
		Low-carbon	M/LCS	S	S	
	Cut steel wire	—	M/CW	C	S <sup>b</sup>	

<sup>a</sup> Comparator to be used when assessing the resultant surface profile. The method for evaluating the surface profile by comparator is described in ISO 8503-2.

<sup>b</sup> Certain types of abrasive rapidly change their shape when used. As soon as this happens, the appearance of the surface profile changes and becomes closer to that of the "shot" comparator.

<sup>c</sup> International Standards for the range of abrasives given here are listed in [annex A](#): the ISO 11124 series for metallic blast-cleaning abrasives and the ISO 11126 series for non-metallic blast-cleaning abrasives.

<sup>d</sup> Certain types of abrasive, depending on hardness, rapidly change their shape when used. As soon as this happens the appearance of the profile changes and becomes more similar to that of the "shot" comparator.