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Corrosion of metals and alloys — Rating method by appearance of rust and stains of atmospheric corrosion for stainless steels

ICS: 77.060

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Foreword

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This document was prepared by Technical Committee ISO/TC156, Corrosion of Metals and Alloys.

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Introduction

Stainless steels contain at least 10,5 % Cr and are widely used in domestic electric utilities, kitchen utensils, transportation vehicles and industrial plants. Corrosion-resistant stainless steels are also used as architectural materials, for example, exterior parts and roofs of buildings. Furthermore, stainless steels are used as braid materials for automotive parts.

Corrosion loss and pitting depth are important factors for selecting, deciding the thickness and estimating the lifetime of materials. Aesthetic appearance is also important for stainless steels used in exterior parts. Therefore, a method for evaluating the appearance of stainless steels under atmospheric exposure has been required.

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Corrosion of metals and alloys — Rating method by appearance of rust and stains of atmospheric corrosion for stainless steels

1 Scope

This International Standard specifies a method for evaluating the aesthetic appearance of stainless steels qualitatively by rating rust and stains formed by atmospheric corrosion. The rust and stains on stainless steels formed by atmospheric corrosion shall be rated by using 10 photographic standards.

This method is especially suitable for evaluating the appearance of specimens and structures made of stainless steels under atmosphere exposure.

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 8044, *Corrosion of metals and alloys — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 8044 and the following 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 stain

visible mark of corrosion products consisting mainly of hydrated iron and chromium oxides

3.2 rating number

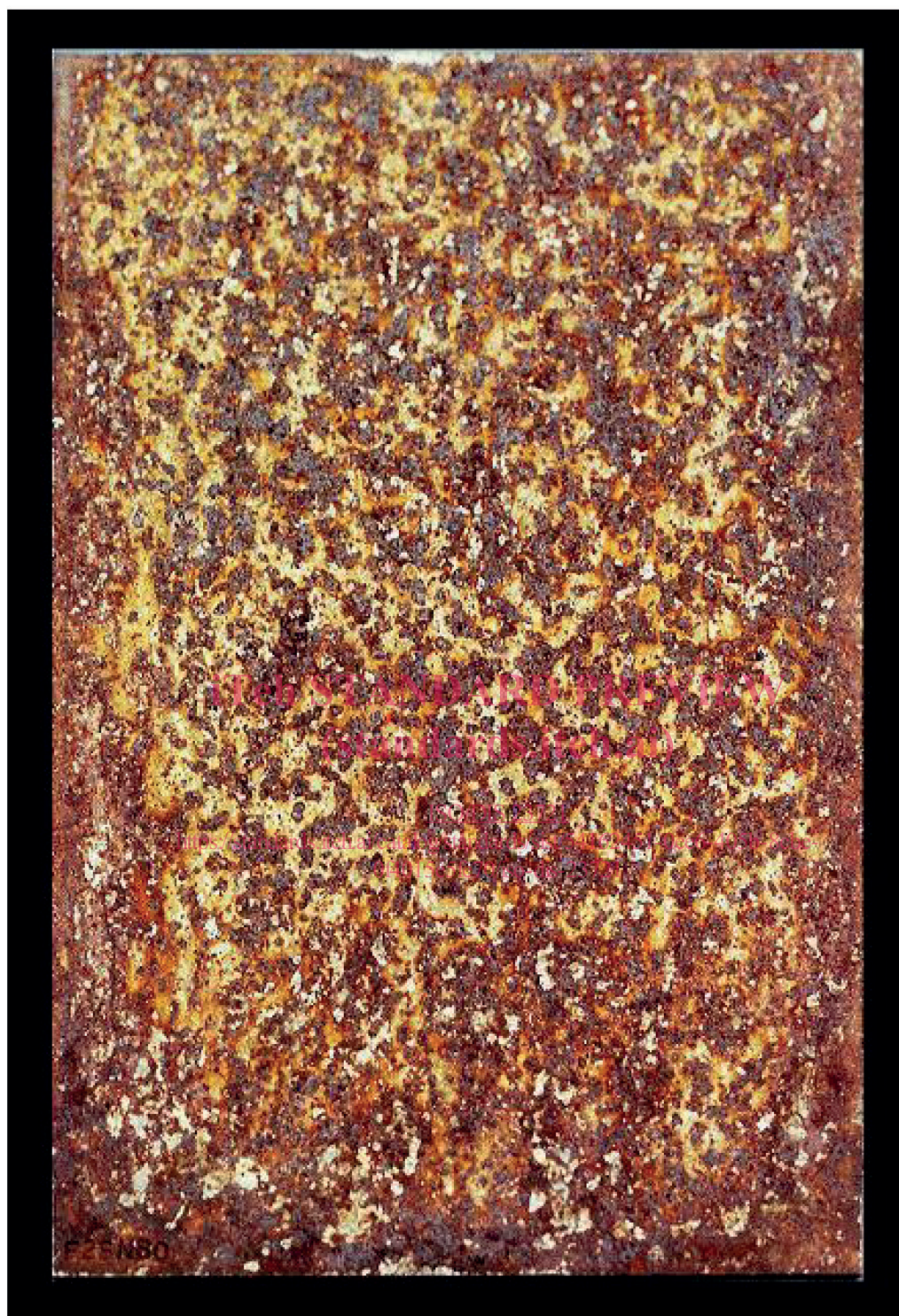
number rated according to the degree of rust and stains formed by atmospheric corrosion

4 Principle

4.1 Photographic standard

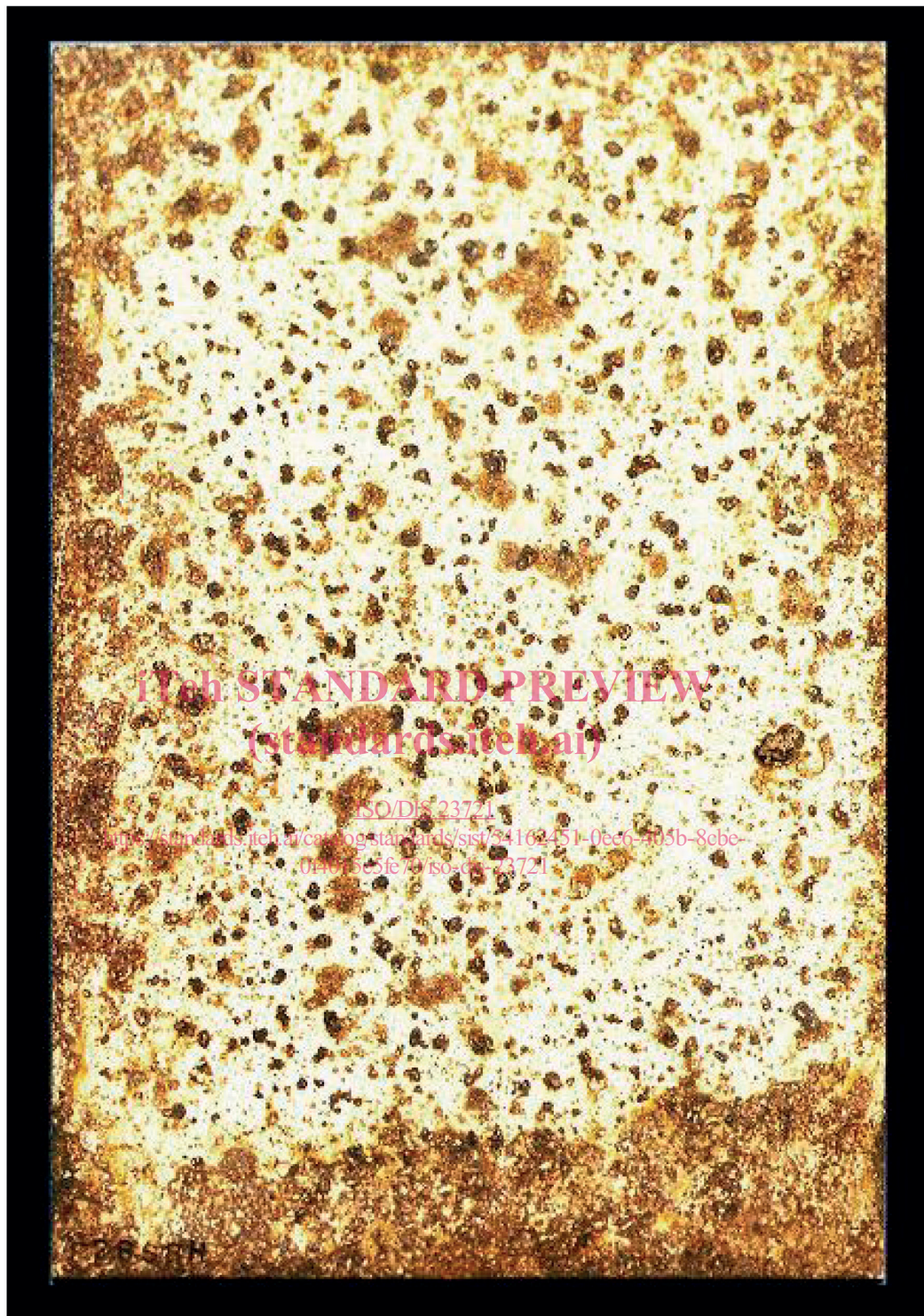
Rust and stains on stainless steels formed by atmospheric corrosion shall be rated by using 10 photographic standards, in which the total area of rust and stains changes in the range of 0 % to 100 %. The photographic standards are shown in [Figure 1](#) to [Figure 10](#). The specimen size in the figures is 100 mm in width and 150 mm in length.

Each of these photos is assigned a rating number (RN) of 0, 1, 2, 3, 4, 5, 6, 7, 8 or 9. RN 0 corresponds to the total area of rust and stains of substantially 100 % and RN 9 corresponds to the total area of rust and stains of 0.01 % or less (See [Table A.1](#)).



10mm

Figure 1 — Rating number RN 0



10mm

Figure 2 — Rating number RN 1

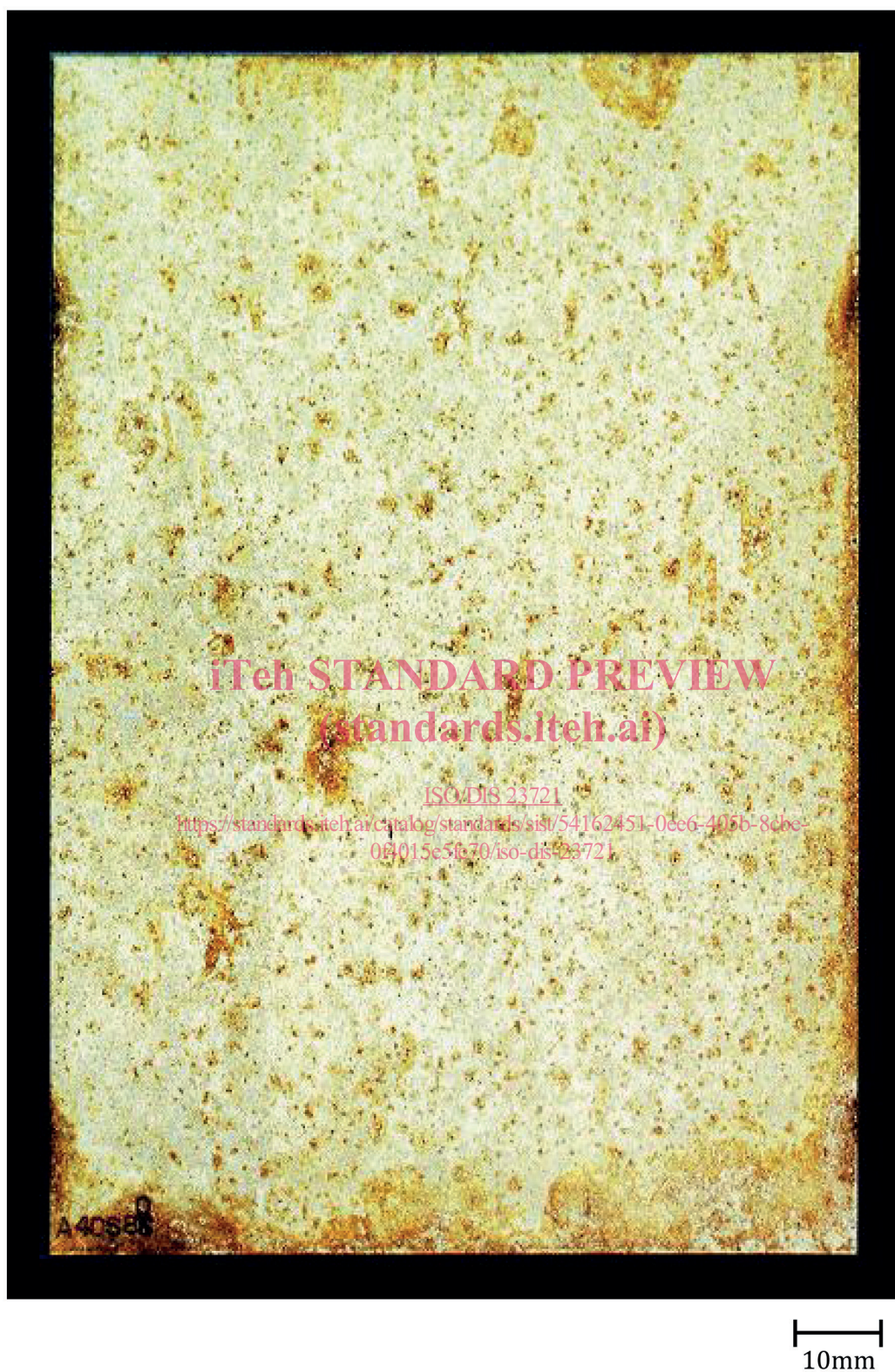
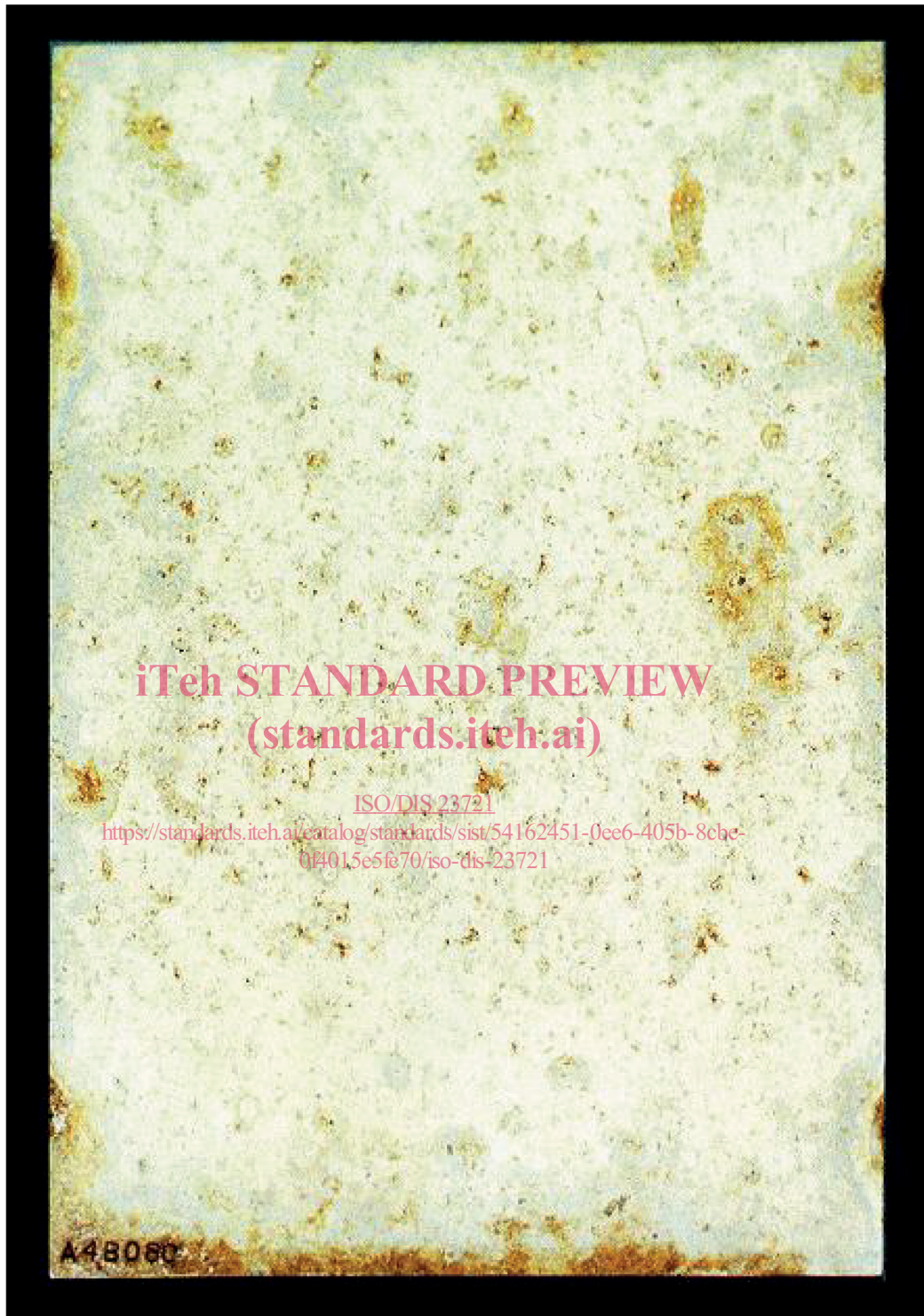


Figure 3 — Rating number RN 2



10mm

Figure 4 — Rating number RN 3