INTERNATIONAL STANDARD

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Paints and varnishes — Evaluation of quantity and size of defects, and of intensity of uniform changes in appearance —

Part 5: Assessment of degree of flaking

Peintures et vernis — Évaluation de la quantité et de la dimension des défauts, et de l'intensité des changements uniformes d'aspect —

Partie 5: Évaluation du degré d'écaillage

Reference number
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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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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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.

This document was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Subcommittee SC 9, *General test methods for paints and varnishes*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 139 *Paints and varnishes,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fourth edition cancels and replaces the third edition (ISO 4628-5:2016), which has been technically revised.

The main changes are as follows:

— the title has been shortened to three elements;

— amendments have been made to Table 2 to clarify how the size of flaking is assessed;

— the text has been editorially revised.

A list of all parts in the ISO 4628 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.

Paints and varnishes — Evaluation of quantity and size of defects, and of intensity of uniform changes in appearance —

Part 5: Assessment of degree of flaking

1 Scope

This document specifies a method for assessing the degree of flaking of coatings by comparison with pictorial standards.

ISO 4628-1 specifies the system used for designating the quantity and size of defects and the intensity of changes in appearance of coatings. It also outlines the general principles of the system. This system is intended to be used, in particular, for defects caused by ageing and weathering, and for uniform changes such as colour changes, for example yellowing.

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 13076, *Paints and varnishes — Lighting and procedure for visual assessments of coatings*

3 Terms and definitions

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

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
degree of flaking
rating characterizing flaked areas in a coating in terms of quantity, size, and depth

4 Assessment

Assess the quantity of flaking by referring to Table 1 and using Figure 1 or Figure 2 as examples, depending on the type of flaking.

Figure 1 shows flaking without preferential direction and Figure 2 shows flaking in a preferential direction due to anisotropy of the substrate.

Table 1 — Rating scheme for designating the quantity of flaking

Rating	Flaked area %
0	0
1	0,1
2	0,3
3	1
4	3
5	15

Assess the average size of the individual areas exposed by flaking in accordance with Table 2.

Table 2 — Rating scheme for designating the size of areas exposed by flaking

Rating	Size of flaking (largest dimension)
0	not visible under × 10 magnification
1	up to 1 mm
2	up to 3 mm
3	up to 10 mm
4	up to 30 mm
5	larger than 30 mm

Where a test area exhibits flaked areas of various sizes, quote as the size rating the largest areas, which are numerous enough to be typical of the test area.

If possible, indicate the depth of flaking by reference to the level in the coating system where failure occurs. A distinction is made between two main types of failure by flaking:

— coat(s) flaking from underlying coat (type a);

— the whole coating system flaking from substrate (type b).

Carry out the assessment under good illumination, as specified in ISO 13076.

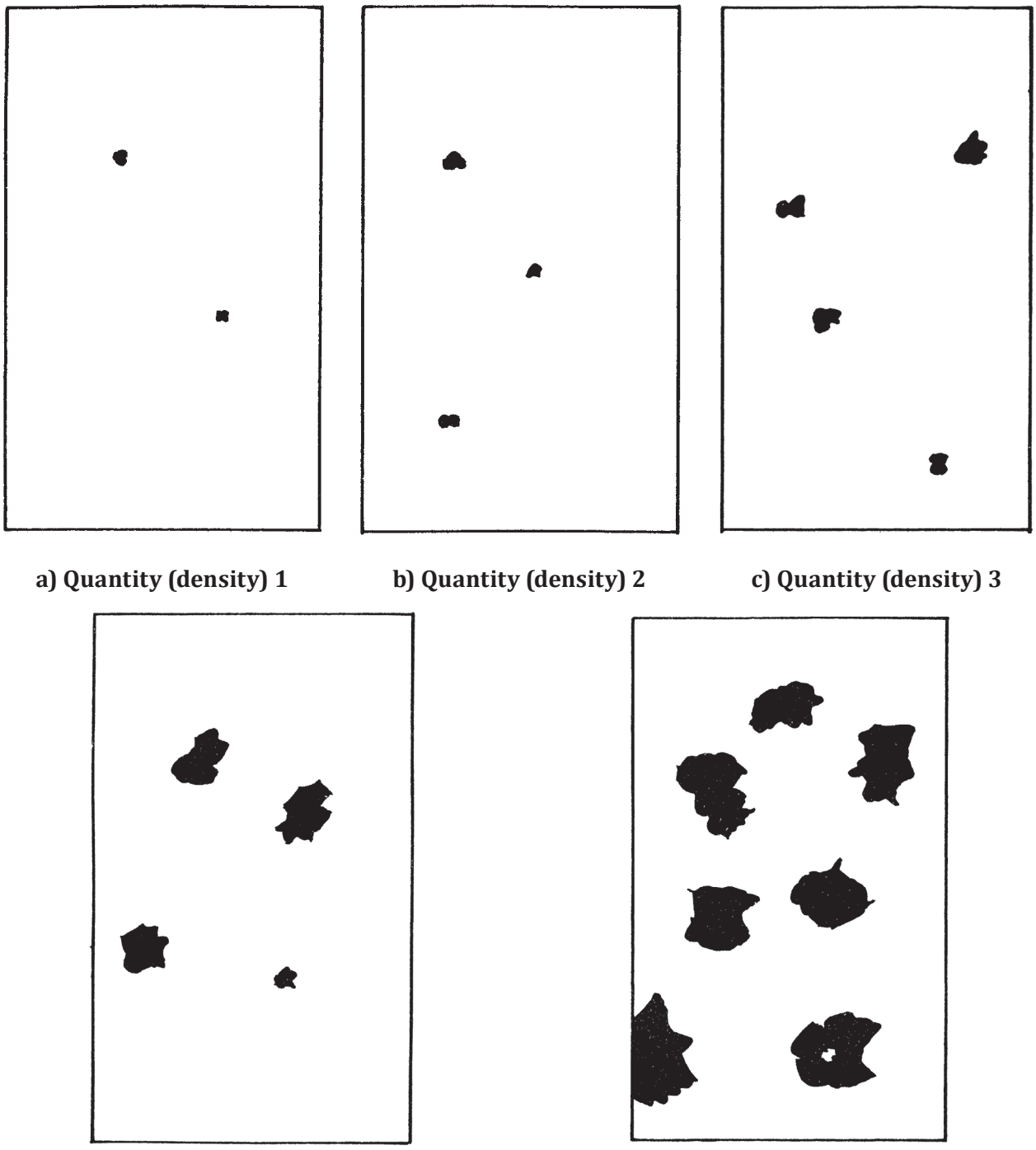
5 Expression of results

Express the numerical ratings of the quantity and size of flaking, where possible together with the depth of flaking (type a or b), shown in Figures 1 and 2, together with the approximate dimensions of the area concerned, or its proportion to the total area, expressed as a percentage.

For example, for quantity 3, size 2, with the whole coating system flaking from the substrate (type b), report the result as:

— flaking; degree of flaking 3(S2)b.

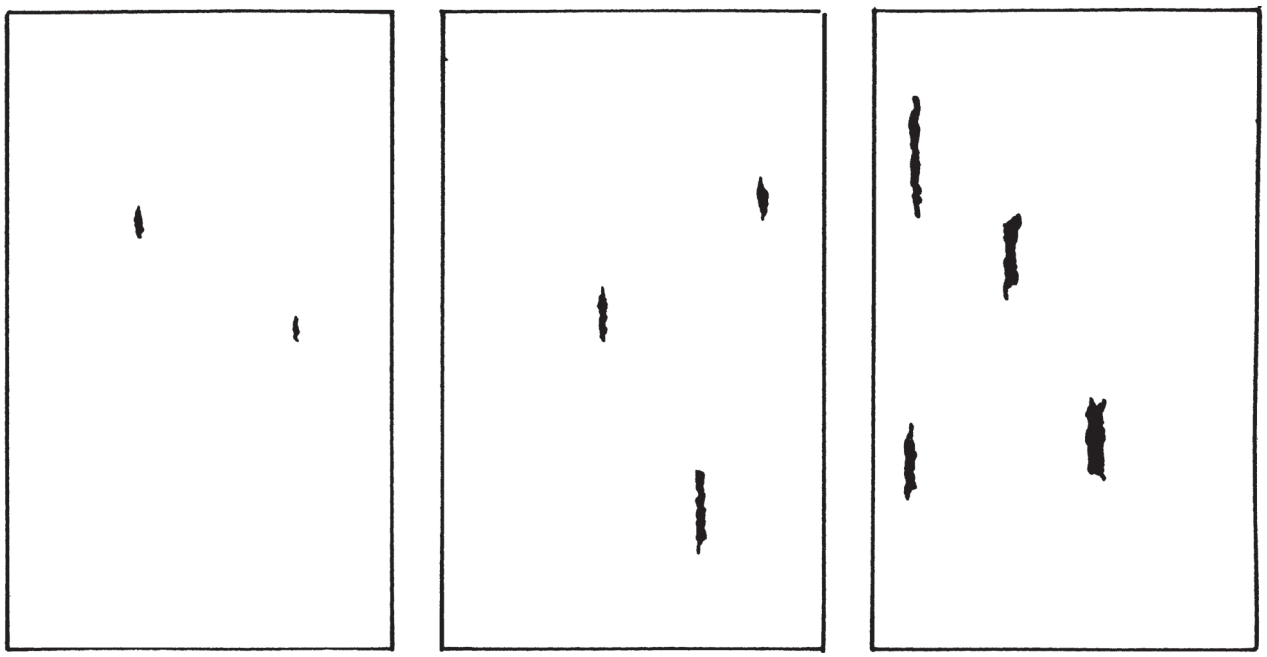
If necessary, the assessment may be amplified in words.



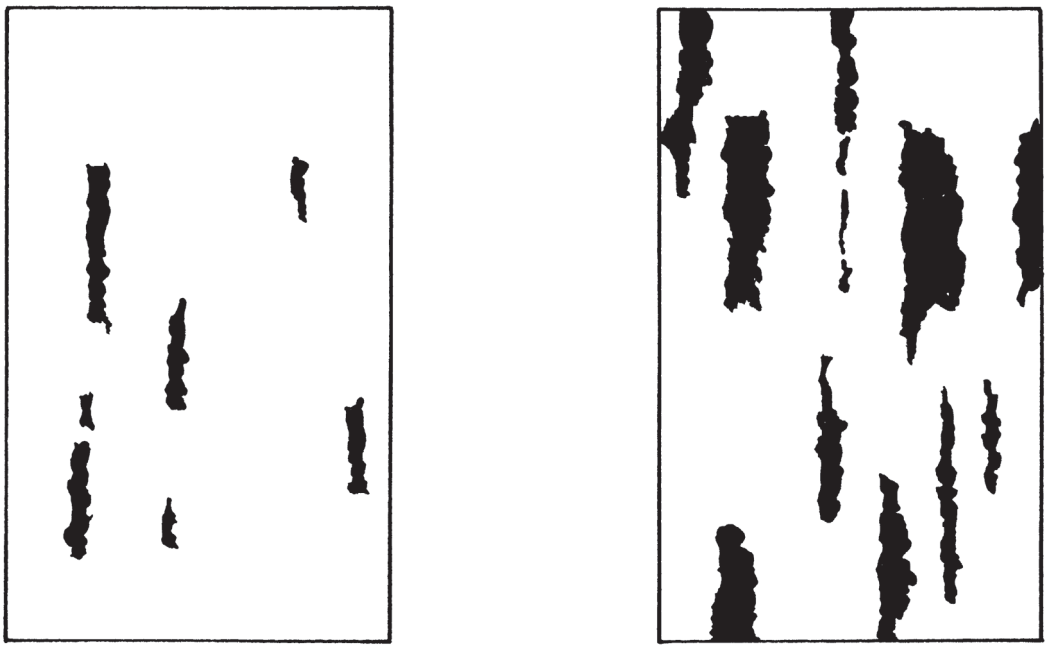
a) Quantity (density) 1 b) Quantity (density) 2 c) Quantity (density) 3

d) Quantity (density) 4 e) Quantity (density) 5

Figure 1 — Flaking without preferential direction (panels of 100 cm^2 to 200 cm^2)



a) Quantity (density) 1 b) Quantity (density) 2 c) Quantity (density) 3



d) Quantity (density) 4 e) Quantity (density) 5

Figure 2 — Flaking in a preferential direction (panels of 100 cm^2 to 200 cm^2)

6 Test report

The test report shall contain at least the following information:

a) all details necessary to identify the coating examined;

b) a reference to this document, i.e. ISO 4628-5:2022;

c) the type of surface examined, its size and, if appropriate, its location;

d) the result of the assessment in accordance with Clause 5;

e) an indication of the illumination under which the assessment was carried out;

f) any deviations from the procedure specified;

g) any unusual features (anomalies) observed during the assessment;

h) the date of the examination.

Bibliography

[1] ISO 4628-1, *Paints and varnishes — Evaluation of degradation of coatings — Designation of quantity and size of defects, and of intensity of uniform changes in appearance — Part 1: General introduction and designation system*

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