INTERNATIONAL STANDARD

ISO 4628-1

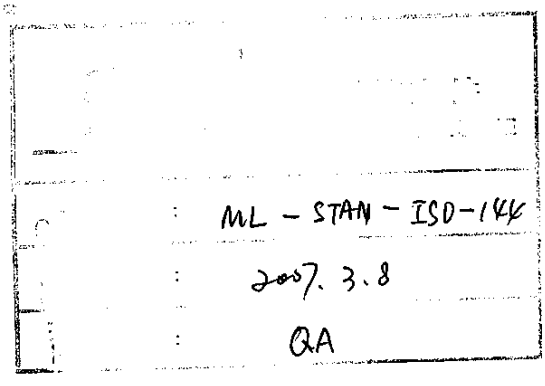
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Paints and varnishes — Evaluation of degradation of coatings — Designation of quantity and size of defects, and of intensity of uniform changes in appearance —

Part 1: General introduction and designation system

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

Partie 1: Introduction générale et système de désignation



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.

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 4628-1 was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Subcommittee SC 9, *General test methods for paints and varnishes*.

This third edition cancels and replaces the second edition (ISO 4628-1:1982), of which it constitutes a mainly editorial revision.

ISO 4628 consists of the following parts, under the general title *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*

— *Part 2: Assessment of degree of blistering*

— *Part 3: Assessment of degree of rusting*

— *Part 4: Assessment of degree of cracking*

— *Part 5: Assessment of degree of flaking*

— *Part 6: Assessment of degree of chalking by tape method*

— *Part 7: Assessment of degree of chalking by velvet method*

— *Part 8: Assessment of degree of delamination and corrosion around a scribe*

— *Part 10: Assessment of degree of filiform corrosion*

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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

1 Scope

This part of ISO 4628 defines a system for designating the quantity and size of defects and the intensity of changes in appearance of coatings and outlines the general principles of the system used throughout ISO 4628. 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.

The other parts of ISO 4628 provide pictorial standards or other means of evaluating particular types of defect. As far as possible, already existing evaluation schemes have been used as the basis.

This part of ISO 4628 can also be used for assessing defects not covered by the other parts of ISO 4628.

2 General principles of the designation system

A uniform convention has been adopted for designating the quantity and size of defects and the intensity of changes by means of ratings on a numerical scale ranging from 0 to 5, 0 denoting no defects or changes, and 5 denoting defects or changes so severe that further discrimination is not reasonable. The other ratings, corresponding to the numbers 1, 2, 3 and 4, are so defined that they give optimum discrimination over the whole range of the scale.

The use of intermediate half-steps is permissible, if specified, to give a more detailed report on the defects or changes observed.

NOTE 1 The quantity of small defects scattered over the test area may be assessed by means of a grid method. Details of such a method are described in ISO 4540, *Metallic coatings — Coatings cathodic to the substrate — Rating of electroplated test specimens subjected to corrosion tests.*

NOTE 2 The ISO ranking may be different from the ranking schemes used in other standards, e.g. the rusting evaluation ASTM D 610, *Standard Test Method for Evaluating Degree of Rusting on Painted Steel Surfaces*, where ranking is from 10 to 1, with 10 meaning no change and 1 meaning greatest change.

In addition to the ratings, the approximate dimensions of the area concerned shall be given, or the proportion of the area concerned compared with the total area, expressed as a percentage.

3 Assessment of defects and of intensity of changes

3.1 General

Carry out the assessment under good illumination.

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3.2 Designation of quantity of defects

The quantity of defects in the form of discontinuities or other local imperfections in the coating, scattered over the test area in a more or less even pattern, is designated in accordance with Table 1. The ratings shall be expressed as a whole number unless otherwise specified (see Clause 2).

Table 1 — Rating scheme for designating the quantity of defects

Rating	Quantity of defect
0	none, i.e. no detectable defects
1	very few, i.e. small, barely significant number of defects
2	few, i.e. small but significant number of defects
3	moderate number of defects
4	considerable number of defects
5	dense pattern of defects

3.3 Designation of size of defects

The average size (order of magnitude) of defects is designated, if required and meaningful, in accordance with Table 2.

Table 2 — Rating scheme for designating the size of defects

Rating	Size of defect [a]
0	not visible under × 10 magnification
1	only visible under magnification up to × 10
2	just visible with normal corrected vision
3	clearly visible with normal corrected vision (up to 0,5 mm)
4	0,5 mm to 5 mm
5	larger than 5 mm

[a] Unless otherwise specified in subsequent parts of this International Standard.

Where a test area exhibits defects of various sizes, the size of the largest defects which are numerous enough to be typical of the test area shall be quoted as the size rating. The size of the defect shall be reported using the designation Sn where S indicates the size and n is the rating number. For example, a defect which is just visible with normal corrected vision is designated S2.

3.4 Designation of intensity of changes

The intensity of uniform changes in the appearance of the coating, such as colour changes, for example yellowing, is designated in accordance with Table 3. The ratings shall be expressed as a whole number unless otherwise specified (see Clause 2).

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Table 3 — Rating scheme for designating the intensity of changes

Rating	Intensity of change
0	unchanged, i.e. no perceptible change
1	very slight, i.e. just perceptible change
2	slight, i.e. clearly perceptible change
3	moderate, i.e. very clearly perceptible change
4	considerable, i.e. pronounced change
5	very marked change

4 Expression of results

The type of defect, the quantity present (Table 1) and its size (Table 2) shall be expressed as indicated in the following examples:

blistering; degree of blistering 2(S2)[1)];

flaking; degree of flaking 3(S2)[2)];

together with the approximate dimensions of the area concerned, or its proportion of the total area, expressed as a percentage.

If necessary, the test result may be amplified in words, for example "confined to edges" or "blistering of top coat down to intermediate coat".

The type of change and its intensity (Table 3) shall be expressed as indicated in the following example:

chalking 4;

together with the approximate dimensions of the area concerned, or its proportion of the total area, expressed as a percentage.

5 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 part of ISO 4628 (ISO 4628-1:2003);

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

d) the result of the assessment in accordance with Clause 4;

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

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

g) the date of the examination.

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1) i.e. quantity 2/size 2.

2) i.e. quantity 3/size 2.

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