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Paints and varnishes — Vocabulary

Peintures et vernis — Vocabulaire

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Contents		Page
Foreword		iv
1 Scope		1
2 Normative references		1
3 Terms and definitions		1
Bibliography		35
Index		36

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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*, 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 third edition cancels and replaces the second edition (ISO 4618:2014), which has been technically revised.

The main changes are as follows:

- the title has been changed from “Terms and definitions” to “Vocabulary”;
- the following terms have been added: brush marks, catalyst, clouding, cold checking, conventional spraying, crater, creeping, dirt-resistant paint, distinctness of image, DOI, drawdown blade, dry spray, film applicator, flocculate, nanocomposite coating, nanoparticle, particle, pigment-binder ratio, primary particle, semi-volatile organic compound, semi-volatile organic compound content, SVOC, SVOC content, SVOCC;
- the following terms have been deleted: after tack, brush-drag, bubbling, cratering, cutting-in, dilatant flow behaviour, flash point, flocculation, flow properties, graining, marbling, pseudoplastic flow behaviour, rheopexy, rheoplectic behaviour, rust back, shear-thickening flow behaviour, shear-thinning behaviour, sheen, tack-free, thixotropic behaviour, thixotropy, UV-curing, viscoelasticity, viscosity, yield point, yield stress, yield value;
- many definitions have been amended;
- the text has been editorially revised and the bibliography and scope have been updated.

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 — Vocabulary

1 Scope

This document defines terms used in the field of coating materials (paints, varnishes and raw materials for paints and varnishes).

Terms relating to specific applications and properties are dealt with in standards concerning those applications and properties, including corrosion protection (see the ISO 12944 series), coating powders (see ISO 8130-14), electro-deposition coatings (see ISO 22553-1) and rheology (see ISO 3219-1).

Terms on nanotechnologies are harmonized with the ISO 80004 series.

Terms on pigments and extenders are harmonized with ISO 18451-1.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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/>

<https://standards.iteh.ai/catalog/standards/sist/9d88b3ba-f667-4d0a-b59a-4a46fbfe3098/iso-4618-2023>

3.1

abrasion

<testing of coatings> process of removing matter or deformation of a surface by friction as a result of rubbing

3.2

abrasion

<surface preparation> process of removing matter in the surface as a result of friction or impact

3.3

accelerator

additive (3.6) to increase the speed of chemical reactions

3.4

acid value

mass in milligrams of potassium hydroxide (KOH) required to neutralize 1 g of a sample under specified test conditions

3.5

acrylic resin

synthetic resin (3.249) resulting from the polymerization or copolymerization of acrylic and/or methacrylic monomers, frequently together with other monomers

**3.6
additive**

substance, which, when added in small quantities to a *coating material* (3.48), improves or modifies one or more properties

Note 1 to entry: A surfactant or surface-active agent is an additive that has the fundamental property of reducing the interfacial tension between a solid and liquid or a liquid and air.

**3.7
adhesion**

phenomenon of attachment at the interface between a solid surface and another material caused by molecular forces

Note 1 to entry: Adhesion should not be confused with *cohesion* (3.52).

**3.8
adhesive strength**

force required to detach a *coating* (3.46) from a *substrate* (3.245) or another coating

**3.9
aerosol**

solid or liquid particles in *dispersion* (3.83) in a gaseous medium

**3.10
ageing**

change of one or more initial properties of a *coating* (3.46) during the passage of time

**3.11
alkyd resin**

synthetic resin (3.249) resulting from the polycondensation of fatty acids (or oils) and carbonic acids with polyols

**3.12
amino resin**

synthetic resin (3.249) resulting from the condensation of urea or melamine or derivatives such as benzo-guanamine with formaldehyde

Note 1 to entry: These *resins* (3.211) are often etherified with alcohols.

**3.13
anti-blocking agent**

additive (3.6) that usually rises to the surface during the *drying* (3.88) process and thus prevents *blocking* (3.27)

**3.14
anti-foaming agent**

additive (3.6) that prevents foaming or reduces the foaming tendency of a *coating material* (3.48)

Note 1 to entry: See also *defoaming agent* (3.74).

**3.15
anti-fouling paint**

coating material (3.48) applied on a structure to prevent the accumulation of fouling or biological growth

**3.16
anti-settling agent**

additive (3.6) that prevents or retards the *settling* (3.229) of *pigments* (3.193) and/or *extenders* (3.104) during storage of a *coating material* (3.48)

3.17**anti-skinning agent**

additive (3.6) that prevents or retards *skinning* (3.236) caused by oxidation during storage

3.18**apparent density**

ratio between the mass and the volume of a non-tamped powder

Note 1 to entry: See also *bulk density* (3.35) and *tamped density* (3.251).

3.19**appearance**

visual characteristics of a surface

Note 1 to entry: Appearance is not a single measure or a general property of a material. It is not characterized by a single parameter but a combination of *colour* (3.55), *gloss* (3.132), *distinctness of image* (3.85), *haze* (3.136), surface structure, *texture* (3.254), *orange peel* (3.178), etc.

Note 2 to entry: The word appearance has no special paint related meaning but is included here for clarification for non-English speakers.

3.20**application rate**

quantity of a *coating material* (3.48) that is required to produce, under defined working conditions, a dry *film* (3.111) or *coat* (3.45) of given thickness on unit area

3.21**barrier coating material**

coating material (3.48) used to isolate a *coating system* (3.51) from the *substrate* (3.245) to which it is applied, in order to prevent chemical or physical interaction

Note 1 to entry: A barrier coating material e.g. prevents *bleeding* (3.25) or migration from an underlying *coat* (3.45) or substrate.

Note 2 to entry: The German term "Isoliermittel" which is still currently used should be avoided, in order to prevent confusion with heat- and sound-deadening materials as well as with electrical insulators.

3.22**binder**

non-volatile part of a *medium* (3.153)

Note 1 to entry: The main purpose of the binder is to build-up a network around the coating components.

3.23**biocide**

additive (3.6) added to a *coating material* (3.48) to prevent organisms responsible for microbiological degradation from attacking a *substrate* (3.245), a coating material or a *film* (3.111) thereof

3.24**blast-cleaning**

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

3.25**bleeding, verb**

migration of a coloured substance from a material into another material in contact with it, which can produce an undesirable staining or discoloration

Note 1 to entry: The substance can be a constituent of the *coating* (3.46) or of the *substrate* (3.245) to which the coating is applied.

3.26**blister**

convex deformation in a coating, arising from local detachment of one or more of the constituent coats

3.27

blocking

unwanted *adhesion* (3.7) between two surfaces, at least one of which has been coated, when they are left in contact under load after a given *drying* (3.88) period

3.28

blooming

migration of a substance to form a deposit on the *coating* (3.46) surface

Note 1 to entry: Blooming can occur when the amount of condensate causes soluble compounds to migrate from the body of the coating to the coating surface.

Note 2 to entry: The substance can be a constituent of the coating or of the *substrate* (3.245) to which the coating is applied.

3.29

blushing, noun

optical property of a transparent or translucent *film* (3.111) that gives a milky *appearance* (3.19) or tint, with iridescent reflections reminiscent of opal

Note 1 to entry: Blushing can be caused by the deposition of moisture from the air and/or precipitation of one or more of the solid constituents of the lacquer.

3.30

brightness

combination of the lightness and *colour* (3.55) intensity of a material

Note 1 to entry: Lightness is most commonly expressed numerically by the tristimulus value Y.

3.31

brittleness

condition whereby a *film* (3.111) or *coat* (3.45) has such poor *flexibility* (3.122) that it disintegrates easily into small fragments

3.32

bronzing

intentional change in the *colour* (3.55) of the surface of an object by coating, giving the *appearance* (3.19) of aged bronze

Note 1 to entry: An unintentional colour change is left out in the definition, as it is no longer applicable for actual *pigments* (3.193).

3.33

brush marks

ridges remaining in a dry *coat* (3.45) after brush application

3.34

bubble

closed or open spherical cavity in a coating, often caused by evaporating *solvents* (3.237)

3.35

bulk density

ratio of mass to volume of a powder when poured gently under specified conditions

Note 1 to entry: The value of the bulk density depends to a large extent on the method of measurement used and the manner in which it is carried out.

Note 2 to entry: See also *tamped density* (3.251).

3.36

burning off

process in which the *coating* (3.46) is changed by heat and then removed

3.37**catalyst**

substance that promotes the chemical *curing* (3.71) of a *coating* (3.46)

3.38**chalking**

surface change in the form of a loosely adherent powder which appears with degradation of a *coating* (3.46)

3.39**checking**

form of fine cracks which do not penetrate to the *substrate* (3.245) distributed over the surface of a dry *film* (3.111) or *coat* (3.45) in a more or less regular pattern

Note 1 to entry: An example of checking is shown in [Figure 1](#).



Figure 1 — Checking

3.40**chemical pretreatment**

chemical process applied to a surface prior to the application of a *coating material* (3.48)

Note 1 to entry: See *phosphating* (3.191).

3.41**chipping**

removal, in flakes, of a *coating* (3.46) or rust or *mill scale* (3.156) by use of hand or power tools

3.42**chlorinated rubber**

polymeric material resulting from the action of chlorine on natural and/or synthetic rubber

3.43**cissing**

appearance (3.19) in a *coating* (3.46) of areas of non-uniform thickness which vary in extent and distribution

3.44**coalescing agent**

additive (3.6) added to a *coating material* (3.48) based on a *polymer dispersion* (3.200) to facilitate *film formation* (3.112)

3.45

coat

continuous layer of a *coating material* (3.48) resulting from a single application

Note 1 to entry: In some industries the word coat is used interchangeably with *film* (3.111).

3.46

coating

layer formed from a single or multiple *coats* (3.45) of one specific *coating material* (3.48) to a *substrate* (3.245)

3.47

coating

process of applying a coat

3.48

coating material

DEPRECATED: coating

product, in liquid, paste or powder form, that, when applied to a *substrate* (3.245), forms a layer possessing protective, decorative and/or other specific properties

3.49

coating powder

coating material (3.48) in powder form which, after fusing and possibly *curing* (3.71), gives a continuous *coat* (3.45)

3.50

coating process

application of a *coating material* (3.48) to a *substrate* (3.245)

3.51

coating system

layer combined of all coats of the same or multiple *coating materials* (3.48)

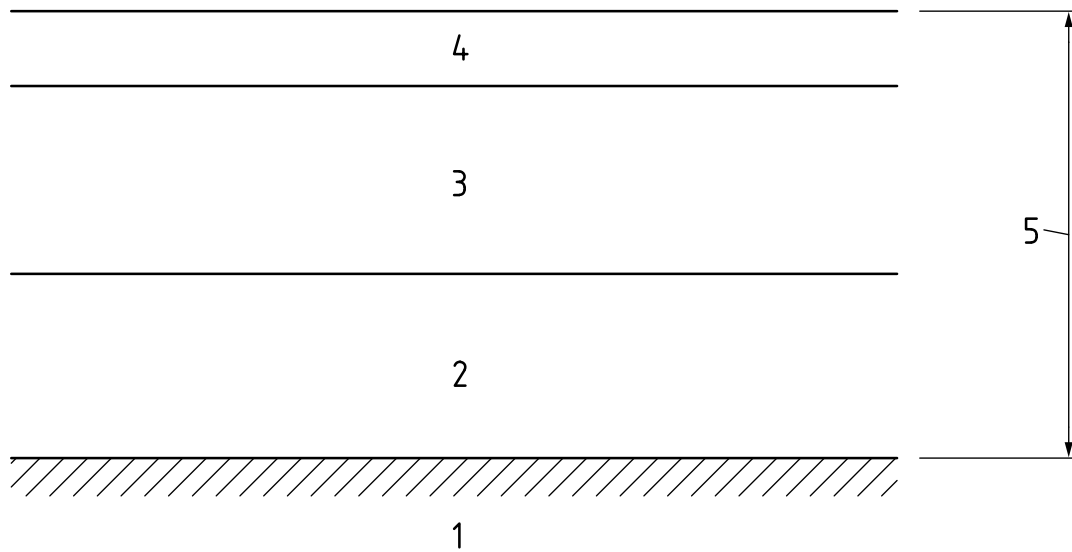
Note 1 to entry: Examples of multiple coating systems are shown in [Figure 2](#) and [Figure 3](#).

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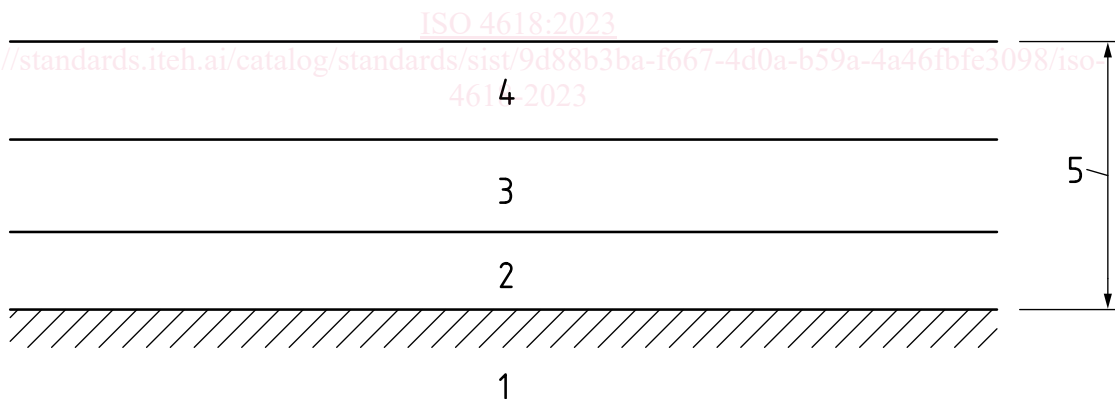


Key

- 1 substrate
- 2 coating A
- 3 coating B
- 4 coating C
- 5 coating system

NOTE The coating system in this example consists of coating A + coating B + coating C.

Figure 2 — Example of a coating system consisting of different coating materials



Key

- 1 substrate
- 2 coat A
- 3 coat A
- 4 coat A
- 5 coating system A

NOTE The coating system in this example consists of three coats of coating material A.

Figure 3 — Example of a coating system with coats of the same coating material

3.52

cohesion

internal forces that hold molecules together in a *film* (3.111) or *coat* (3.45)

Note 1 to entry: Cohesion should not be confused with *adhesion* (3.7).

3.53

coil coating

coating process (3.50) whereby the *coating material* (3.48) is applied continuously to a coil of metal which may be rewound after the *film* (3.111) has been dried

3.54

cold cracking

cold checking

formation of cracks or checks in a *film* (3.111) resulting from exposure to low temperatures

3.55

colour

sensation resulting from the visual perception of light of a given spectral composition by the human eye

Note 1 to entry: The use of the German word "Farbe" alone, i.e. not in combinations of words, for *coating materials* (3.48) is deprecated.

Note 2 to entry: A colour is characterized by hue, saturation or chroma, and lightness.

3.56

colour retention

degree of permanence of a *colour* (3.55)

Note 1 to entry: Colour retention can be influenced by weathering.

3.57

colouring material

colourant

substance that confers *colour* (3.55) to other materials

Note 1 to entry: Colouring materials comprise *pigments* (3.193) that are insoluble in the application medium as well as *dye stuffs* (3.92) that are soluble in the application medium.

3.58

compatibility

<of materials> ability of two or more materials to be mixed together without causing undesirable effects

3.59

compatibility

<of a *coating material* (3.48) with the *substrate* (3.245)> ability of a coating material to be applied to a substrate without causing undesirable effects

3.60

consistency

body

subjectively assessed flow behaviour of a *coating material* (3.48) when applying a shear force

3.61

contrast ratio

ratio of the reflectance of a *coating material* (3.48) applied under specified conditions over a black surface to the reflectance of the same thickness of this *coating material* (3.48) applied over a white surface

3.62**corrosion**

physicochemical interaction between a metallic material and its environment that results in changes in the properties of the metal, and that may lead to significant impairment of the function of the metal, the environment or the technical system, of which these form a part

Note 1 to entry: This interaction is often of an electrochemical nature.

[SOURCE: ISO 8044:2020, 3.1]

3.63**cracking**

rupturing of a dry *film* (3.111), *coat* (3.45) or *coating system* (3.51)

Note 1 to entry: The English term “cracking” is also used for a specific form of cracking illustrated in [Figure 4](#).

Note 2 to entry: *Crocodiling* (3.69) and *crow's foot cracking* (3.70) are examples of forms of cracking.



Figure 4 — Cracking

3.64**crater**

small depression in a *film* (3.111) or *coat* (3.45) that persist after *drying* (3.88)

Note 1 to entry: Examples of craters are shown in [Figure 5](#). Some pinholes are also shown in [Figure 5](#).