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**Paints and varnishes — Terms and
definitions**

**Peintures et vernis — Termes et
définitions**

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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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information.

The committee responsible for this document is ISO/TC 35, *Paints and varnishes*.

This second edition cancels and replaces the first edition (ISO 4618:2006), which has been technically revised.

The main changes are listed below.

- a) The following terms have been added: abrasion, aerosol, appearance, bubble, colour retention, dispersion, effect pigment, emulsion, functional pigment, nanoaerosol, nanocoating, nanodispersion, nanoemulsion, nanoextender, nanofilm, nano-object, nanopigment, nanoscale, nanostructured coating, nanosuspension, nanotexture, non-volatile matter by volume, overcoatability, performance, pourability (changed from flowability), reflow effect, rheopexy/rheoplectic behaviour, rust back (synonym for flash rust), rust bloom, scratch, scribe, shear-thickening flow behaviour/dilatant flow behaviour, shear-thinning flow behaviour/pseudoplastic flow behaviour, surface structure, suspension, texture, thixotropy/thixotropic behaviour, viscoelasticity, viscosity, yield point/yield stress/yield value.
- b) The following terms have been amended: adhesive strength, ageing, agglomerate, aggregate, airless spraying, anti-foaming agent, anti-fouling paint, application rate, barrier coating material, bleeding, binder, biocide, blistering (replaced by blister), blooming, brightness, chalking, coat, coating, coating material, coating process, cohesion, colour, colouring material, consistency/body, corrosion, cracking, cratering, crocodiling, crow's foot cracking, defoaming agent, de-nibbing, dirt pick-up, dirt retention, drying, durability, dyestuff, elasticity, etching, extender, feather edging, feeding, filler, filling, film, film formation, flash point, flexibility, floating, flooding, flow, flow agent, hardness, hiding power, holiday, hot spraying, hydrocarbon resin, impregnating material, in-can preservative, lap, leafing, mar resistance (changed to mar), masking, metamerism, non-volatile matter, paint, pigment, polymer dispersion, pot life, preparation grade, recoatability, resin, run, rust grade, sag, sagging, sheen, shelf life, shop primer, stopper, synthetic resin, thixotropic agent/thixotrope, varnish.
- c) The following terms have been deleted: blast primer, chromating, emulsion paint/latex paint, coverage (as synonym for hiding power), flowability (changed to pourability), hair cracking, opacity (as synonym for hiding power), high solids, miss (as synonym for holiday).

Paints and varnishes — Terms and definitions

1 Scope

This International Standard 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, e.g. corrosion protection, coating powders.

Terms on nanotechnologies are harmonized with ISO/TS 80004-4.

In addition to terms in English and French (two of the three official ISO languages), this International Standard gives the equivalent terms in German; these are published under the responsibility of the member body for Germany (DIN). However, only the terms and definitions given in the official languages can be considered as ISO terms and definitions.

NOTE 1 Those terms that are defined elsewhere in this International Standard are shown in *italics*.

NOTE 2 See also the ISO online browsing platform (OBP): <https://www.iso.org/obp/ui/>

2 Terms and definitions

2.1

abrasion

process of wearing away or deformation of a surface by friction as a result of rubbing

2.2

abrasive blast-cleaning

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

2.3

accelerator

additive that increases the speed of chemical reactions

2.4

acid value

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

2.5

acrylic resin

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

2.6

additive

any substance, added in small quantities to a *coating material*, to improve or otherwise modify one or more properties

2.7

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*.

**2.8
adhesive strength**

force required to detach a *coating* from a *substrate* or another coating

**2.9
aerosol**

solid or liquid particles in dispersion in a gaseous medium

**2.10
after tack**

property of a *film* to remain sticky after normal drying or curing

**2.11
ageing**

change of one or more initial properties of a *film* during the passage of time

**2.12
agglomerate**

collection of weakly bound particles or aggregates or mixtures of the two where the resulting external surface area is similar to the sum of the surface areas of the individual components

Note 1 to entry: The force applied to the *aggregates/agglomerates* during the paint making process can differ, depending on the method used.

**2.13
aggregate**

particle comprising strongly bonded or fused particles where the resulting external surface area may be significantly smaller than the sum of calculated surface areas of the individual components

Note 1 to entry: The force applied to the *aggregates/agglomerates* during the paint making process can differ, depending on the method used.

**2.14
airless spraying**

process of application of *coating material* by forcing it through an orifice at high pressure without air supply

**2.15
alkyd resin**

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

**2.16
amino resin**

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

Note 1 to entry: These resins are often etherified with alcohols.

**2.17
anti-blocking agent**

additive that usually rises to the surface during the drying process and thus prevents *blocking*

**2.18
anti-foaming agent**

additive that prevents foaming or reduces the foaming tendency of a *coating material*

Note 1 to entry: See also *defoaming agent*.

**2.19
anti-fouling paint**

coating material applied to the underwater sections of a ship's hull or to other underwater structures to discourage biological growth

2.20**anti-settling agent**

additive that prevents or retards the *settling* of *pigments* and/or *extenders* during storage of a *coating material*

2.21**anti-skinning agent**

additive that prevents or retards *skinning* caused by oxidation during storage

2.22**apparent density**

ratio of mass to volume of an untamped powder

Note 1 to entry: See also *bulk density* and *tamped density*.

2.23**appearance**

visual characteristics of a surface

Note 1 to entry: This includes *colour*, *gloss*, distinctness of image (DOI), *haze*, *surface structure*, *texture*, *orange peel*, etc.

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

2.24**application rate**

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

Note 1 to entry: It is expressed in l/m² or kg/m².

Note 2 to entry: See also *spreading rate*.

2.25**barrier coating material**

coating material used to isolate a *coating system* from the *substrate* to which it is applied, in order to prevent chemical or physical interaction, e.g. to prevent *bleeding* or migration from an underlying *coat* or substrate

Note 1 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.

2.26**binder**

non-volatile part of a *medium*

2.27**biocide**

additive added to a *coating material* to prevent organisms responsible for microbiological degradation from attacking a substrate, a *coating material* or a *film* thereof

2.28**bleeding**

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

2.29**blister**

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

2.30

blocking

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

2.31

blooming

migration of a substance to form a deposit on the coating surface

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

2.32

blushing

milky opalescence that sometimes develops as a *film* of lacquer dries, and is due to the deposition of moisture from the air and/or precipitation of one or more of the solid constituents of the lacquer

2.33

brightness

combination of the lightness and *colour* intensity of a material

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

2.34

brittleness

condition whereby a *film* or *coat* has such poor *flexibility* that it disintegrates easily into small fragments

2.35

bronzing

change in the *colour* of the surface of a *film* giving the *appearance* of aged bronze

2.36

brush-drag

resistance encountered when applying a *coating material* by brush, related to its high-shear viscosity

2.37

bubble

closed or open spherical cavity trapped in a *paint* layer, often caused by evaporating *solvents*

2.38

bubbling

formation of temporary or permanent *bubbles* in an applied film

2.39

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*.

2.40

burning off

removal of a *coating* by a process in which the *film* is softened by heat and then scraped off while still soft

2.41

chalking

appearance of a loosely adherent powder on the surface of a *film* or *coat* arising from the degradation of one or more of its constituents

**2.42
checking**

form of *cracking* characterized by fine cracks distributed over the surface of a dry *film* or *coat* in a more or less regular pattern

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

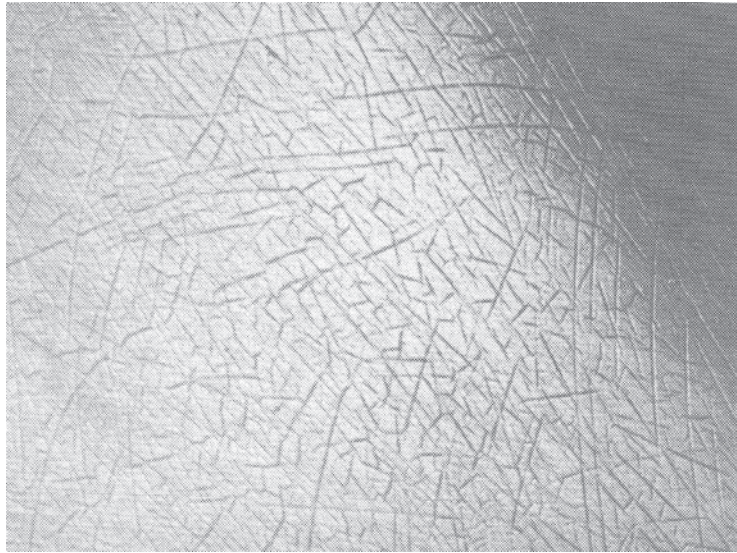


Figure 1 — Checking

2.43

chemical pre-treatment

any chemical process applied to a surface prior to the application of a *coating material*

Note 1 to entry: See e.g. *phosphating*.

2.44

chipping

removal, in flakes, of a *coating* or rust and *mill scale* by use of hand or power tools

2.45

chlorinated rubber

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

2.46

cissing

appearance in a *film* of areas of non-uniform thickness which vary in extent and distribution

2.47

clear coating material

coating material which when applied to a *substrate* forms a solid transparent *film* having protective, decorative or specific technical properties

Note 1 to entry: See also *varnish*.

2.48

coalescing agent

additive added to a *coating material* based on a polymer dispersion to facilitate *film formation*

2.49

coat

layer of a *coating material* resulting from a single application

Note 1 to entry: For fillers the word “coat” is used instead of “film”.

2.50.1

coating

layer formed from a single or multiple application of a *coating material* to a *substrate*

2.50.2

coating

process of applying a coat

Note 1 to entry: The use of the term “coating” for “*coating material*” is deprecated.

2.51

coating material

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

Note 1 to entry: The German term “Beschichtungsstoff” includes the terms “Lack”, “Anstrichstoff” and such for similar products.

2.52

coating powder

coating material in powder form which, after fusing and possibly *curing*, gives a continuous *film*

2.53

coating process

method of application of a *coating material* to a *substrate*

2.54

coating system

combination of all *coats* of *coating materials* which are to be applied or which have been applied to a *substrate*

Note 1 to entry: The actual system can be characterized by the number of coats involved.

Note 2 to entry: See also *coating*.

2.55

cohesion

forces that bind a *film* or *coat* into an integral entity

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

2.56

coil coating

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

2.57

cold cracking

formation of cracks in a *film* resulting from exposure to low temperatures

2.58

colour

sensation resulting from the 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 is deprecated.

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

2.59

colour retention

degree of permanence of a *colour*

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

2.60

colouring material

any substance that confers *colour* to other materials

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

2.61.1

compatibility

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

2.61.2

compatibility

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

2.62

consistency

body

flow resistance of a *coating material* as assessed subjectively when applying a shearing force

2.63

contrast ratio

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

2.64

corrosion

process of deterioration by chemical, electrochemical or microbiological reactions resulting from exposure to the environment or a medium

2.65

cracking

rupturing of a dry *film* or *coat*

Note 1 to entry: The English term “cracking” is also used for a specific form of cracking illustrated in [Figure 2](#).

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

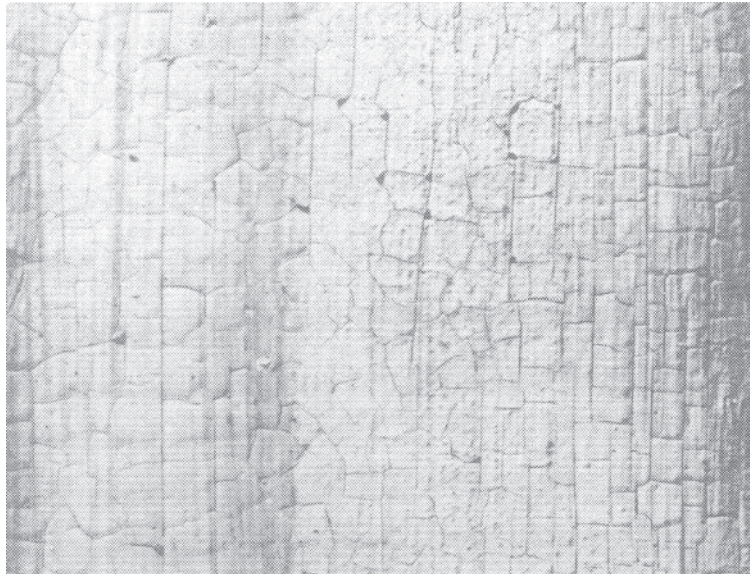


Figure 2 — Cracking

2.66

cratering

formation in a *film* or *coat* of small circular depressions that persist after drying

Note 1 to entry: Craters can extend into preceding layers of *coating* or to the *substrate*.

Note 2 to entry: Cratering is caused by localized inhomogeneities of the surface tension of the *coating*. Contamination of the *substrate* or *coating* with incompatible substances such as small oil drops or particulate material are the most frequent causes.

2.67

crawling

extreme form of *cissing*

Note 1 to entry: There is no German term for “crawling”.

2.68

crazing

form of *cracking* characterized by wide, deep cracks distributed over the surface of a dry *film* in a more or less regular pattern

Note 1 to entry: An example of crazing is shown in [Figure 3](#).

Note 2 to entry: There is no French and German term for “crazing”.



Figure 3 — Crazing

2.69

**critical pigment volume concentration
CPVC**

value of the *pigment volume concentration* at which the voids between the solid particles which are nominally touching are just filled with *binder* and above which certain properties of the *film* are markedly changed

2.70

crocodiling

form of *cracking* characterized by a pattern of cracks resembling a crocodile skin

Note 1 to entry: An example of crocodiling is shown in [Figure 4](#).

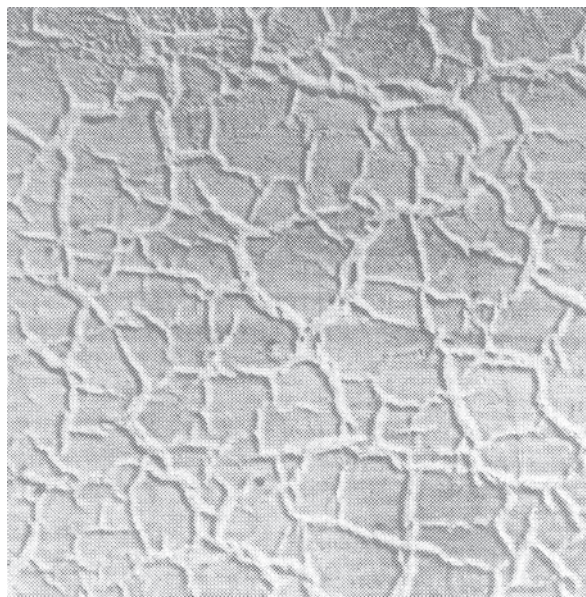


Figure 4 — Crocodiling

2.71

crow's foot cracking

form of *cracking* characterized by a pattern of cracks resembling a crow's foot

Note 1 to entry: An example of crow's foot cracking is shown in [Figure 5](#).



Figure 5 — Crow's foot cracking

2.72

curing

hardening

increase in the molecular size of a *binder* by chemical reaction

Note 1 to entry: Acceleration is possible by physical means (heat, radiation) or a catalyst.

Note 2 to entry: In French, curing is used for two-component *paints*, the second component generally being called the *hardener*.

2.73

curing agent

additive that promotes the chemical *curing* of a *coating*

2.74

curtain coating

application of a *coating material* by passing the article to be coated horizontally through a descending sheet of a continuously recirculated *coating material*

2.75

cutting-in

application of a *coating material* by brush up to a predetermined line

Note 1 to entry: An example is applying the *coating material* to the frames of windows without applying it to the glazing.

2.76

defoaming agent

additive that reduces foam which can form during manufacture and/or application of the *coating material*

Note 1 to entry: See also *anti-foaming agent*.

2.77**degreasing**

removal from a surface, prior to painting, of oil, grease and similar substances by either an organic *solvent* or a water-based cleaning agent

2.78**de-nibbing**

removal of small particles protruding from the dry surface of an applied *coating* or of a *substrate*

2.79**de-scaling**

removal of *mill scale* or laminated rust from steel or other ferrous *substrates*

2.80**diluent**

volatile liquid, single or blended, which, whilst not a *solvent*, may be used in conjunction with the *solvent* without causing any deleterious effects

Note 1 to entry: See also *solvent* and *thinner*.

2.81**dipping**

application of a *coating material* by immersing the object to be coated in a bath containing the *coating material* and then, after withdrawal, allowing it to drain

2.82**dirt pick-up**

tendency of a dry *film* or *coat* to attract to the surface appreciable amounts of soiling material

2.83**dirt retention**

tendency of a dry *film* or *coat* to retain on the surface soiling material which cannot be removed by simple cleaning

2.84**dispersion**

heterogeneous mixture of at least two materials, which are insoluble or only sparingly soluble in each other and not chemically bonded

Note 1 to entry: Dispersion is the generic term for *suspension* and *emulsion*.

2.85**dispersing agent****dispersant**

additive that facilitates the dispersion of solids in the *medium* during manufacture and that increases the stability of the mixture thereafter

2.86**drier**

compound, usually a metal soap, that is added to products drying by oxidation in order to accelerate this process

2.87**drying**

all the processes through which an applied *coating material* passes in going from the liquid to the solid state

Note 1 to entry: "Oxidative drying" is used frequently, instead of the more correct term "oxidative hardening".

Note 2 to entry: See also *curing*.