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ISO/FDIS 4618:2022(E)

ISO TC 35/WG 2

Paints and varnishes — Vocabulary

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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](http://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](http://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 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](http://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).

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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

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behaviour, rheopexy, rheopectic 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.

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

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](http://www.iso.org/members.html) ~~www.iso.org/members.html~~.

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## 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 ISO/FDIS 80004-1.

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/>

#### 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

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

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Note 1 to entry: A surfactant or surface-active agent is an *additive* (3.6) that has the fundamental property of reducing the interfacial tension between a solid and liquid or a liquid and air.

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**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).

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

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

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

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

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

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

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**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)

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

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

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3.15

anti-fouling paint

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

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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)

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3.17

anti-skinning agent

additive (3.6) that prevents or retards skinning (3.235/236) caused by oxidation during storage

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3.18

apparent density

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

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

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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 (DOI) (3.85), haze (3.136), surface structure, texture (3.254), orange peel (3.178), etc.

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

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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

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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

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Note 1 to entry: A barrier coating material e.g. prevents bleeding (3.25) or migration from an underlying coat (3.45) or substrate (3.245).

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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)

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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* (3.48) or a *film* (3.111) thereof

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**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

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

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**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

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**3.28**

**blooming**, verb

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

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Note 1 to entry: Blooming **could** occur when the amount of condensate causes soluble compounds to migrate from the body of the *coating* (3.46) to the coating surface.

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

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**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

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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

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Note 1 to entry: Brightness 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

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### 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

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Note 1 to entry: An unintentional *colour* (3.55) change is left out in the definition, as it is no longer applicable for actual *pigments* (3.193).

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### 3.33

#### brush marks

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

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### 3.34

#### bubble

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

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### 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).

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### 3.36

#### burning off

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

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### 3.37

#### catalyst

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

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### 3.38

#### chalking

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

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### 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

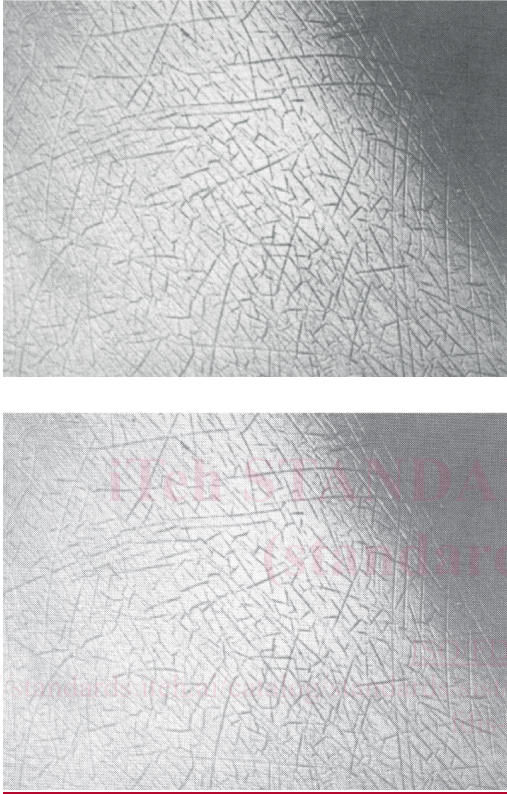
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Note 1 to entry: An example of checking is shown in Figure 1.



**Figure-1.—** Checking

**3.40  
chemical pretreatment**

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

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

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**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

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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

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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)

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3.45

**coat**

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

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

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3.46

**coating**, noun

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

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3.47

**coating**, verb

process of applying a coat

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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

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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)

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3.50

**coating process**

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

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3.51

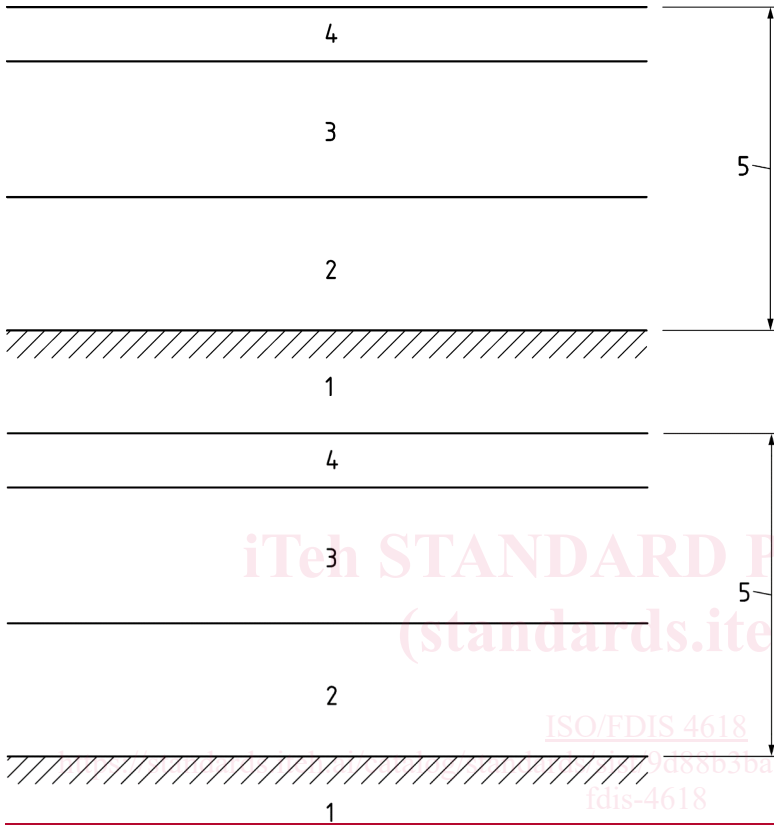
**coating system**

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

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Note 1 to entry: Examples of multiple coating systems are shown in Figure 2 and Figure 3.

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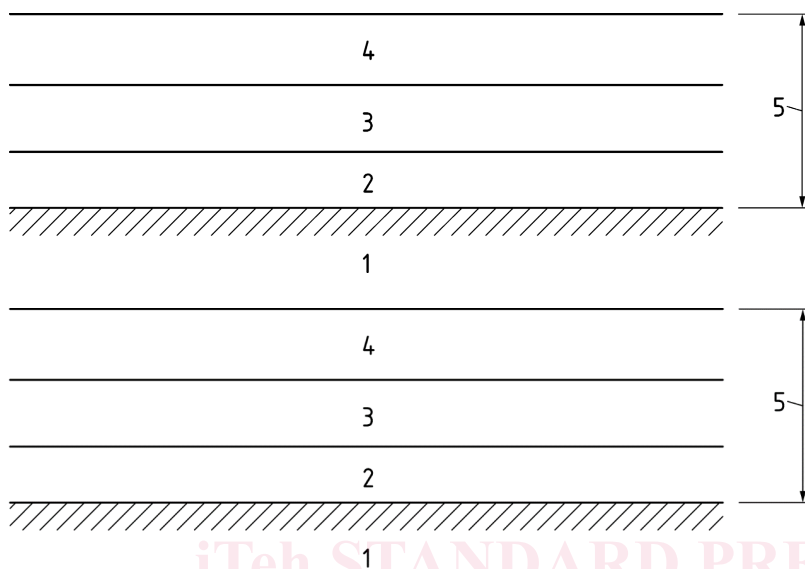


- Key**
- 1 substrate
  - 2 coating A
  - 3 coating B
  - 4 coating C
  - 5 coating system

**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 A + coating B + coating C materials

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**Key**

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

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

**Figure 3.** — Example of a coating system of with coats of the same coating material, being coating A consisting 3 coats of coating material A.

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**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).

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**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

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**3.54 cold cracking**