BS ISO 18451-1:2015

BSI Standards Publication

Pigments, dyestuffs and extenders — Terminology

Part 1: General terms

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee STI/1, Pigments.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Published by BSI Standards Limited 2015

ISBN 978 0 580 86375 2

ICS 01.040.87; 87.060.10

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 November 2015.

Amendments/corrigenda issued since publication

Date	Text affected

BS ISO 18451-1:2015

INTERNATIONAL STANDARD

ISO 18451-1

First edition
2015-11-01

Pigments, dyestuffs and extenders — Terminology —

Part 1: General terms

Pigments, colorants et matières de charge — Terminologie —

Partie 1: Termes généraux

Reference number
ISO 18451-1:2015(E)

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Foreword

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The committee responsible for this document is ISO/TC 256, *Pigments, dyestuffs and extenders*.

ISO 18451 consists of the following parts, under the general title *Pigments, dyestuffs and extenders — Terminology*:

— *Part 1: General terms*

— *Part 2: Classification of colouring materials according to colouristic and chemical aspects*

INTERNATIONAL STANDARD ISO 18451-1:2015(E)

Pigments, dyestuffs and extenders — Terminology —

Part 1: General terms

1 Scope

This part of ISO 18451 defines terms that are used in the field of pigments, dyestuffs and extenders.

For some terms, reference is made to ISO 4618 in which also terms and definitions for colourants are given, relating to their use in coating materials.

In addition to terms in English and French (two of the three official ISO languages), this part of ISO 18451 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 Those terms that are defined elsewhere in this part of ISO 18451 are shown in *italics*.

2 Terms and definitions

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

2.1
abrasiveness
property of *pigments* (2.95) or *extenders* (2.34) and their preparations to cause wear at the used apparatus by mechanical action

2.2
aluminium pigment
pigment (2.95) consisting essentially of finely divided pure aluminium Al 99,5

Note 1 to entry: The aluminium particles have lamellar form.

2.3
apparent density after tamping
ratio of mass to volume of a powder after compressing (e.g. by tamping or vibration) under specified conditions

2.4
barite
naturally occurring barium sulfate, $BaSO_4$

2.5
binder demand
amount of a binder or binder solution that is required to obtain, under specified dispersion conditions, a mass of defined rheology

2.6
bismuth vanadate pigment
yellow inorganic *pigment* (2.95) consisting of bismuth vanadate with or without isomorphous inclusion of bismuth molybdate

2.7
blanc fixe
barium sulphate
synthetic barium sulphate, produced by a precipitation process

Note 1 to entry: Naturally occurring barium sulfate is called *barite* (2.4).

2.8
bleeding
migration (2.76) of a *colourant* (2.19) from a material into another material being in contact with it

2.9
blooming
migration (2.76) of a *colourant* (2.19) to the surface of the coloured material

2.10
cadmium pigment
inorganic coloured pigment consisting essentially of cadmium zinc sulphide (yellow pigments) or of mixed crystals of cadmium sulphide and cadmium selenide (red pigments)

2.11
calcined clay
calcined aluminium silicate
aluminium silicate ($Al_2O_3 \cdot 2SiO_2$), lamellar, mainly amorphous in structure as determined by X-ray diffraction, produced from natural clay by thermal dehydration, consisting partly of cristalline mullite $3(Al_2O_3 \cdot 2SiO_2)$

2.12 Calcite

2.12.1
calcite
crystalline calcium carbonate
<mineralogy> calcium carbonate of trigonal crystal structure

2.12.2
calcite
crystalline calcium carbonate
<pigments> designation for *extenders* (2.34) produced from calcareous spar of marble or for precipitated calcitic calcium carbonates

2.13
carbon black
pigment (2.95) synthetically produced by thermally oxidative cracking of aromatic oils and gases

Note 1 to entry: It is distinguished between carbon black and industrial carbon black.

2.14
ceramic decoration colour
preparation consisting of coloured or colourless glass powder and inorganic *pigments* (2.95) for coating of ceramics or glass by melting at temperatures above 450 °C

2.15
chalking
appearance of a loosely adherent fine *powder* (2.97) on the surface of a film or pigmented plastic arising from the degradation of the binder

2.16
chroma
difference of a *colour* (2.20) from an achromatic colour of the same lightness

2.17
chromium oxide pigment
inorganic coloured pigment consisting essentially of chromium (III) oxide (Cr_2O_3) in the form of a dry powder

2.18
CIC-pigment
coloured inorganic complex pigment
coloured pigment, rutile or spinell based, produced by replacement of titanium in the rutile lattice or aluminium or magnesium in the spinel lattice through other atoms

Note 1 to entry: Such pigments are incorrectly named mixed phase pigments.

2.19
colourant
generic term for all colouring substances

Note 1 to entry: Colourants comprise *pigments* (2.95) which are insoluble in the medium as well as *dyestuffs* (2.30) which are soluble in the medium.

Note 2 to entry: A pigment may contain the pure chemical substance and/or a surface treatment and/or additives.

Note 3 to entry: A colourant may also contain traces of impurities, which may originate from raw materials and/or the production processes.

Note 4 to entry: In order to improve application properties, a colourant may contain additives.

2.20
colour
sensation resulting from the visual perception of electromagnetic radiation of a given spectral composition

Note 1 to entry: The use of the German word “Farbe” alone, i.e. not in combinations of words, for coating materials is to be rejected.

Note 2 to entry: A colour is characterized by *hue* (2.49), *saturation* (2.105) or *chroma* (2.16), and *lightness* (2.65).

Note 3 to entry: It is distinguished between chromatic and achromatic colours.

2.21
colour difference
differences in *lightness* (2.65), *chroma* (2.16) and *hue* (2.49)

Note 1 to entry: Colour differences, for example, occur between different specimens, between the same specimens but of different history and within a specimen inhomogeneous with regard to colour.

2.22
colour strength equivalent
reciprocal of the *relative tinting strength* (2.104) of a *pigment* (2.95)

Note 1 to entry: It indicates how many parts of a sample are colouristically equivalent to 100 parts of a reference sample. In other words, the colour strength equivalent of a weaker *pigment* (2.95) is greater than 100.

2.23 Compound

2.23.1
compound
<pigments> mixture of *pigments* (2.95) and/or *extenders* (2.34), ready for use

2.23.2
compound
<plastics> moulding material, ready for use, containing all the *colourants* (2.19), *extenders* (2.34) and additives

2.24
core pigment
pigment (2.95) the mostly inorganic core of which is enveloped with one or more (mostly inorganic) substances so that its optical properties are hardly effected by the material of the shell but its application properties are improved

2.25
corrosion-inhibiting pigment
anticorrosive pigment
pigment (2.95) that inhibits or avoids, in priming coats on metals, the corrosion of the metal surface, normally by chemical or physicochemical action

2.26
depth of shade
measure for the intensity of a colour perception that increases with increasing *chroma* (2.16) and decreases with increasing *lightness* (2.65)

Note 1 to entry: Colourations having the same depth of shade appear to be prepared using the same concentrations of colourants having the same *tinting strength* (2.121).

2.27
dispersibility
property of a *pigment* (2.95) or *extender* (2.34) characterized by its ability to be wetted, separated and distributed in a medium

Note 1 to entry: The dispersibility depends on its wettability and on the number and strength of the adhering areas between the components of the *agglomerates* (2.93.3).

Note 2 to entry: As a measure of the dispersibility under specified dispersion conditions, e.g. the speed of the *tinting strength* (2.121) development and/or the decrease of the *fineness of grind* (2.37) can be taken.

2.28
dispersing
separation of the *agglomerates* (2.93.3) of the *pigment* (2.95) or *extender* (2.34) powder into smaller particles [*agglomerates* (2.93.3), *aggregates* (2.93.2) and *primary particles* (2.93.1)] and their wetting by the medium at the same time

Note 1 to entry: Occasionally, separation of *aggregates* (2.93.2) and breaking, for example, of needle-shaped *primary particles* (2.93.1) also takes place. Furthermore, a statistically uniform distribution of the *particles* (2.93) formed in this way to all volume elements of the medium is a part of the dispersing process.

2.29
dolomite
natural calcium magnesium carbonate containing between 1,18 and 1,23 parts by mass of $CaCO_3$ to 1 part by mass of $MgCO_3$

2.30
dyestuff
colourant (2.19), soluble in the application medium

Note 1 to entry: *Colourants* (2.19) for glass, ceramics and vitreous enamel that are dissolved in the glass phase are also called “Lösungsfarben” in German language. In these cases, oxides of transition elements are used.

Note 2 to entry: In German usage, in the pharmaceutical and foodstuffs fields, the term “Farbstoff” is used as a synonym for “colourant”.

2.31
earth pigment
pigment (2.95) produced from earths, e.g. by classification, if necessary with additional thermal treatment

2.32
effect pigment
platelet-like *pigment* (2.95) that confers not only *colour* (2.20) but additional properties such as iridescence (interference at thin layers), angle dependency of colour (colour travel, colour flop, light-dark flop), or texture

Note 1 to entry: See also *metal effect pigment* (2.72), *nacreous pigment* (2.78), *interference pigment* (2.51).

2.33
electro chromic pigment
pigment (2.95) which changes its *colour* (2.20) depending on the electric current or the voltage

2.34
extender
substance in granular or powder form, insoluble in the medium (e.g. coating material) and used to modify or influence certain physical properties

Note 1 to entry: The German terms “Extender”, “Extenderpigment”, “Pigmentextender” or “Verschnittmittel” should be avoided.

Note 2 to entry: Whether a given substance is to be considered as *pigment* (2.95) or extender depends on its application.

2.35
fastness
stability of the *colour* (2.20)

Note 1 to entry: For characterization of the respective stress, the term fastness, e.g. of a coating, is used in word combinations such as light fastness, acid fastness, solvent fastness. The acid fastness, for example, of a coating is the stability of the *colour* (2.20) of the coating under the influence of acids.

2.36
final level of dispersion
level of dispersion (2.62) when it has become constant under the defined conditions

Note 1 to entry: The final level of dispersion of a *pigment* (2.95) depends on the binder system in which it is dispersed, on the dispersion process and on the composition of the milling base.

2.37
fineness of grind
measure for the largest solid particles in a liquid matrix

Note 1 to entry: The term fineness of grind is not to be confused with the term grain hardness.

2.38
floating
separation of one or more *pigments* (2.95) from a coloured coating material, casing streaks or areas on the surface of the coating material

2.39
flooding
separation of the *pigments* (2.95) in a liquid coating giving rise to a *colour* (2.20) which, although uniform over the whole surface, is markedly different from that of the freshly applied wet film before drying/hardening

Note 1 to entry: See *leafing* (2.61).

2.40
food dyestuff
substance that gives *colour* (2.20) to a foodstuff or restores the colour of a foodstuff

2.41
full shade
colour (2.20) of a *mass tone system* (2.70) in a non-hiding layer

2.42
functional extender
extender (2.34), when applied in the application medium, processes or enhances specific functions due to its physical or chemical properties

Note 1 to entry: Examples for physical properties are: elasticity, durability, hardness, anti-fatigue.

2.43
functional pigment
pigment (2.95), when applied in the application medium, possesses specific functions due to its unique physical or chemical properties rather than only colouring

Note 1 to entry: Examples for specific functions are: UV absorption, electric properties such as conductivity, anti-corrosion properties, photocatalytical properties, function as barrier pigment, infrared absorption or infrared reflection.

2.44
goniochromatic pigment
effect pigment (2.32) showing an angle-depending colour change between different interference colours

2.45
heat stability
resistance to a heat treatment of the *colour* (2.20) of the test specimens under specified conditions of test

2.46
heavy-metal containing pigment
pigment (2.95) containing heavy metal(s) as constituent

Note 1 to entry: Heavy metals are all metals having a density greater than 4,5 g/cm^3.

2.47
hiding power
ability of material, containing *colourants* (2.19), to obliterate the *colour* (2.20) or *colour differences* (2.21) of the *substrate* (2.114)

Note 1 to entry: The use of the German expressions “Deckkraft” und “Deckfähigkeit” should be avoided.

[SOURCE: ISO 4618:2014, 2.138, modified — Note 2 deleted]

2.48
hiding power value
numerical value of the *hiding power* (2.47), as determined using a defined method

2.49
hue
type of *chroma* (2.16) of a *colour* (2.20)

Note 1 to entry: The hue is designated in daily life by words such as red, yellow, green, blue, violet, etc.

2.50
inclusion pigment
pigment (2.95), the colouring component of which is included in a coat of high thermal and chemical resistance

Note 1 to entry: The coat renders it possible that the colouring component can be used at much higher temperatures. Furthermore, the resistance, e.g. to acids and alkalies, will be improved essentially.

2.51
interference pigment
pearlescent pigment
effect pigment (2.32), the effect of which is based completely or predominantly on the phenomenon of interference, e.g. *pearlescent pigment*, fire-coloured metal bronze

Note 1 to entry: Interference pigments can be coated with one or more layers.

2.52
intrinsic hardness
hardness of the primary particle of a *pigment* (2.95) or *extender* (2.34) as a property of the material

Note 1 to entry: Only indirect conclusions to the practically effective intrinsic hardness can be made, for example, from abrasion tests.

Note 2 to entry: In the case of inorganic pigments, the Mohs hardness is often given as a reference value for the intrinsic hardness.

2.53
iron blue pigment
pigment (2.95) formed by the reaction of iron salts with cyanoferrate(II) or cyanoferrate(III) ions and followed, if necessary, by treatment with oxidizing agents

2.54
iron oxide pigment
pigment (2.95) consisting of natural or synthetic iron oxides, if necessary with additions of extenders

2.55
kaolinite
main constituent of *natural clay* (2.88)

2.56
lake
pigment (2.95) produced by precipitation of a dissolved organic *dyestuff* (2.30) with a precipitating agent

Note 1 to entry: Lake is not “Lack” as commonly used in German language but a *colourant* (2.19). In Austrian and Swiss usage, the German expression “Farblack” is not usual.

2.57 Lake pigment

2.57.1
lake pigment
<type 1> *pigment* (2.95) produced by precipitation of a sulphone or carbonic acid-containing azo dyestuff with one or more suitable metal salts

Note 1 to entry: Lake pigments predominantly contain metal cation magnesium, calcium, strontium, barium, aluminium or manganese.

2.57.2
lake pigment
<type 2> *pigment* (2.95) produced by precipitation of a basic *dyestuff* (2.30) with heteropoly acids

2.58
lead chromate pigment
yellow, orange or red *pigment* (2.95) consisting of lead chromate with or without lead sulphate and/or lead molybdate

Note 1 to entry: Designations in common use for lead chromate pigments are, for example, chrome yellow, molybdate orange and molybdate red.

2.59
lead chrome green pigment
inorganic *pigment* (2.95) produced from *lead chromate pigments* (2.58) and *iron blue pigments* (2.53) without additions of *extenders* (2.34) and other *colourants* (2.19)

2.60
lead chrome/phthalocyanine pigment
pigment (2.95) produced from *lead chromate pigments* (2.58) and phthalocyanine blue pigments without additions of other *colourants* (2.19)

2.61
leafing
flooding (2.39) of specially treated *effect pigments* (2.32) to the surface of a coating material shortly after application

2.62
level of dispersion
extent to which *pigment* (2.95) particles have been separated, distributed and stabilized by milling in a binder system under defined conditions

2.63
light fastness
resistance to colour changes due to exposure to light, without direct atmospheric effects (therefore, not "weather resistance")

Note 1 to entry: Light fastness commonly is evaluated by visual assessment using standard reference colour standards (or by instrumental assessment).

2.64
lightening power
ability of a *pigment* (2.95) to increase the *lightness* (2.65) of a coloured, grey or black medium

2.65
lightness
intensity of a light perception as it is inseparable connected with each colour perception

Note 1 to entry: Definition aligned to CIELAB.

2.66
lithopone™
white pigment obtained by combined precipitation of zinc sulphide (ZnS) and barium sulphate ($BaSO_4$)

2.67
luminance factor
measure of the *lightness* (2.65) of *surface colours* (2.115)

Note 1 to entry: Generally, this luminance factor is 100 times the reflectance factor R_V. Depending on the object and the measuring geometry 100 times the reflectance, ρ, or the transmittance factor, T, can be taken as the luminance factor. The luminance factor is connected with the tristimulus values by the luminance coefficients.

2.68
luminous pigment
pigment (2.95) that absorbs radiation and emits light (of higher wavelength)

Note 1 to entry: This effect is called luminescence.

Note 2 to entry: The optical effect is based on its ability to absorb radiation and to emit light of higher wavelength with temporal delay (phosphorescence) or without temporal delay (fluorescence).

2.69
mass tone
colour (2.20) of a *mass tone system* (2.70) in optically infinite (hiding) layer

2.70
mass tone system
pigmented system, containing one *pigment* (2.95) only

2.71
masterbatch
preparation which, in a solid polymer carrier, contains substances [*colourants* (2.19), *extenders* (2.34), additives] in much higher concentration than in the moulded component or semi-finished product to be produced using this preparation

Note 1 to entry: The substances are present either completely dispersed or dissolved.

2.72
metal effect pigment
platelet-like *pigment* (2.95) consisting of metal

Note 1 to entry: Metal effect pigments can be orientated in parallel and show then metallic gloss due to light reflection at the flakes.

2.73
metal pigment
pigment (2.95) consisting of metals or metal alloys

EXAMPLE Zinc dust pigment.

2.74
mica
alkali-containing hydrated aluminium silicates in lamellar form

EXAMPLE Muscovite, biotite and phlogopite.

Note 1 to entry: Not to be confused with *micaceous iron oxide* (2.75).

2.75
micaceous iron oxide
refined mineral or synthetic product consisting essentially of iron (III) oxide (Fe_2O_3)

Note 1 to entry: Micaceous iron oxide has lamellar form and is grey in *colour* (2.20) with metallic gloss.

2.76
migration
transfer of a *colourant* (2.19) from a medium coloured with it to the surface [*blooming* (2.9)] or into another medium

[SOURCE: *bleeding* (2.8)]

2.77
muscovite
natural lamellar hydrated potassium aluminium silicate

Note 1 to entry: Muscovite can be used as raw material for *effect pigments* (2.32).

2.78
nacreous pigment
gloss pigment consisting of transparent flakes with high refractive index

Note 1 to entry: Nacreous pigments can be orientated in parallel and show then nacreous lustre as characterized by multiple reflection. Nacreous pigments that also show interference colours are also called pearl pigment or *interference pigment* (2.51).

2.79
nanodispersion
material in which *nano-objects* (2.82) are dispersed in a continuous phase of a different composition

Note 1 to entry: Nanodispersions comprise *nanosuspensions* (2.86) and *nanoemulsions* (2.80).

Note 2 to entry: Gaseous matrices are excluded (solid and liquid drops in gases are "aerosols").

[SOURCE: ISO 4618:2014, 2.165]

2.80
nanoemulsion
nanodispersion (2.79) with a liquid matrix and at least one or more liquid *nano-objects* (2.82)

[SOURCE: ISO 4618:2014, 2.166]

2.81
nanoextender
extender (2.34) made of *nano-objects* (2.82)

[SOURCE: ISO 4618:2014, 2.167]

2.82
nano-object
material with one, two or three external dimensions in the *nanoscale* (2.85)

Note 1 to entry: This is a generic term for all discrete objects in the *nanoscale* (2.85).

[SOURCE: ISO 4618:2014, 2.169]

2.83
nanopigment
pigment (2.95), made of *nano-objects* (2.82)

[SOURCE: ISO 4618:2014, 2.170]

2.84
nanopowder
particulate material only composed of *nano-objects* (2.82)

Note 1 to entry: Nanopowder may include *agglomerates* (2.93.3) and/or *aggregates* (2.93.2) in the *nanoscale* (2.85) (largest dimension ≤100 nm).

2.85
nanoscale
size range from approximately 1 nm to 100 nm

[SOURCE: ISO 4618:2014, 2.171]

2.86
nanosuspension
heterogeneous mixture of materials comprising a liquid and finely dispersed solid *nano-objects* (2.82)

Note 1 to entry: As examples, nanosuspension can apply to either suspensions of *nanopigments* (2.83) or *nanoextenders* (2.81) (minerals), or to polymeric nanosuspensions.

[SOURCE: ISO 4618:2014, 2.173]

2.87
natural calcium carbonate
calcium carbonate
calcium carbonate produced by beneficiation of geological deposits of chalk, calcareous spar or marble

2.88
natural clay
clay
natural hydrated aluminium silicate
natural occurring hydrated aluminium silicates with lamellar crystal structure, predominantly consisting of kaolinite of chemical composition $Al_2O_3 \cdot 2SiO_2 \cdot 2H_2O$ | $Al_4((OH)_8/Si_4O_{10})$

Note 1 to entry: In common use, natural clay is also called china clay.

2.89
natural silica
natural ground quartz
ground *quartz* (2.100) consisting of the low-temperature modification of quartz with a theoretical density 2,65 g/cm^3

Note 1 to entry: Particularly fine ground natural quartz is called quartz powder.

2.90
near-infrared reflecting pigment
NIR reflecting pigment
pigment scattering near-infrared radiation in the wavelength range above the visible range up to 2 500 nm

Note 1 to entry: This spectral range comprises the non-visible part of the solar radiation (except UV).

Note 2 to entry: The term "IR-reflective" is mistakable and should be avoided because it also includes the mid infrared or "thermal" infrared. Many technical pigments, which are designed to be solar reflective, reflect near infrared but absorb mid infrared. The absorption of mid infrared is important for the emission of heat resulting from the incomplete reflection of solar radiation in the near infrared.

2.91
non leafing
enrichment of *effect pigments* (2.32) on the lower level of a freshly applied base coat

2.92
oil absorption value
quantity of refined linseed oil that is absorbed under defined conditions by a sample of *pigment* (2.95) or *extender* (2.34)

Note 1 to entry: The oil absorption value can be expressed either on a volume/mass basis or on a mass/mass basis.

2.93
particle
distinguishable *pigment* (2.95) or *extender* (2.34) unit, which can have any structure

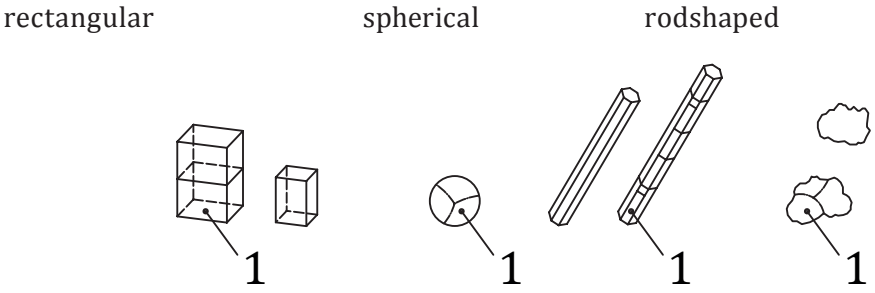
Note 1 to entry: Differentiations between the terms specified in 2.93.1 to 2.93.3 cannot always be formulated with a desired clarity in practice; often there are no clear distinctions. In Figures 1 to 3, the terms specified under 2.93.1 to 2.93.3 are being defined with the example of rectangular, spherical, rod-shaped, and irregularly shaped particles in a highly schematized way.

2.93 Primary particles

2.93.1
primary particle
single particle
by means of appropriate physical procedures (e.g. by means of light microscope, electron microscope) recognizably as individual detectable particle

Note 1 to entry: See Figure 1.

Note 2 to entry: In special cases, a crystalline primary particle can be a single crystal or consist of several, with appropriate radiation (e.g. X-ray) definable, coherently scattered grid areas (crystallites).



Key

1 coherently scattered grid areas (crystallites)

Figure 1 — Primary particles

2.93.2
aggregate
unit grown together of facially contiguous *primary particles* (2.93.1), which surface is smaller than the sum of surfaces of the primary particles

Note 1 to entry: See Figure 2.

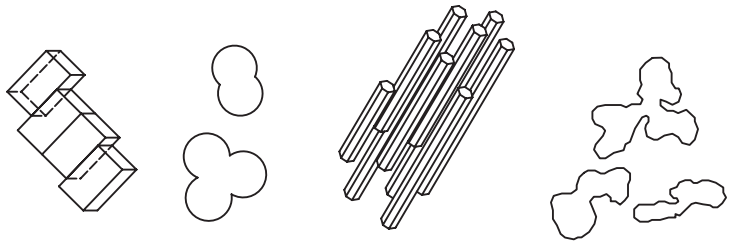


Figure 2 — Aggregates

2.93.3
agglomerate
unit not grown together of *primary particles* (2.93.1) and/or *aggregates* (2.93.2) contiguous e.g. on corners and edges, which total surface does not basically deviate from the sum of the single surfaces

Note 1 to entry: See Figure 3.

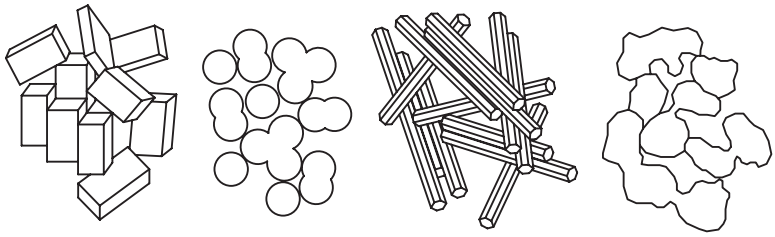


Figure 3 — Agglomerates

2.93.4
flocculate
in suspensions (e.g. in pigment binder systems) appearing *agglomerate* (2.93.3), which can be divided by means of low shear forces

2.94
particle size
geometrically measured value for the identification of spatial expansion of a *particle* (2.93)

2.95
pigment
colourant (2.19) consisting of *particles* (2.93), insoluble in the application medium (e.g. coating material or plastic)

Note 1 to entry: Pigments can be further described on the basis of their chemical composition, their optical or technical properties, e.g. inorganic pigment, organic pigment, coloured pigment, white pigment, *effect pigment* (2.32), *corrosion-inhibiting pigment* (2.25), magnetic pigment.

Note 2 to entry: Pigments for ceramics, glass and vitreous enamels are called stains.

Note 3 to entry: Whether a given substance is to be considered as pigment or *extender* (2.34) depends on its application.

2.96
pigment preparation
preparation in which at least one *pigment* (2.95) is dispersed in a carrier

EXAMPLE Mill paste.

Note 1 to entry: The carrier envelopes the pigment completely and is compatible with the intended application medium. The pigment is present at a higher concentration as is the case at the later application.

Note 2 to entry: The preparation may contain e.g. dispersing agents, *extender* (2.34), binder, plastic, solvent, plasticizer or their mixtures.

2.97
powder
quantity of single unbound *particles* (2.93)

Note 1 to entry: Unbound refers to non-covalent and/or non-ionic chemical bond.

2.98
precious-metal containing decoration colour
preparation consisting of precious metals and organic and inorganic metal and precious metal compounds

Note 1 to entry: A precious-metal containing decoration colour contains no glass powder or only small amounts of it.

Note 2 to entry: In contrast to ceramic decoration colours, precious-metal decoration colours are always supplied together with the application additives added. All application additives evaporate or burn during melting and are no longer detectable in the coating.

2.99
precipitated calcium carbonate
calcium carbonicum praecipitatum
CCP
synthetic calcium carbonate, consisting of trigonal crystals [like those of *calcite* (2.12.1, 2.12.2)] or rhombic bipyramidal crystals (like those of aragonite) or vaterite or amorphous particles or mixtures of the modifications listed before

2.100
quartz
crystalline silica

Note 1 to entry: See also *natural ground quartz* (2.89).

2.101
reactive pigment
pigment (2.95) that in coatings reacts with the binder, the substrate or with agents penetrating from outside

EXAMPLE Corrosion protection pigment.

2.102
red lead
red orange-red *corrosion-inhibiting pigment* (2.25) consisting of lead orthoplumbate (Pb_3O_4) and lead (II) oxide (PbO)

2.103
relative scattering power
percentage ratio of the scattering index of the white pigment under test to the scattering index of a reference white pigment

2.104
relative tinting strength
relative colour strength
percentage ratio of the *tinting strength* (2.121) of the *colourant* (2.19) under test related to the tinting strength of a reference colourant

2.105
saturation
proportion of the *chroma* (2.16) to the *lightness* (2.65)

2.106
scattering power
ability of a pigmented medium to partly diffuse the incident light

2.107
shade
shade of a near white or achromatic specimen is the small chromatic amount by which the *colour* (2.20) of the specimen differs from ideal white or (ideal) achromatic

2.108
silica
silica obtained by wet-chemical and thermal or pyrogenic methods that is characterized as amorphous by X-ray or electron diffraction

2.109
specific surface area
absolute surface area of the sample divided by the sample mass

2.110
stability
ability of a material to resist against change of its properties when stressed or exposed

Note 1 to entry: Type and extent of the exposure as well as the change of properties are to be agreed.

2.111
stain
pigments for ceramics, glass and vitreous enamels

2.112
standard depth of shade
SD
depth of shade (2.26) level laid down by convention

2.113
strontium chromate pigment
yellow inorganic *pigment* (2.95) produced from chromium(VI) and strontium compounds of the composition $SrCrO_4$, without additions of *extenders* (2.34) and organic *colourants* (2.19)

Note 1 to entry: Strontium chromate pigment is an active *corrosion inhibiting pigment* (2.25).

2.114
substrate
surface to which the coating material is applied or is to be applied

[SOURCE: ISO 4618:2014, 2.244]

2.115
surface colour
colour (2.20) of a non-self-luminous object, i.e. of an object that requires an illuminating radiation to be seen

Note 1 to entry: The term should be used in this meaning only. Thus, surface colour is no *colourant* (2.19).

2.116
surface-coated pigment
pigment (2.95), the *particles* (2.93) of which are coated with additional materials

EXAMPLE Silica and aluminium oxide hydrate on titanium dioxide pigment.

2.117
surface-treated pigment
pigment (2.95), the surface of which has been treated chemically or physically

Note 1 to entry: The surface treatment influences the properties of the pigments

— during handling (e.g. with regard to dust formation) and/or

— during processing [e.g. *dispersibility* (2.27), storage stability] and/or

— the properties of the pigmented finished product [e.g. *stability* (2.110)].

2.118
talc
natural lamellar hydrated magnesium silicate

2.119
tamping volume
ratio of volume to mass of a powder after compressing (e.g. by tamping or vibration) under specified conditions

2.120
thermochromic pigment
pigment (2.95) the *colour* (2.20) of which can change depending on the temperature

Note 1 to entry: The colour change may be reversible or irreversible.

2.121
tinting strength
colour strength
measure of the ability of a *colourant* (2.19) to colour other materials because of its absorptive power

2.122
titanium dioxide pigment
white, inorganic material in powder form having a high refractive index, that contains at least 80 % TiO_2

Note 1 to entry: This *pigment* (2.95) is available under the anatase (type A) and rutile (type R) mineral forms.

2.123
toner
printing ink for electrostatic and digital printing processes

Note 1 to entry: In American English, the term toner is also used for organic pigments.

2.124
transparency
characteristic of a pigmented or unpigmented system to scatter light as little as possible

Note 1 to entry: Accordingly, when a coating material is applied on a black substrate, the colour change of the black substrate shall be as little as possible. The higher the transparency of the pigmented or unpigmented system, the smaller the colour difference to the black substrate.

Note 2 to entry: The term "lasure" is used as a synonym for "transparency".

2.125
tribopigment
pigment (2.95) which, due to its pronounced tribo-electric properties, controls the polarity, height and constancy of the charge of *toners* (2.123) and tribo-electric powder coating materials

2.126
ultramarine pigment
inorganic coloured pigment

Note 1 to entry: Chemically, it is sodium aluminium silicate with included chalcogens, e.g. sulfur, as chromophore.

2.127
wettability
property of *pigments* (2.95) and *extenders* (2.34) to form interfaces to liquid media

Note 1 to entry: In practice, the wettability is assessed by the speed with which the pigment powder (extender powder) is wetted by the liquid medium (see also *dispersing* (2.28)).

2.128
white lead
white inorganic *reactive pigment* (2.101) consisting of basic lead carbonate of the theoretical composition $2PbCO_3 \cdot Pb(OH)_2$

2.129
whiting
natural calcium carbonate derived from chalk, a sedimentary rock of soft texture originating from the Cretaceous period

Note 1 to entry: It is characterized by microcrystalline calcitic crystals (up to 1 µm across). Chalk is mainly formed from shells and skeletons of small maritime organisms, e.g. foraminifera and coccoliths. Residual shell fragments are an essential characteristic of chalk. The term "whiting" shall not be used to describe forms of naturally occurring or precipitated calcium carbonate other than chalk.

2.130
zinc dust pigment
pigment (2.95) produced by distillation and subsequent condensation of the vapour phase or by spraying of liquid zinc, and containing at least 94 % of metallic zinc

2.131
zinc oxide pigment
zinc white
white inorganic *pigment* (2.95) that is produced by a pyrogenic procedure from metallic zinc or other zinc-containing raw materials

Note 1 to entry: Characteristically is the zinc oxide content of at least 98,5 %.

2.132
zinc phosphate pigment
active *corrosion-inhibiting pigment* (2.25) consisting either predominantly of zinc phosphate dihydrate [$Zn_3(PO_4)_2 \cdot 2H_2O$] or of a mixture of zinc phosphate dihydrate and zinc phosphate tetrahydrate [$Zn_3(PO_4)_2 \cdot 4H_2O$] or predominantly of zinc phosphate tetrahydrate

2.133
zinc sulfide pigment
white pigment that is produced by wet-chemical methods

Note 1 to entry: Characteristically is a zinc sulphide content of at least 98 %.

Annex A
(informative)

Alphabetical index

Bibliography

[1] ISO 4618:2014, *Paints and varnishes — Terms and definitions*

ICS 01.040.87; 87.060.10

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