

Glossary of Paint and related terms

Committees responsible for this British Standard

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- British Colour Makers' Association
- British Decorators' Association
- British Resin Manufacturers' Association
- Department of the Environment (Building Research Establishment)
- Institute of Metal Finishing
- Oil and Colour Chemists' Association
- Paint Research Association
- Paintmakers' Association of Great Britain Ltd.
- Society of Dyers and Colourists

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Contents

	Page
Committees responsible	Inside front cover
Foreword	ii
1 General and miscellaneous	1
2 Raw materials	5
3 Equipment, manufacturing plant and techniques	12
4 Paint types, characteristics and properties	14
5 Surface preparation and the application of coating materials	22
6 Terms used in methods of test and analysis	31
7 Colour and colour measurement	34
8 Paint defects	36
Index	42
Publication(s) referred to	50

Foreword

This British Standard has been prepared under the direction of the Pigments, Paints and Varnishes Standards Policy Committee. It supersedes BS 2015:1965, which is withdrawn.

This British Standard defines terms specific to, and in general use in, the paint and allied industries.

The previous edition was an alphabetical list of terms but this revision has divided the terms into sections related to specific areas. Terms which may commonly be used in the paint industry in the ordinary dictionary sense have been omitted except for materials used in the manufacture of paints; these are included in section 2.

The approach of the glossary is to define terms in the general sense, avoiding detailed technical descriptions but remaining accurate and informative.

Some terms exist which may have specific meanings in particular sections of the paint and allied industries but which are defined in a general sense in this glossary. The aim is for the glossary to be of use to as wide a cross section of the industry as possible; where a more specific meaning is known to be recognized by a particular interest, an endeavour has been made to draw attention to this as part of the definition.

Each entry has an individual number consisting of four digits in two parts; the first two digits represent the number of the section and subsection, and the second two digits represent the place that the term occupies within the section or subsection. Where two or more terms have the same meaning, preferred terms are printed in bold type; and deprecated terms are given below the preferred term, in medium type, with their status indicated. Terms of more than one word, e.g. "hammer finish", are written in the direct style and not as "finish, hammer". The inverted term is included in the index with reference to the direct term.

Terms are listed alphabetically in the index and are referred to by the numbers which are found against the terms in the body of the standard.

The method of alphabetization used in the index is word-by-word. The following filing sequence has been used for entries that begin with the same word:

- a) a single word entry and its sub-headings;
- b) the same word identified by same qualifier;
- c) compound entries beginning with the same word.

Italicized words indicate terms that are defined elsewhere in this standard.

A confusing aspect of the terminology of this field is the use of the term "coating" in three senses: for the material applied, the action of applying the material, and the resulting film. In this glossary "coating" is used only for the action, "coat" is used for the resulting film and "coating material" for the material used.

In order to keep abreast of progress in the industries concerned, British Standards are subject to periodical review. Suggestions for new terms and improvements to existing definitions are welcomed by the committee responsible for the updating of this standard.

NOTE The titles of the publications referred to in this standard are listed on page 50.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 50, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 General and miscellaneous

No.	Term	Definition
10 02	adhesion	The degree of attachment between the <i>film</i> of a <i>coating material</i> and the <i>substrate</i> with which it is in contact. The latter may be another <i>film</i> (intercoat <i>adhesion</i>) or the <i>substrate</i> material. NOTE <i>Adhesion</i> should not be confused with <i>cohesion</i> .
10 04	ageing	The irreversible change, if any, in the properties of a <i>coating material</i> , that occurs with the passage of time. It is referred to, in particular, in connection with dry <i>films</i> .
10 05	agglomerate	A loose arrangement of <i>primary particles</i> and <i>aggregates</i> of a <i>pigment</i> , attached, for example, at their corners or edges, which may be broken down during <i>dispersion</i> in the paint-making process.
10 06	aggregate	An assemblage of particles rigidly joined together, as by partial fusion, i.e. sintering or cementation or by growing together, which is not usually broken down by the <i>dispersion</i> techniques used in the <i>paint</i> industry.
10 07	alcoholysis	The chemical reaction between an ester and an alcohol that results in the replacement of the alkyl group in the ester by that of the alcohol. NOTE This reaction is frequently employed in the manufacture of <i>alkyd resins</i> , in which a triglyceride oil is reacted with a polyhydric alcohol at a high temperature in the presence of a <i>catalyst</i> to form a mixture of partial esters (mono- and di-glycerides, etc.). These partial esters are, unlike the oils themselves, miscible with the dibasic acids used in alkyd manufacture and obviate the need for the generally more expensive fatty acids.
10 08	apparent density	Density in grams per litre of untamped powder.
10 09	aqueous dispersion	A <i>dispersion</i> in which the continuous phase is water with or without substances dissolved therein.
10 10	auto-ignition temperature	The temperature to which, under specified conditions, a substance has to be raised to initiate self-sustained combustion in the absence of any source of ignition. NOTE 1 <i>Auto-ignition temperature</i> is not an absolute property, it varies with the method used for its determination. NOTE 2 The <i>auto-ignition temperature</i> of a material has no direct relationship to its <i>flash point</i> .
10 12	break mucilage	Of oils. The separation of the mucilaginous product that occurs when certain unrefined vegetable oils are heated. This appears as a hazy suspension which may coagulate into a spawn-like mass. The separated material generally remains insoluble, and cannot be re-dissolved in the oil, even on prolonged heating. NOTE When separation occurs, the oil is said to “break”. The insoluble matter is also referred to as the “break” or “mucilage”.
10 13	build	The thickness, either real or apparent, of the dry <i>film</i> of a <i>coating material</i> .
10 14	bulk density	Density in grams per litre of tamped powder.
10 15	bulking volume	The volume per unit mass of tamped powder, usually expressed as litres per kilogram (l/kg).

No.	Term	Definition
10 16	catalyst	A substance that increases the rate of a chemical reaction, but that remains chemically unchanged at the end of the reaction. NOTE 1 The term is often loosely employed to cover those additives that enter into the reaction, as in the <i>curing</i> by chemical cross-linking of resins. NOTE 2 See also <i>accelerator</i>, <i>cross-linking agent</i>, <i>curing agent</i>, <i>hardener</i> and <i>initiator</i>.
10 18	coating	A process that leads to the deposition of a <i>coat</i> .
10 21	cohesion	The forces that bind together into a coherent whole the particles of a <i>film</i>. NOTE <i>Cohesion</i> should not be confused with <i>adhesion</i>.
10 23	copolymer	A <i>polymer</i> derived from more than one chemically different species of <i>monomer</i>. NOTE An example is butadiene-styrene.
10 25	curing	The process of condensation or <i>polymerization</i> of a material by heat or chemical means resulting in the full development of the desired properties.
10 26	degree of polymerization	The number of monomeric structural units in a given <i>polymer</i> molecule.
10 27	depolymerization	The reduction, by physical or chemical action, of the molecular complexity of polymeric materials. The process may yield the parent <i>monomer</i> and/or more simple <i>polymers</i> , or lead to the complete destruction of the substance.
10 29	dispersibility	The rate at which a <i>pigment</i> , during the milling process, achieves the requisite degree of <i>dispersion</i> .
10 30	dispersion	A two-phase system in which one phase, the disperse phase, is permanently distributed as small particles throughout the second phase, the continuous phase.
10 31	elastomer	A macromolecular material that, after substantial deformation by a weak stress at room temperature returns rapidly to its initial shape and dimensions when the stress is removed.
10 32	emulsion	Apparently homogeneous material formed by the incorporation of two liquids which are normally immiscible. One liquid is dispersed in the other in the form of minute drops. NOTE 1 If the droplets remain permanently dispersed, the <i>emulsion</i> is said to be stable. Certain compounds are added as <i>stabilizers</i> because of their power to keep the droplets dispersed. NOTE 2 With reference to <i>coating materials</i>, the term is often erroneously applied to stable emulsion-like <i>dispersions</i> of a solid organic <i>binder</i> in water, e.g. polyvinyl acetate <i>emulsion</i>.
10 34	film formation	The process by which <i>coating materials</i> , when applied to a <i>substrate</i> , are transformed into a cohesive layer.
10 35	finish	The final or only <i>coat</i> in a <i>coating-system</i>. NOTE See also subsection 42 for types and appearance of the <i>finish</i>.

No.	Term	Definition
10 36	flammability limits	The limits of concentration known as lower explosion limit (LEL) and upper explosion limit (UEL) expressed as percentages by volume in air; between these limits a gas or vapour is capable of being explosively ignited on contact with a source of ignition. CAUTION. It should not be assumed that mixtures below the LEL and above the UEL are not combustible.
10 37	footing	The gradual deposition of <i>foots</i> from a <i>drying oil</i> or <i>varnish</i> .
10 38	foots	The settled layer that collects at the bottom of the container, when a <i>drying oil</i> or <i>varnish</i> is allowed to stand.
10 39	functionality	A concept commonly used in the formulation of <i>alkyd resins</i> or <i>polyester resins</i> prepared by a polycondensation reaction, where the term refers to the number of reactive groups within a molecule. NOTE The most important groups in this context are carbonyl, carboxyl and hydroxyl, but others are the epoxy, urethane and vinyl groups.
10 40	glass transition temperature (T_g)	A temperature below the melting point of a <i>polymer</i> at which the temperature dependence of volume and other thermodynamic variables show a marked change of gradient. Above this temperature the <i>polymer</i> exhibits rubber-like properties; below this temperature the <i>polymer</i> becomes inelastic and brittle.
10 41	homopolymer	A <i>polymer</i> , the molecules of which consist of one kind of structural unit repeated any number of times. NOTE Examples are polyvinyl chloride or polyvinyl acetate.
10 42	inhibitor	A material used, in small proportions, to arrest or retard a chemical reaction.
10 44	monomer	The unit molecule from which a <i>polymer</i> is built up.
10 46	particle size	The size of a typical particle within a <i>pigment</i> , <i>extender</i> , <i>powder coating material</i> or <i>paint</i> , usually expressed as a linear dimension, e.g. in micrometres (μm), which may be related to a sieve aperture or the diameter of an equivalent spherical particle. NOTE <i>Particle size</i> data will have value only if qualified by reference to the specific method of measurement. Rarely, however, are particles similar enough in size for a single figure to be meaningful. The range of sizes that are encountered practically may be expressed in a variety of ways, e.g. the mass of particles retained on a range of sieves, the number of particles that fall in different size brackets or the volume of particles that settle out from a suspension under given conditions. The mean <i>particle size</i> can be calculated from any of these sets of results and clearly it is important to state the method of evaluation. (See also BS 2955.)
10 47	particle size distribution	The relative proportion of the various <i>particle sizes</i> occurring in a given sample.
10 48	pigment binder ratio	The ratio, expressed as mass/mass, of the total <i>pigment</i> (white and/or coloured <i>pigment</i> plus <i>extender</i>) to the <i>binder</i> in a <i>coating material</i> .
10 50	polymer	A substance, the molecules of which consist of one or more structural unit(s) repeated many times. NOTE The <i>polymers</i> most widely used in surface <i>coating materials</i> are produced either by addition <i>polymerization</i> , e.g. <i>vinyl resins</i> , or by condensation <i>polymerization</i> in which water or other substances are eliminated, e.g. <i>alkyd resins</i> .
10 51	polymerization	A chemical reaction leading to the formation of a <i>polymer</i> .

No.	Term	Definition
10 52	prepolymer	A <i>polymer</i> that is capable of further <i>polymerization</i> by reaction with itself or with other <i>polymers</i> or <i>monomers</i> .
10 53	primary particles	The individual particles of a <i>pigment</i> or an <i>extender</i> that may be largely combined in <i>aggregates</i> and/or <i>agglomerates</i> .
10 54	saponification	The formation of a soap by the reaction between a fatty acid ester and an alkali. NOTE In painting practice, <i>saponification</i> refers to the decomposition of the <i>medium</i> of a <i>film</i> by alkali and moisture in the <i>substrate</i> , e.g. new concrete or rendering based on cement, sand and lime. Saponified <i>films</i> may become sticky and discoloured. In very severe cases the <i>film</i> may be completely liquefied by <i>saponification</i> . (See also <i>unsaponifiable matter</i>).
10 56	specific surface surface area <i>deprecated</i>	The surface area of the particles in a unit mass of powder as determined under stated conditions, e.g. from adsorption, permeability, particle size and size distribution. NOTE See BS 4359-1.
10 57	spirit	In the <i>paint</i> industry, this term is somewhat loosely used but generally refers to commercial ethyl alcohol normally sold as industrial methylated spirit. NOTE The term mineral spirits is used, particularly in America, for what is known in the UK as <i>white spirit</i> . This consists mainly of a mixture of aliphatic hydrocarbons with a proportion of aromatic hydrocarbons.
10 58	spirit-soluble material	A material, e.g. a resin or a <i>dye</i> , that dissolves readily in a liquid composed essentially of an alcohol, usually ethyl alcohol (industrial methylated spirit). NOTE The term does not imply solubility in <i>white spirit</i> .
10 59	surface treatment	Of a pigment. The modification of the surface of a <i>pigment</i> in order to improve particular properties, e.g. resistance to <i>yellowing</i> ; <i>dispersibility</i> or <i>weathering</i> . The process may involve the deposition of small quantities of other materials on to the surface of the <i>pigment</i> .
10 60	surfactant surface-active agent	A substance that has the fundamental property of reducing the interfacial tension between a solid and a liquid, or a liquid and air.
10 61	terpolymer	A <i>polymer</i> derived from three chemically different species of <i>monomer</i> . NOTE An example is acrylonitrile-butadiene-styrene.
10 62	thermal depolymerization	Depolymerization effected by means of heat.
10 63	thermoplastic	A term applied to a macromolecular material capable of being reversibly softened by heating.
10 64	thermosetting	A term applied to a macromolecular material that under the influence of appropriate thermal conditions undergoes <i>polymerization</i> to yield a solid which is infusible and insoluble in commonly used <i>solvents</i> .
10 66	unsaponifiable matter	The fraction, usually expressed as a percentage, e.g. of a <i>binder</i> , that remains unaffected by alkalis under specified test conditions.

No.	Term	Definition
10 69	viscosity apparent viscosity	The internal resistance to flow possessed by a liquid, determined by measuring the force required to shear the liquid, i.e. to move one layer over another in orderly flow without turbulence at a defined rate. NOTE 1 Most <i>solvents</i> , and many oils and <i>varnishes</i> are what are termed Newtonian liquids, that is, when they are tested in suitable viscometers at a fixed temperature, their rate of flow (shear) is proportional to the shearing force. The <i>viscosity</i> of these liquids at a fixed temperature is thus a constant. NOTE 2 For most <i>paints</i> and other pigmented materials the rate of flow (shear) is not proportional to the shearing force, but may vary with the time and rate of shearing. For these materials only an <i>apparent viscosity</i> , a figure that refers only to the behaviour of the material under the particular circumstances and precise conditions of measurement, can be determined. (See BS 188; BS EN 535.)
10 70	zeta potential	The electric potential that develops at the interface between a solid and the liquid phase with which it is in contact.

2 Raw materials

21 Pigments

21 01	aluminium paste	A paste consisting of fine aluminium flakes in a volatile <i>medium</i> , usually <i>white spirit</i> .
21 02	bronze paste	A paste consisting of bronze coloured metallic flakes in a volatile <i>medium</i> , usually <i>white spirit</i> . NOTE It is used in combination with <i>media</i> to make <i>metallic</i> and <i>polychromatic paints</i> .
21 03	dry colour	A term used to describe any coloured <i>pigment</i> , including black but excluding white.
21 05	earth colour mineral pigment	A <i>pigment</i> of the class that is usually mined, subsequently dried, ground and sometimes calcined. NOTE Examples are red and yellow oxides of iron, raw and burnt sienna and umber.
21 06	extended pigment reduced pigment <i>deprecated</i>	A <i>paint</i> raw material consisting of a mixture of a <i>pigment</i> and an <i>extender</i> . NOTE Such materials, when commercially available, are identified by the respective proportions of the <i>pigment</i> and <i>extender</i> .
21 08	flake white	A variety of white lead in oil.
21 09	Indian red	A red oxide with a bluish undertone made by <i>grinding</i> a variety of haematite.
21 10	inert pigment	A <i>pigment</i> that remains relatively inactive or chemically unchanged in <i>paints</i> under specified conditions. NOTE The term has little significance unless the conditions are stated.
21 11	inhibitive pigment	A <i>pigment</i> that retards or prevents the corrosion of metals by chemical and/or electrochemical means, as opposed to performing a purely barrier function. NOTE Red lead and zinc chromate are examples of <i>inhibitive pigments</i> as opposed to red iron oxide which has little or no inhibitive action.
21 12	lake colours	A class of <i>pigments</i> consisting of organic colouring matter chemically or physically absorbed on an inorganic base or carrier, e.g. alumina. NOTE <i>Lake colours</i> are characterized by bright <i>colour</i> and pronounced translucency when made into a <i>coat</i> .

No.	Term	Definition
21 13	lead chromes	A group of <i>pigments</i> , consisting essentially of precipitated lead chromate, to which are added during manufacture other substances which modify the crystal structure in order to create a range of <i>colours</i> from primrose yellow to scarlet.
21 14	organic pigment pigment-dyestuff <i>deprecated</i>	A coloured <i>pigment</i> , insoluble in water but sometimes partially soluble in organic <i>solvents</i> , based on an organic compound sometimes with an inorganic component physically or chemically incorporated.
21 16	pigment chip	A concentrated <i>dispersion</i> , in chip form, of a <i>pigment</i> in a <i>polymer</i> . NOTE 1 Examples are cellulose nitrate, <i>vinyl resin</i> . NOTE 2 <i>Pigment chips</i> , unlike conventional powder <i>pigments</i> , offer the end-user a means of achieving a very fine <i>pigment dispersion</i> within a chosen <i>medium</i> , without needing to use <i>ball mills</i> or heavy-duty high-shear equipment such as <i>triple-roll-mills</i> .
21 17	pigment paste	A <i>dispersion</i> of a <i>pigment</i> in a continuous liquid phase.
21 18	tinter	A coloured <i>pigment</i> or <i>pigments</i> dispersed in a <i>medium</i> compatible with <i>paint vehicles</i> , added in relatively small proportions to already prepared <i>paints</i> to modify their <i>colour</i> . NOTE Stainer is an obsolescent term for <i>tinter</i> .
21 19	titanium dioxide pigment	One of a range of white <i>pigments</i> , widely used in <i>coating materials</i> , that are based on titanium dioxide in two crystalline forms: anatase and rutile. The two forms differ in their effects on <i>hiding power</i> and <i>weathering</i> resistance; these effects can be modified by treatment, e.g. with silica or alumina.
21 20	toner	An insoluble salt of an organic <i>dye</i> . NOTE The term is also loosely applied to pure <i>organic pigments</i> but this sense is deprecated.
21 21	transparent iron oxide	A red oxide <i>pigment</i> that colours a <i>coating material</i> with minimal effect on its transparency.
21 22	universal tinter	A multi-purpose <i>tinter</i> that can be used both with organic solvent-thinned <i>paints</i> and with water-thinned <i>paints</i> .
21 23	zinc dust	Finely divided zinc metal used as a <i>pigment</i> in protective <i>coating materials</i> for iron and steel.

22 Resins, intermediates and other media constituents

NOTE Definitions of other types of resin are given in BS 1755-1.

22 01	acetal resin	A <i>thermoplastic</i> resin derived from polyvinyl acetate in which ester groups have been replaced by hydroxyl groups and most of these hydroxyl groups converted to acetal groups by reaction with aldehyde.
22 02	acrylic resin	A <i>synthetic resin</i> made by the <i>polymerization</i> of an acrylic compound, e.g. methyl acrylate, methyl methacrylate. NOTE See also <i>vinyl resin</i> .

No.	Term	Definition
22 03	alkyd resin	A <i>synthetic resin</i> made by condensation between a polyhydric alcohol such as glycerol, and a polybasic acid such as phthalic acid (normally used in the form of the anhydride). NOTE Modifying agents may be incorporated to influence the properties of the resulting product. Thus, the inclusion of acids from a vegetable <i>drying oil</i> such as <i>linseed oil</i>, in place of some of the phthalic anhydride, gives a resin soluble in the organic <i>solvents</i> usually used in <i>paints</i> and <i>varnishes</i>. By varying the types and ratios of the polyhydric alcohols and carboxylic acids, an almost infinite number of different resins can be made, some of which may be used as the sole film-forming agents or as film-forming ingredients with materials such as <i>nitrocellulose</i>. (See also <i>long oil</i>; <i>short oil</i>.)
22 04	amino resin	A <i>synthetic resin</i> of the <i>thermosetting</i> type made by the reaction of urea, thiourea, melamine, or allied compounds usually with formaldehyde. NOTE <i>Amino resins</i> are blended with other resins (e.g. <i>alkyd resin</i> or <i>epoxy resin</i>) and are usually cured by <i>stoving</i>. <i>Amino resins</i> may also be cured by chemical means at normal air temperature, e.g. in wood finishes.
22 05	bitumen	A viscous liquid or a solid, consisting essentially of hydrocarbons and their derivatives which is soluble in aliphatic <i>solvents</i> and is substantially non-volatile and softens gradually when heated. NOTE Bitumen is black or brown in <i>colour</i> and possesses waterproofing and <i>adhesive</i> properties.
22 06	blown oil	A vegetable oil that has been partially oxidized by injecting a current of air whilst at an elevated temperature. The characteristics of the oil, such as its increased <i>viscosity</i> and degree of oxidation, can be controlled by the time, the temperature and the amount of air.
22 07	bodied oil	An oil of increased <i>viscosity</i> produced by any means. NOTE Examples are <i>blown oil</i>, <i>stand oil</i>.
22 08	boiled oil	<i>Linseed oil</i> which has been heated and to which <i>driers</i> have been added.
22 09	butyral resin	A resin derived from polyvinyl alcohol in which the hydroxyl groups have been reacted with butyraldehyde instead of acetaldehyde.
22 10	cellulose acetate butyrate	A <i>thermoplastic</i> material derived from a mixed acetic acid and butyric acid ester of cellulose.
22 11	cellulose acetate propionate	A <i>thermoplastic</i> material derived from a mixed acetic acid and propionic acid ester of cellulose.
22 12	chlorinated rubber	Natural or synthetic rubber that has been chlorinated to increase its solubility in organic <i>solvents</i>. NOTE <i>Coating materials</i> made from <i>chlorinated rubber</i> have a high degree of chemical and water resistance.
22 13	copal	The <i>natural resins</i> formed from the exudate of various tropical trees.
22 14	dehydrated castor oil (abbrev. DCO)	A <i>drying oil</i> prepared by the action of heat at about 280 °C on <i>castor oil</i> in the presence of acidic <i>catalysts</i> such as sodium bisulphite.
22 15	dispersion resin	A stabilized <i>dispersion</i> of a <i>polymer</i> in a liquid. NOTE The <i>dispersion</i> technique enables <i>coating materials</i> to be prepared with higher non-volatile contents at a particular <i>viscosity</i> than is possible with solutions of similar resins. The <i>coating materials</i> fall into three main groups, <i>plastisols</i>, <i>organosols</i> and <i>non-aqueous dispersions</i>.

No.	Term	Definition
22 16	drying oil	An oil, usually of vegetable origin, having the property of hardening by oxidation to a tough <i>film</i> , when exposed to air. NOTE The commonest examples are <i>linseed oil</i> , <i>soya bean oil</i> , <i>safflower oil</i> and <i>dehydrated castor oil</i> .
22 17	epoxy resin	A <i>synthetic resin</i> containing epoxide groups and in which the final <i>polymer</i> is formed as a result of a reaction taking place substantially at the epoxide groups.
22 18	hydrocarbon resin (1)	A <i>synthetic resin</i> derived from the reaction between hydrocarbons and aldehydes. The hydrocarbon may be aromatic such as naphthalene, benzene or one of its homologues, or a terpene.
22 19	hydrocarbon resin (2)	A resin formed by the <i>polymerization</i> of coumarone and/or indene in the presence of <i>catalysts</i> .
22 20	isocyanates	A class of organic compounds, embodying the –NCO group that react with polyesters and polyethers to form <i>polyurethane resins</i> .
22 21	isomerized rubber cyclized rubber	A resin, soluble in <i>white spirit</i> or other organic <i>solvents</i> , produced from natural rubber by heating with an acid <i>catalyst</i> .
22 22	ketone resin (1)	A <i>synthetic resin</i> obtained by the auto-condensation of cyclic ketones such as cyclohexanone, methyl cyclohexanone and cyclopropanone.
22 23	ketone resin (2)	A <i>synthetic resin</i> formed by the condensation of a ketone with an aldehyde.
22 24	lac	A resinous substance excreted by COCCUS LACCA insects on certain trees in tropical rainforests.
22 25	latex	Originally a natural rubber latex; now also applied to dispersions of various <i>synthetic resins</i> .
22 26	linseed oil	The <i>drying oil</i> obtained from the seeds of the flax plant LINUM USITATISSIMUM. NOTE The crude product is known as raw <i>linseed oil</i> and before usage in surface <i>coating materials</i> it undergoes various treatments either by acid or alkali to yield refined <i>linseed oil</i> .
22 27	long oil	A high ratio of oil to resin in a <i>medium</i> , i.e. high <i>oil length</i> .
22 28	maleic resin	A polycondensation product from maleic acid, or more usually maleic anhydride, <i>rosin</i> and polyhydric alcohols, such as glycerol or pentaerythritol.
22 29	natural resin	A glassy amorphous organic substance produced either in the metabolism of tree growth, e.g. <i>copal</i> , or by insects, e.g. <i>lac</i> . NOTE The former may be obtained from growing trees or dug up from the ground (fossil resin) where it has lain since the trees from which it was formed decayed in prehistoric times. These resins, as distinct from gums, are not soluble in water but may be dissolved in organic <i>solvents</i> or vegetable oils, if necessary after heat treatment, to form <i>varnishes</i> .
22 30	nitrocellulose cellulose nitrate	A resin produced by the nitration of cellulose and which is soluble in esters or ketones. NOTE The solubility of these resins is dependent on the degree of nitration and the <i>viscosity</i> of the solution is dependent on the molecular weight. They are mainly used for making <i>non-convertible coating materials</i> .
22 31	non-aqueous dispersion (abbrev. NAD)	A <i>dispersion</i> of reactive resin and other reactants, usually with added <i>pigments</i> , in a non-solvent organic liquid. On heating, after application, <i>film formation</i> is completed by evaporation of volatiles and <i>thermosetting</i> reactions.

No.	Term	Definition
22 32	non-drying oil	An oil that undergoes little or no oxidation when exposed to air and therefore has no film-forming properties. NOTE See <i>film formation</i> .
22 33	oil length	The ratio of oil to resin in a <i>medium</i> . The <i>oil length</i> may be expressed in terms of parts by mass of oil to one part by mass of resin, or in percentage terms.
22 34	organosol	A stabilized <i>dispersion</i> of a <i>thermoplastic</i> high <i>polymer</i> resin, usually with added <i>pigments</i> , in an organic liquid that is predominantly volatile. On heating, after application, the <i>coating</i> forms a <i>coherent film</i> (see <i>cohesion</i>) with simultaneous loss of organic carrier.
22 35	petroleum resin	A resin produced by the <i>polymerization</i> of low-boiling unsaturated compounds such as olefines and diolefines, which result from the cracking of petroleum. The resins are usually quite dark in <i>colour</i> and cannot be used in pale coloured products.
22 36	phenolic resin	A <i>synthetic resin</i> normally of <i>thermosetting</i> type produced by the reaction of a phenol, or its homologues, with an aldehyde, usually formaldehyde or a compound that is capable of providing methylene bridges. Phenol, cresol, xyenol and resorcinol are commonly used. NOTE The term includes both the simple condensation products (pure or 100 % phenolics), and those modified with <i>rosin</i> or <i>rosin</i> esters. <i>Phenolic resins</i> are reacted with <i>drying oils</i> to produce <i>media</i> for <i>paints</i> .
22 37	plastisol	A stabilized <i>dispersion</i> of a <i>thermoplastic</i> high <i>polymer</i> resin in an organic liquid of which a substantial portion is a <i>plasticizer</i> of low volatility and miscible with the resin at an elevated temperature, usually with added <i>pigment</i> . On heating, after application, the <i>polymer</i> and plasticizer fuse to a <i>coherent film</i> .
22 38	polyol	An alcohol having two or more hydroxyl groups per molecule. NOTE The term is widely used in the <i>synthetic resin</i> industry to cover such compounds as glycerol, pentaerythritol and trimethylolpropane.
22 39	polyurethane alkyd	A resin produced by reacting polyisocyanates with a suitable <i>alkyd resin</i> .
22 40	polyurethane oil	An oil produced by reacting polyisocyanates with <i>drying oils</i> which have undergone <i>alcoholysis</i> to yield partial esters containing free hydroxyl groups.
22 41	polyurethane resin	A <i>synthetic resin</i> produced by reacting a polyhydroxyl reactant, normally of polyester or polyether structure, with a polyisocyanate. NOTE <i>Polyurethane resins</i> are frequently supplied in two-pack form to be used immediately upon mixing.
22 42	rosin	A <i>natural resin</i> obtained from pine oleo-resin after removal of the volatile fractions. NOTE Two kinds of <i>rosin</i> are commercially available; gum <i>rosin</i> tapped from live trees and wood <i>rosin</i> obtained from dead wood such as stumps and knots.
22 43	seedlac	A granular form of purified <i>lac</i> produced from the crude resin by extraction with water.
22 44	semi-drying oil	An oil in which the degree of unsaturation and hence the drying characteristics are inferior to those of a <i>drying oil</i> such as <i>linseed oil</i> .

No.	Term	Definition
22 45	shellac	A collective name for the purified grades of <i>lac</i> . NOTE The most commonly occurring grade is orange <i>shellac</i> which is supplied in flakes. More refined grades such as dewaxed, bleached and garnet <i>shellac</i> are also available.
22 46	short oil	A low ratio of oil to resin in a <i>medium</i> , i.e. low <i>oil length</i> .
22 47	silicone	A member of a class of compounds in which the basic structure consists of silicon-oxygen linkages, which are very stable to heat and other influences. NOTE The class includes polymerizable high temperature resistant resins, lubricant greases and oils, organic solvent-soluble water repellents and surface tension modifiers for organic solvents.
22 48	silicone-modified resin	A <i>synthetic resin</i> , the properties of which have been modified with a substantial proportion of a <i>silicone</i> usually to improve resistance to <i>weathering</i> or to heat. NOTE Examples are silicone-modified <i>alkyd resin</i> , <i>epoxy resin</i> and <i>polyester resin</i> .
22 49	size	An aqueous solution of animal glue, cellulose derivative or starches used to seal porous <i>substrates</i> .
22 50	soya bean oil	A <i>drying oil</i> extracted from the soya bean that has inferior drying properties to <i>linseed oil</i> but which may be improved by suitable processing. It is used in the manufacture of <i>alkyd resins</i> . NOTE <i>Coating materials</i> containing <i>soya bean oil</i> are less prone to <i>yellowing</i> than those based on <i>linseed oil</i> .
22 51	stand oil	A <i>drying oil</i> polymerized by heating under substantially air-free conditions in contrast to <i>blown oil</i> . NOTE The unqualified term normally refers to linseed <i>stand oil</i> but may be applied to others. <i>Stand oils</i> dry to <i>films</i> that are generally tougher and more water resistant than pure <i>linseed oils</i> . The degree of change in properties depends on the extent of <i>polymerization</i> as indicated by <i>viscosity</i> .
22 52	synthetic resin	A member of a group of chemically produced substances that resemble and share some of the properties of <i>natural resins</i> . NOTE 1 The term is generally understood to mean a member of the heterogeneous group of compounds produced from simpler compounds by condensation and/or <i>polymerization</i> . NOTE 2 Chemically modified natural <i>polymers</i> , such as cellulose derivatives are not considered to be synthetic resins.
22 53	tall-oil fatty acid	The term applied to a complex mixture of fatty acids that is obtained as a by-product of the sulphite process in the paper pulp industry.
22 54	tung oil china wood oil	A <i>drying oil</i> expressed from various species of ALEURITES.
22 55	vinyl resin	A <i>synthetic resin</i> of the <i>thermoplastic</i> type obtained by the <i>polymerization</i> of <i>monomers</i> containing the vinyl group.

23 Additives

23 02	activator	A substance added in small quantity to another to promote its activity. NOTE 1 For example, traces of certain elements can promote the luminescence of zinc sulphide <i>pigments</i> in <i>luminous paints</i> . NOTE 2 Peroxides added to polyesters are sometimes called <i>activators</i> .
23 03	anti-oxidant	A material that inhibits the oxidation of <i>coating materials</i> during storage, or delays <i>drying</i> after application.

No.	Term	Definition
23 04	anti-sagging agent	A material incorporated in a <i>coating material</i> to reduce the tendency for <i>sagging</i> in the applied <i>film</i> . NOTE An example is <i>hydrogenated castor oil</i> .
23 05	anti-settling agent suspending agent <i>deprecated</i>	A substance incorporated in a <i>coating material</i> to delay the formation of sediment and to maintain uniform consistency during storage or, as in dipping <i>paints</i> , during painting operations.
23 06	anti-skinning agent	An <i>anti-oxidant</i> added in small quantities to a <i>coating material</i> to prevent the formation of a skin during storage.
23 07	ballotini	Very small transparent glass spheres having optical properties such that incident light is reflected back in the general direction of the source. NOTE <i>Ballotini</i> are incorporated in, or superimposed on, <i>paint films</i> or plastic <i>coating materials</i> to give increased visibility, e.g. in signs illuminated by car headlamps.
23 08	castor oil	A <i>non-drying oil</i> extracted from the seeds of <i>RICINUS COMMUNIS</i> . NOTE After refining, the oil is used in the manufacture of <i>dehydrated castor oil</i> for use as a constituent in the manufacture of certain <i>synthetic resins</i> . <i>Castor oil</i> may be also blown, the resulting product being used as a <i>plasticizer</i> in some <i>lacquers</i> . (See <i>blown oil</i> , <i>hydrogenated castor oil</i> .)
23 09	cross-linking agent	A compound that will react chemically with a polymeric material, giving rise to a three-dimensional network which is substantially insoluble in common <i>solvents</i> .
23 10	curing agent	An <i>additive</i> that promotes the chemical <i>curing</i> of a <i>film</i> . NOTE See also <i>catalyst</i> and <i>initiator</i> .
23 11	denaturant	A substance added to industrial ethyl alcohol to render it unfit for human consumption.
23 12	dewatering agent (1)	A fluid containing a <i>surfactant</i> (e.g. a quaternary ammonium compound) that when added to a liquid <i>paint</i> enables it to be applied to a damp <i>substrate</i> .
23 13	dewatering agent (2)	A fluid applied to a <i>substrate</i> to remove water from it.
23 14	dispersing agent dispersant	An <i>additive</i> used in the manufacture of <i>coating materials</i> to facilitate the <i>dispersion</i> of the solid components in the liquid phase.
23 16	flatting agent matting agent	A product incorporated in a <i>coating material</i> to reduce the <i>gloss</i> of the dried <i>film</i> .
23 17	fungistat	A material that when added to a <i>coating material</i> restricts fungal growth. NOTE An example is zinc oxide.
23 18	hardener	A material that, by chemical reaction, enhances the hardness of a <i>coat</i> .
23 19	hydrogenated castor oil	<i>Castor oil</i> that has been converted to a waxy product by reacting it with hydrogen in the presence of a suitable metallic <i>catalyst</i> .
23 20	initiator	A substance capable of starting a <i>polymerization</i> reaction. NOTE See <i>catalyst</i> .
23 22	(in can) preservative	A substance added in small quantities to a <i>coating material</i> to protect it against bacterial degradation. NOTE <i>Preservatives</i> are generally used in <i>water-based paints</i> .

No.	Term	Definition
23 23	retarder	A substance added to slow down a chemical or physical change. A slowly evaporating <i>solvent</i> may be added to a <i>coating material</i> to delay the <i>set</i> of the <i>film</i> after application and to improve the application properties, or to give a better <i>film</i> , e.g. one with improved <i>flow</i> . NOTE A <i>retarder</i> may be added to plaster to retard its setting.
23 24	stabilizer	A substance added, usually in small proportions, to retard undesirable chemical or physical changes. NOTE For example, small quantities of stabilizers are added to retard the dehydrochlorination of <i>chlorinated rubber</i> or the coagulation of an <i>emulsion</i> .
23 25	thickener	A material added to water-borne <i>coating materials</i> to increase the <i>viscosity</i> thus enabling application of thicker <i>films</i> .
23 26	turpentine turps	A colourless volatile liquid distilled from the products of certain pine trees and consisting of a complex mixture of terpene hydrocarbons. NOTE <i>Turpentine</i> was formerly extensively used in <i>paints</i> and <i>varnishes</i> but has now been largely replaced by <i>white spirit</i> .
23 27	white spirit	A straight-run or blend of petroleum hydrocarbons with a boiling range lying between 150 °C and 200 °C used as a <i>thinner</i> for <i>coating materials</i> . NOTE <i>Turpentine substitute</i> is a deprecated term for a petroleum distillate of the <i>white spirit</i> type.

3 Equipment, manufacturing plant and techniques

31 Pigment and paint-making processes

31 01	attritor	A machine used to disperse <i>pigment</i> by subjecting the <i>mill-base</i> to the action of small balls of the order of 2 mm to 5 mm diameter kept in motion by a rotor.
31 02	ball mill	A machine consisting essentially of a cylindrical vessel that, when charged with the appropriate quantity of ceramic or metal spheres of suitable sizes, and rotated at the correct speed about its longitudinal axis, can be used either for the dry <i>grinding</i> of solids or for the <i>dispersion</i> of solids in liquids.
31 03	Banbury mixer	An enclosed mixer, named after its inventor, consisting essentially of a cylindrical vessel in which solids may be dispersed in polymeric materials by rotating blades. The vessel and rotors are hollow so that they can be heated or cooled to control the temperature of the materials being processed.
31 04	bead mill	A mill operating on generally similar principles to a <i>sand mill</i> but often orientated horizontally and usually involving <i>grinding</i> agents of larger diameter.
31 05	colloid mill	A machine designed to produce adequate <i>dispersions</i> from premixed pastes or slurries. It consists of a ring of carborundum or steel rotating at high speeds beneath a static disc of the same material. The <i>mill-base</i> is sheared between the ring and the static disc.
31 06	colour dispenser	A device, mechanical or electronic, normally installed near the point of sale, for adding to previously filled packages of <i>paint</i> predetermined volumes of appropriate <i>tinter</i> to adjust the <i>colour</i> in accordance with the requirements of the ultimate customer.

No.	Term	Definition
31 07	critical speed	The rotational speed of a <i>ball mill</i> above which the centrifugal forces during the dispersing process impede the cascading motion of the grinding agents in the <i>mill-base</i> .
31 08	edge-runner mill	A mill usually consisting of a horizontal circular pan. One or more rollers are made to rotate edge-wise around the pan. The pan and rollers may be made from cast iron or stone.
31 09	filtration	The mechanical separation of finely suspended matter from associated liquids by means of a porous membrane or fine mesh.
31 10	grinding	The process that achieves the breaking down of particles of <i>pigment</i> to smaller sizes.
31 11	hammer mill	A type of mill used for pulverizing dry materials in which the disintegration is caused by the flailing action of a series of small hammers rotating at high speed within a mesh of suitable size.
31 12	heavy-duty mixer internal mixer	A machine consisting of a cylindrical container in which materials are masticated by rotating blades or rotors. The container and rotors are cored so that they can be heated or cooled to control the temperature of the charge.
31 13	high speed disperser cavitation mixer <i>deprecated</i>	A machine consisting of a shaft-mounted impeller which when rotated at high speeds imparts a shearing action to disperse solids in liquids.
31 14	horizontal mixer pug mill	A U-shaped vessel fitted with a lid and having blades on a centrally-mounted shaft that is capable of rotating about a horizontal axis.
31 15	maturing	Of varnishes. The process by which clarity, brightness, working properties, etc. of <i>varnishes</i> are improved by storage in tanks.
31 16	mill-base	The mixture of resins, <i>solvents</i> , <i>pigments</i> and <i>additives</i> that is milled together to produce the <i>dispersion</i> from which a pigmented <i>coating material</i> is prepared.
31 17	paint conditioner	A mechanical device that restores to an homogenous state a <i>coating material</i> that has undergone <i>settling</i> during storage, by shaking the sealed container.
31 18	pebble mill	A <i>ball mill</i> in which the grinding agent is composed of pebbles.
31 19	pin mill	A mill similar to a <i>hammer mill</i> except that the hammers are replaced by fixed pins as the concussive elements. Usually, these pins are attached to a rotor that engages a stator similarly fitted with pins.
31 20	premixer	Any machine used for thoroughly pre-blending constituents in either the dry or liquid state. Various types of internal mixer are used.
31 21	roller mill (three-roll mill; five-roll mill)	A machine used to disperse a <i>pigment</i> by passing a <i>mill-base</i> between two rollers rotating at different speeds. The process may be repeated through a series of rollers, hence three- or five-roll mills.
31 22	sand mill	A vertical cylinder, charged with sand and fitted with a rotating shaft on which discs are fixed and into which a premix of <i>pigment</i> and <i>medium</i> is run. After being dispersed the charge is expelled through a sieve which retains the sand. NOTE The sand may be replaced by glass beads.
31 23	Z-blade mixer	A mixer similar to a <i>horizontal mixer</i> but with the single blades replaced by two Z-shaped intermeshing blades.