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Designation: D 16 – 03

Standard Terminology for Paint, Related Coatings, Materials, and Applications[1]

This standard is issued under the fixed designation D 16; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

abrasion resistance, *n (for coatings)*—the ability of a coating to resist being worn away and to maintain its original appearance and structure when subjected to rubbing, scraping, or wear. **D 968, D01.23**

acid number, *n (for coatings)*—the number of milligrams of potassium hydroxide (KOH) required to neutralize the free acids in 1 g of an oil, resin, varnish, or other substance; generally reported on the nonvolatile content.

acid value — see **acid number.**

acrylic resin—under **resin, synthetic,** see *acrylic resin.*

additive, *n*—a substance added in small quantities to another substance, usually to improve specific properties (for example, a drier, mildewcide, etc.).

adhesion promoter, *n*—a material built into a binder or added to a paint to form primary bonds to either the substrate or the previously applied coating, with the specific aim of improving the dry or wet adhesion, or both. **D01.23**

alkyd resin—under **resin, synthetic,** see *alkyd resin.*

architectural coatings, *n*—coatings intended for on-site application to interior or exterior surfaces of residential, commercial, institutional or industrial buildings.

asbestos—see **industrial talc** and **industrial talc, nonasbestos type.**

associative thickener, *n*—water-soluble polymers containing hydrophobic groups that are capable of nonspecific hydrophobic association similar to surfactants that elevate viscosity presumably by association between thickener particles or thickener and dispersed particles that may be present in the aqueous system such as latex particles rather than through high molecular weight or chain stiffness of the thickener molecules themselves.

autodeposition, *n*—a single-step immersion metal finishing process in which an organic coating is applied by means of unique surface chemical reactions carried out in an aqueous latex dispersion, also referred to as chemiphoresis. Components within the bath give rise to chemical reactions that slightly solubilize the metallic surface and lead to destabilization, deposition, and coalescence of the dispersed latex particles at that surface.

DISCUSSION—The deposition rate of the latex is controlled by the rate of surface solubilization. The process does not require any pretreatments such as phosphating, needs no external energy input, and gives rise to deposition wherever the solution wets the substrate. Irregularly shaped parts can be uniformily coated.

baking finish, *n*—a paint or varnish that requires baking at temperatures above 150°F (65°C) for the development of desired properties.

baking temperature, *n*—a temperature above 150°F (65°C).

batch, *n*—the total quantity of a material produced in a single final mixing operation after all production processes are complete, or just prior to filling.

bituminous varnish— under **varnish,** see *bituminous varnish.*

bleeding, *n*—the diffusion of coloring matter through a coating from the substrate; also, the discoloration arising from such diffusion. In the case of printing ink, the spreading or running of a pigment color by the action of a solvent such as water or alcohol.

blistering resistance, *n*—the ability of a coating to resist the formation in the film of dome-shaped, liquid- or gas-filled projections resulting from local loss of adhesion and lifting of the film from the previously applied coating or the substrate.

blocking, *n—for coatings other than powder coatings,* the sticking of a coated surface to an adjacent surface when the two surfaces have been in contact for an extended period of time. **D01.42**

brush-drag, *n*—resistance encountered when applying a coating by brush, directly related to the high-shear viscosity of the coating. **D 4958, D01.42**

bulking value, *n*—solid volume of a unit weight of material, usually expressed as gallons per pound. For practical purposes this is 0.120 divided by the specific gravity.

caulking compound, *n*—a soft, plastic material, consisting of pigment and vehicle, used for sealing joints in buildings and other structures where normal structural movement may occur.

DISCUSSION—Caulking compound retains its plasticity for an extended period after application. It is available in forms suitable for

[1] This terminology is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.16 on Definitions.

Current edition approved July 10, 2003. Published August 2003. Originally approved in 1911. Last previous edition approve in 2000 as D 16 - 00.

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application by gun and knife and in extruded preformed shapes.

cellulose lacquer— see **lacquer.**

chalking resistance, *n*—the ability of a pigmented coating to resist the formation of a friable powder on its surface caused by the disintegration of the binding medium by degradative weather factors.

checking resistance, *n*—the ability of a coating to resist slight breaks in the film that do not penetrate to the previously applied coating or to the substrate. The breaks should be called cracks if penetration extends to the previously applied coating or to the substrate. See **cracking resistance.**

chipping resistance, *n*—the ability of a coating or layers of coatings to resist removal, usually in small pieces, resulting from impact by hard objects or from wear during service.

coating, *n*—a liquid, liquefiable or mastic composition that is converted to a solid protective, decorative, or functional adherent film after application as a thin layer.

color of an object, *n*—the aspect of the appearance of an object dependent upon the spectral composition of the incident light, the spectral reflectance or transmittance of the object, and the spectral response of the observer.

hue, n—The attribute of color perception by means of which a color is judged to be red, orange, yellow, green, blue, purple, or intermediate between adjacent pairs of these, considered in a close ring, red and purple being an adjacent pair. (White, gray and black colors possess no hue). **E 284**

DISCUSSION—The short end of the spectrum is violet, with purple by definition being a nonspectral combination of red and violet. The practice of replacing violet by purple in the roster of object colors is apparently a practical accommodation to color-order requirements, as described in the Munsell system. See Practice D 1729.

lightness, n— (*1*) The attribute by which a perceived color is judged to be equivalent to a member of a series of grays ranging from black to white. (*2*) The attribute of color perception by which a non-self-luminous body is judged to reflect more or less light. **E 284**

saturation— attribute of a visual sensation that permits a judgment to be made of the proportion of pure chromatic color in the total sensation. **E 284**

contrast ratio, *n*—ratio of the reflectance of a dry paint film over a black substrate of 5 % or less reflectance, to the reflectance of the same paint, equivalently applied and dried, over a substrate of 80 % reflectance.

coverage, coverage rate, covering power—ambiguous terms that are used in some instances to refer to hiding power and in others to mean spreading rate. The precise terms **hiding power** and **spreading rate** are preferred.

cracking resistance, *n*—the ability of a coating to resist breaks of the film where the breaks extend through to the surface painted and the previously applied coating or the substrate is visible. The use of a minimum magnification of 10 diameters is recommended in cases where it is difficult to differentiate between cracking and checking. See **checking resistance.**

crawling, *n*—defect in which the wet film recedes from localized areas of the substrate (usually caused by insufficient wetting) leaving those areas uncoated. **D 1848, D01.42**

curtaining—see **sag or sagging**.

density, *n*—the mass per unit volume of a substrate at a specified temperature and pressure; usually expressed in g/mL, kg,L, g/cm^3, g/L, kg/m^3 or lb/gal. See **specific gravity**. **D01.23, D01.24**

DISCUSSION—(*1*) g/mL = kg/L = g/cm^3; g/L = kg/m^3. (*2*) Density (lb/gal) = Density (g/mL) × 8.345405 ... (*3*) The temperature should be 25°C for best conformance with Test Method D 1475. For liquids and solids, which are the usual concerns of Committee D-1, the pressure need not be specified. (*4*) Density of water at 25°C = 0.997044 g/mL = 8.32 lb/gal.

dirt (*for coatings*)—see **soil.**

dirt resistance, *n (for coatings)*—the ability of a coating to resist soiling by foreign material, other than microorganisms, deposited on or embedded in the dried coating.

distinctness-of-image gloss, *n*—the sharpness with which image outlines are reflected by the surface of an object.

dope, *n*—a composition, usually a cellulosic lacquer, for application on textiles and leathers.

drier, *n*—an additive that accelerates the drying of an oil, paint, printing ink, or varnish.

DISCUSSION—Driers are usually metallic compositions and are available in both solid and liquid forms.

drying oil, *n*—an oil that possesses to a marked degree the property of readily taking up oxygen from the air and changing to a relatively hard, tough, elastic substance when exposed in a thin film to the air.

durability, *n*—a relative term indicating degree of permanency. It may be applied to individual protective, decorative, or functional properties, for example, "the durability of gloss," but if used in a general way, for example, "the excellent durability of a paint," implies the ability of the described coating to retain, to the indicated degree, all the properties required for the continued service of the coating.

edge-tracking, *n*—a residual, discernible pattern in a roller-applied coating, characterized by trails from either or both ends of the roller.

efflorescence, *n*—a condition that occurs when soluble salts in a dry coating or the substrate migrate to the surface due to the movement of water through the film; characterized by a (commonly) white, nonuniform powder or crystalline incrustation, not removable with neutral water but usually removed with dilute mineral acid. **D 1736, D 1848, D01.42**

DISCUSSION—The previously water-soluble salts become insoluble at the surface of the film due to reaction with carbon dioxide of the air.

emulsion paint—under **paint,** see *emulsion paint.*

enamel, *n*—a paint that is characterized by an ability to form an especially smooth film.

erosion resistance, *n*—the ability of a coating to withstand being worn away by chalking or by the abrasive action of water or windborne particles of grit. The degree of resistance is measured by the amount of the coating retained. See **abrasion resistance.**

ester gum—under **resin, synthetic,** see *ester gum.*

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extended pigments, *n*—organic pigments diluted with an extender (for example, alumina trihydrate, blanc fixe, or calcium carbonate).

facade paint, *n*—a decorative and protective coating for exterior masonry surfaces–usually for buildings and walls.

DISCUSSION—This is a term more commonly used in Europe.

filiform corrosion resistance, *n*—the ability of a coating to resist that type of corrosion of metal substrates characterized by a definite thread-like structure and directional growth that occurs under coatings.

filler, *n*—a pigmented composition for filling pores or irregularities in a surface preparatory to application of other finishes.

finish, *n*—(*1*) final coat in a paint system; at the termination of cure or drying (*2*) sometimes refers to the entire coating system: the texture, color, and smoothness of a surface, and other properties affecting appearance.

fire-retardant, *adj*—a descriptive term which implies that the described product, under accepted methods of test, will significantly: (*a*) reduce the rate of flame spread on the surface of a material to which it has been applied, or (*b*) resist ignition when exposed to high temperatures, or (*c*) insulate a substrate to which it has been applied and prolong the time required to reach its ignition, melting, or structural-weakening temperature.

fire-retardant coating, *n*—a coating that will do one or more of the following: (*1*) reduce the flame spread on the substrate over which the coating is applied, sometimes at the sacrifice of the coating (see intumescent coating);

(*2*) resist ignition of the substrate when exposed to high temperature; or

(*3*) insulate the substrate to which the coating is applied and thereby prolong the time required to reach its ignition, melting or structural-weakening temperature.

flaking resistance, *n*—the ability of a coating to resist the actual detachment of film fragments either from the previously applied coating or the substrate. Flaking is generally preceded by cracking, checking, or blistering and is the result of loss of adhesion. Also known as scaling resistance.

flatting agent, *n*—a material added to paints, varnishes, and other coating materials to reduce the gloss of the dried film.

forced drying temperature, *n*—a temperature between room temperature and 150°F (65°C).

*fossil resin***,** *n*—under **resin, natural,** see *fossil resin.*

gallon, U. S., *n*—a volume equal to 231 $in.^3$ For paint, varnish, lacquer, and related products this is measured at 77°F (25°C).

glaze, *n*—a very thin coating of a paint product usually a semi-transparent coating tinted with Van Dyke brown, burnt sienna, or a similar pigment, applied on a previously painted surface to produce a decorative effect.

glazing compound, *n*—a dough-like material consisting of pigment and vehicle, used for sealing window glass in frames. It differs from putty in that it retains its plasticity for an extended period.

grain, *n*—an inch-pound unit of weight, equal to 0.002285 avoirdupois oz (0.0648 g). **CED**

*grinding japan***—**see **japan, grinding.**

grit, *n*—coarse foreign particles in paint materials and coatings, often of irregular shape, that are hard, abrasive, and resistant to disintegration.

hiding power, *n*—the ability of a paint, or paint material as used, to hide or obscure (see opacity) a surface to which it has been uniformly applied.

DISCUSSION—When expressed numerically, it is generally in terms of the number of square feet over which a gallon of paint, or pound of pigment, as used, can be uniformly spread to produce a specified contrast ratio (see **contrast ratio**). The term **covering power** has no specific relationship to hiding power, and actually has no precise meaning.

*hue***—**under **color of an object,** see *hue.*

hydroxyl number, *n*—the number of milligrams of potassium hydroxide (KOH) equivalent to the hydroxyl content of 1 g of sample.

impact tester, *n*—a device for dropping a cylindrical weight from a variable height onto a coated metal test panel; the greater the height required to produce cracks in the coating, the greater its impact resistance. **D 2794, D01.23**

industrial talc, *n*—a mineral product varying in composition from that approaching the theoretical formula of talc, $Mg_3Si_4O_{10}(OH)_2$, to mixtures of talc and other naturally associated minerals, some of which may be fibrous as defined in ASTM Definitions D 2946, Terms Relating to Asbestos. These fibrous minerals may or may not be asbestos.

industrial talc, nonasbestos type, *n*—industrial talc of which less than 2 particles per 100 particles (by light microscopy) are asbestos fibers, where "asbestos fiber" is defined as being both a fiber by Definitions D 2946 and one of the asbestiform varieties of serpentine, riebeckite, cummingtonite (which are chrysotile, crocidolite and amosite, respectively), anthophyllite, tremolite, or actinolite. The nonasbestiform varieties of these same minerals are not asbestos.

intumescent coating, *n*—a fire-retardant coating (which see) that when heated forms a foam produced by nonflammable gases, such as carbon dioxide and ammonia. This results in a thick, highly insulating layer of carbon (about fifty times as thick as the original coating) that serves to protect the coated substrate from fire.

japan, *n*—a varnish yielding a hard, glossy, dark-colored film. Japans are usually dried by baking at relatively high temperatures.

japan, *n*—a vehicle for japan colors; frequently contains shellac.

japan color, *n*—a paste containing pigment and a grinding japan vehicle used for lettering and decoration.

japan drier, *n*—a resinate-base liquid drier.

lacquer, *n*—a coating composition that is based on synthetic thermoplastic film-forming material dissolved in organic solvent that dries primarily by solvent evaporation. Typical lacquers include those based on nitrocellulose, other cellulose derivatives, vinyl resins, acrylic resins, etc.

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lake, *n*—a special type of pigment consisting essentially of an organic soluble coloring matter combined more or less definitely with an inorganic base or carrier. It is characterized generally by a bright color and a more or less pronounced translucency when made into an oil paint.

Under this term are included two (and perhaps three) types of pigment: (*a*) the older original type composed of hydrate of alumina dyed with a solution of the natural organic color, (*b*) the more modern and far more extensive type made by precipitating from solution various coal-tar colors by means of a metallic salt, tannin, or other suitable reagent, upon a base or carrier either previously prepared or coincidently formed, and (*c*) a number combining both types in varying degree might be regarded as a third class.

lap, *n (for coatings)*—the region where one area of a coated surface merges into an adjacent freshly-coated area during application of a single coat to the entire surface.

DISCUSSION—The objective of the painter is to avoid showing the lap.

latex paint—under **paint,** see *latex paint.*

leveling, *n*—(*1*) the process whereby a film of liquid coating flows out after application so as to minimize any surface irregularities such as brush marks, orange peel, peaks, or craters, that have been produced by the mechanical process of application. (*2*) a measure or rating of the leveling ability of a coating. **D 4062, D01.42**

lightness—under **color of an object,** see *lightness.*

maleic resin—under **resin, synthetic,** see *maleic resin.*

liquid, *n*—(flammability regulations) a substance that has a definite volume but no definite form, except such given by its container. It has a viscosity of 1×10^{-3} to 1×10^{3} St (1×10^{-7} to 1×10^{-1} m^2 s^{-1}) at 104°F (40°C) or an equivalent viscosity at agreed upon temperature. (This does not include powders and granular materials.) Liquids are divided into two classes:

Class A, low viscosity—a liquid having a viscosity of 1×10^{-3} to 25.00 St (1×10^{-7} to 25.00×10^{-4} $m^2 s^{-1}$) at 104°F (40°C) or an equivalent viscosity at an agreed upon temperature.

Class B, high viscosity—a liquid having a viscosity of 25.01 to 1×10^{3} St (25.01×10^{-4} to $1 \times 10^{-1} m^2$ s^{-1}) at 104°F (40°C) or an equivalent viscosity at an agreed upon temperature.

mar resistance, *n*—(1) ability of a coating to resist visual damage caused by light abrasion, impact, or pressure. (2) resistance of the surface of the coating to permanent deformation resulting from the application of a dynamic mechanical force. **D 5178, CED, D01.23**

mass color, *n*—the color, when viewed by reflected light, of a pigment-vehicle mixture of such thickness as to obscure completely the background. Sometimes called over-tone or mass-tone.

mass-tone—see **mass color**.

melamine resin—under **resin, synthetic** see *melamine resin.*

metal marking resistance, *n*—the ability of a coating to withstand streaking or marking when a metal object is rubbed against or dragged across the surface of the coating.

MFFT, *n*—abbreviation of minimum film forming temperature.

mildew (fungus) resistance, *n*—the ability of a coating to resist fungus growth that can cause discoloration and ultimate decomposition of a coating's binding medium.

mildewstat, *n*—a chemical agent that inhibits the growth of mildew.

mohair paint roller cover, *n*—a cover in which the paint applicating material is woven of short-pile velour that contains wool or angora goat hair.

mottling, *vt*—the presence in the surface of a film, of irregularly shaped, randomly distributed areas that vary in color, gloss, or sheen, causing the film to be non-uniform in appearance, also known as **blotching**. **D 1848, D01.42**

mud-cracking, *n*—an irregular broken network of cracks in the film, which occurs due to volatile loss while drying or curing. **D 1848, D01.42**

natural resin—see **resin, natural**.

natural spreading rate, *n*—the spreading rate that occurs when a coating is applied in a manner natural to the operator's technique, perceptions, and expectations, as they relate to coating tools, substrate, and characteristics of the coating itself.

DISCUSSION—Such a spreading rate can vary widely with the same paint applied under similar conditions by different operators, but a series of paints applied by different operators under the same conditions will tend to have approximately the same rank order.

nondrying oil, *n*—an oil that does not of itself possess to a perceptible degree the power to take up oxygen from the air and lose its liquid characteristics.

nonvolatile content, *n*—the portion of a coating that does not evaporate during drying or curing under specified conditions, comprising the binder and, if present, the pigment. (The percent volatile content is obtained by subtracting the nonvolatile content from 100.)

nonvolatile vehicle, *n*—the liquid portion of a paint excepting its volatile thinner and water.

OEM coatings, *n*—original equipment manufacturers coatings, which include automotive, marine, furniture, appliance, as well as many other miscellaneous consumer and industrial applications.

oil color, *n*—an oil paint containing a high concentration of colored pigment, commonly used for tinting paint.

oil paint—under **paint,** see *oil paint.*

oil varnish—under **varnish,** see *oil varnish.*

opacity, *n*—the degree of obstruction to the transmission of visible light.

In this sense "opacity" is a relative term, it being considered that given a film sufficiently thin, in paint technology at least, there is no absolutely opaque substance.

open time, *n*—length of time a coating remains wet enough to allow for brushing-in at the laps; also called wet edge time.

over-tone—see **mass color**.

paint *vb*—to apply a thin layer of a coating to a substrate by brush, spray, roller, immersion, or any other suitable means.

paint *n, general*— a pigmented coating. See **coating**.

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