



VdL-Guideline 01

"VdL-Guideline on Decorative Coatings"

Guideline on the declaration of paints, lacquers, varnishes, renders, fillers, primers and related products

Edition of June 2018 (6th revision)

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VdL-Guideline 01 was prepared by the Technical Committee on Decorative Coatings (Technische Kommission Bautenanstrichmittel -TKB) and the Technical Committee on Render & Decor (Technische Kommission Putz & Dekor - TKPD) within the Paint and Printing Ink Association.

This Guideline is no longer valid following publication of a new edition.

Foreword

The coating material manufacturers who are members of the German Paint and Printing Ink Association declare their commitment to Responsible Care in all questions of environmental protection and the protection of public health.¹ The manufacturers undertake to implement this Guideline by developing their products to comply with the VdL-Guideline on the declaration of paints, lacquers, varnishes, renders, fillers, primers and related products. The sense and purpose of this undertaking is to promote those coating materials that, to the best of our current knowledge, produce no effects that adversely affect health that result from their composition and when used as intended. The deliberate non-use of certain substances is also intended to properly account for the need to protect tradespersons in their work.

All VdL-Guidelines are published on the VdL website.

URL as of June 2018: <http://www.wirsindfarbe.de/service-publikationen/vdl-richtlinien/>



¹ The global Responsible Care initiative represents a binding declaration of intent on the part of companies in the chemicals industry – and independently of any requirements imposed by law – to pursue continual improvement in terms of safety, health and the environment, and also to publish details of the progress that has been made in this area on a regular basis. With Responsible Care, the chemicals industry intends to make a contribution to solving global (environmental) challenges in those areas where they have both responsibilities and influence. The implementation of Responsible Care in the paints and printing inks industry follows the VdL-Guideline 'Environment, Health Protection and Safety'.

1 Scope

This VdL-Guideline applies to paints, lacquers, varnishes, renders, fillers, primers and related products, and for both indoor and outdoor applications.

2 Self-commitment

Coating materials that are declared/fully listed pursuant to VdL-Guideline 01 must comply with the following general requirements **2.1–2.6**.

2.1 Heavy metals

Pursuant to this Guideline, no substances or preparations containing the following heavy metals may be added to these products: cadmium, lead, hexavalent chromium, mercury, arsenic. Any contamination with these metals that occurs must have a level no higher than 100 ppm (mg/kg) in each case.

2.2 CLP classification

Coating materials declared pursuant to this VdL-Guideline may not exhibit the following classification and labelling pursuant to the CLP Regulation (EC) No 1272/2008:

Classification	Labelling
Acute toxicity cat. 1–3	H300, H310, H330, H301, H311, H331
Specific target organ toxicity (single exposure) cat. 1, 2	H370, H371
Specific target organ toxicity (repeated exposure) cat. 1	H372
Respiratory sensitisation cat. 1, 1A, 1B	H334
Carcinogenicity cat. 1A, 1B	H350
Germ cell mutagenicity cat. 1A, 1B	H340
Reprotoxicity cat. 1A, 1B	H360

2.3 Titanium dioxide

Titanium dioxide (TiO₂) used in a coating material declared pursuant to this VdL-Guideline must be manufactured according to the Council Directive 92/112/EEC of 15 December 1992 on procedures for harmonizing the programmes for the reduction and eventual elimination of pollution caused by waste from the titanium dioxide industry and its transposition into national law (in Germany: 25th Federal Immission Control Act (BImSchV) of 8 November 1996 on limiting emissions from the titanium dioxide industry).

2.4 Plasticisers

Plasticisers that are listed in the annex (1) to section 3 of the German Ordinance on Food Contact Materials and Articles, seq. nos. 7 and 8, may not be used in coating materials declared pursuant to VdL-Guideline 01.

2.5 Fluorinated surfactants

The following long-chain fluorinated surfactants may not be used: perfluorocarboxylic acids with carbon chain lengths \geq C8, including perfluorooctanoic acid (PFOA), perfluoroalkyl sulfonates with carbon chain lengths \geq C6, including perfluorohexane sulfonic acid (PFHxS) and perfluorooctanesulfonic acid (PFOS) and related compounds, which may become degraded into the aforementioned long-chain fluorinated surfactants.

2.6 Allergy hotline/safety enquiries

To provide special protection for allergy sufferers, manufacturers who declare their coating materials pursuant to VdL-Guideline 01 undertake to set up an allergy hotline service. The number of this hotline should preferably be included on the label or the technical data sheet if the coating material contains allergenic substances at a concentration above the notification threshold or is classified with EUH statement EUH208 and/or hazard statement H317.

This condition is considered to have been met if a telephone number is stated on the safety data sheet under 1.3, 'Safety enquiries'.

3 Claiming of properties

For properties that relate to the coating material, the following claims can be used with reference to this VdL-Guideline if the conditions stated for each claim have been met and the coating material is declared pursuant to this Guideline. The manufacturer or importer bears sole responsibility for the claiming of such properties.

3.1 Aromatic-free

If aromatic content in the coating material is less than 1 percent by weight, determined according to DIN 55683 or calculated using manufacturer specifications.

3.2 Biocide-free/preservative-free

If the preservative substance content in the coating material specified as the individual substance plus formaldehyde, is < 2 ppm (mg/kg), with the exception of CIT < 0.5 ppm (mg/kg).

A product that is labelled with H317 or EUH208 may never be declared to be 'biocide-free/preservative-free', even if other causes are the reason for this labelling.

3.3 Low-emission/very low emission (emission-/solvent-free)

If solvent and plasticiser content does not exceed the respective threshold value for 'solvent-free' (3.5) and 'plasticiser-free' (3.6). The term 'solvents' here includes VOCs and SVOCs (semi-volatile organic compounds).

3.4 Formaldehyde-free

If the free formaldehyde content in the product is less than 2 ppm (mg/kg) pursuant to VdL-Guideline 03.

3.5 Solvent-free

If the VOC content (pursuant to Directive 2004/42/EC) in the coating material is less than 700 ppm (mg/kg), determined according to DIN EN ISO 17895 or DIN EN ISO 11890-2, or calculated using manufacturer specifications.

3.6 Plasticiser-free

If the external plasticiser content in the coating material (in the sense of VdL-Guideline 01, determined according to DIN EN ISO 11890-2) or calculated using manufacturer specifications is less than 700 ppm (mg/kg).

4 Declaration: Full listing of substances

Pursuant to VdL-Guideline 01, the contents are to be stated on the label and in the technical data sheets.

4.1 Rules

The following rules apply to the declaration of substances:

1. Coating material constituents must be declared in the following order:
 - Setting components/film builders
 - Pigments/fillers
 - Solvents/water
 - Additives

2. constituents are categorised as follows:
 - Groups
 - Substance classes
 - Chemical names

3. Within a group, substances are listed in descending order of the amount added, without stating the actual amount.

4. For a declaration/full declaration, all constituents not classified pursuant to CLP are stated from 1 percent by weight, while constituents classified pursuant to CLP are stated from 0.1 percent by weight. In addition, all constituents must also be stated that must necessarily be stated in section 3 of the safety data sheet as a result of substance-specific concentration limits < 0.1% or which lead to a labelling of the substance with EUH208.

5. Isothiazolinones:

If actively added during the manufacturing process, these must be specified regardless of the concentration in the declaration/full declaration. Coating materials that contain the preservative methylisothiazolinone (MIT) at a level of at least 15 ppm (mg/kg) in the coating material must be declared using the wording of EUH208 (“Contains methylisothiazolinone. May cause an allergic reaction.”) in the labelling area in order to comply with this VdL-Guideline. In addition, MIT must then also be stated in the declaration/full declaration.

6. Nanomaterials:

Nanomaterials that are deliberately added to the coating material in order to create certain properties directly linked to the particle size and which are classified as hazardous by CLP must be stated with the additional designation of ‘nano’ in brackets.

7. GISCODE:

Coating materials declared pursuant to VdL-Guideline 01 must be labelled with the GISCODE for coating materials. The VdL recommends including GISCODEs in the manufacturer information (safety data sheets, technical data sheets) and stating these on the container label.

GISCODEs for coating materials with the corresponding grouping details for coating materials have been published on the website <http://wingisonline.de> (June 2018).

Examples for the categorisation of constituents by their groups/subgroups/function/substance class and their chemical names are given in **annex 1** of this Guideline. The terms, definitions, abbreviations and names as used here must be used analogously and as applicable. Terms and definitions are explained in **annexes 3, 4 and 5**.

4.2 Difference between declaration and full listing

In the context of this VdL-Guideline, the user has two options available for declaring substances:

Declaration pursuant to VdL-Guideline 01:

The constituents must be stated by giving at least their substance class (**annex 1, column 1**) or by giving their chemical name (**annex 1, column 2**). Sensitising substances that lead to product labelling with H317 or EUH208 must always be stated by using their chemical name.

Full declaration pursuant to VdL-Guideline 01:

The constituents must be stated by giving their chemical name (**annex 1, column 2**). Pigments that do not have to be classified or labelled pursuant to CLP can be declared with the substance class (**annex 1, column 1**).

Examples of coating material declarations can be found in **annex 6**.

5 Use of this Guideline

The use of VdL-Guideline 01 is also recommended for non-members of VdL.

The VdL reserves the right to review declarations referencing this VdL-Guideline in order to verify compliance with the Guideline. In the case of violations, the VdL reserves the right to prohibit any reference to the Guideline and to take legal action against misleading declarations.

The examples of substance classes and constituents mentioned in the text and tables are not intended to be seen as exhaustive, nor should these be used to draw any conclusions about their regulatory status.

Annex 1: Substances

Setting components/film builders group	
Substance class	Chemical names
Binders: organic (copolymers), inorganic, natural (natural resins)	Acrylic *, acrylate *, acrylic hydrosol, aldehyde *, alkyd *, amine *, potassium silicate, amber, benzoguanamine *, butadiene *, butyl acrylate *, cellulose compounds, chlorinated rubber, coumarone-indene *, dammar, safflower oil, dragon's blood, ethylene vinyl acetate resin, epoxide *, gypsum, urea-formaldehyde, isocyanates, tung oil, lime, casein, natural rubber, ketone *, pine resin, hydrocarbon resin, rosin, rosin-glycerine, copal, refined linseed oil, larch resin balsam, clay, linseed oil, linseed-stand oil, melamine *, gum mastic, methyl methacrylate *, nitrocellulose, novolacs, nut oil, polyolefins, phenolic resin, polyamide, polyester, polyethylene, polyisocyanate, polypropylene, polyurethane, resol, ricinus oil, safflower stand oil, shellac, silanes, silicates, siliconates, siloxanes, soybean oil, sunflower oil, stand oil, starch, styrene *, sulfonamide *, tall resin, terpene *, vinyl acetate *, vinyl alcohol *, vinyl chloride *, vinyl ether *, vinyl ester *, silicate, cement. Industry-standard combinations can also be formed from the above, and the terms dispersion, resin, ester, polymer or emulsion may be used. Prefixes such as pure, hetero-, poly-, special, thixo-, etc. are also possible. In the above examples, the asterisk usually stands for 'resin' or 'polymers'.
Curing agents: aliphatic polyisocyanate, aromatic polyisocyanate, polyaspartate, alkaline curing agents, acidic curing agents	Oligomers or polymers of hexamethylene diisocyanate (HDI), isophorone diisocyanate (IPDI), 1,4-cyclohexane diisocyanate (CHDI), toluene diisocyanate (TDI), methylene diphenyl diisocyanate (MDI), m-tetramethylxylene diisocyanate (m-TMXDI), polyaspartic acid ester, amidoamines, polyamides, polyamines; -- phenols, hexahydrophthalic acid anhydride
Reactive thinners (RTs); unsaturated hydrocarbon resins, epoxides, acrylates, amine functional hydrocarbon resins	Styrene, vinyl toluene, divinylbenzene, allyl esters, esters of acrylic or methacrylic acid, glycidyl ether, aliphatic polyols and alkylphenols, butandioldiglycidylether, acrylates, epoxides, amine functional RTs, oxazolidines, aldimines and ketimines
<u>Internal</u> plasticisers	Components used to increase flexibility, which are covalently integrated using chemical bonds with the various film-forming agents (see above). Chemical names do not need to be stated separately.

Pigments and fillers group	
Substance class	Chemical names
Inorganic white and colour pigments	Titanium dioxide, lithopone, zinc sulphide, zinc oxide, soot, iron oxide black, iron oxide red, iron oxide yellow, chromium oxide green, bismuth vanadate yellow, Prussian blue, ultramarine blue
Organic pigments	Monoazo *, diazo *, naphthol *, phthalocyanine *, quinacridone *, diketopyrrolopyrrole *, dioxazine *, perlyene *, isoindoline *, indanthrone *, aniline pigments
Effect pigments, metal effect pigments	Bronzes, STAPA®, flakes, powders, pastes containing aluminium, brass, stainless steel, nickel, silver, bronze, zinc, gold, (metal oxide mica pigments), polymer pigments, micaceous iron oxide, micronised titanium dioxide, graphite, glass
Flame retardant pigments	Zinc borate, barium metaborate, aluminium hydroxide
Infrared-reflecting pigments	Metal oxide-coated mica, organic black pigments, off-white aluminium pigment, mixed-phase metal oxide
Corrosion protection pigments, mixed-metal phosphates	Zinc oxide, zinc phosphate, zinc dust, iron mica, calcium magnesium phosphate, zinc borate/phosphate, zinc molybdate/phosphate, aluminium triphosphate
Luminous pigments	Stilbenes, blankophores, ethylene *, phenyl ethylene/thiophene derivatives, 1,3-diphenyl-2-pyrazoline, naphthalimides, thiazoles, pyrazoles, oxadiazoles, triazines, doped inorganic luminous pigments
Magnetic pigments	Ferromagnetic iron oxide
Mineral fillers	Calcium carbonate (natural, precipitated), calcite (calcspars), chalk; marble, calcium/magnesium carbonate, dolomite, aluminium oxide, silicon dioxide (amorphous, crystalline, diatoms (see below), pyrogenic), cristobalite, glass (spheres, powder), siliceous earth, silicas, silicic acid, diatomaceous earth, precipitated silicates, quartz, fused silica, quartz powder, quartz sand, quartz round grain or sand iron mica (haematite), mica, chlorite (aluminium potassium (magnesium) silicate), kaolin (porcelain clay, aluminium silicate), ground pumice (aluminium magnesium silicate), feldspart (aluminium potassium sodium silicate), calcium silicate, wollastonite, talcum (magnesium silicate), zeoliths, analcime (sodium aluminium silicate), barium sulphate (natural or synthetic), baryte/heavy spar (natural barium sulphate), blanc fixe (precipitated barium sulphate) Clay, slate powder, basalt, silicon carbide
Fibre fillers	Cotton, cellulose, glass, wood, textile, polyamide, polyester, jute, hessian, mineral wool, synthetics
Organic fillers	Microspheres, cork powder, granulated cork, wood flour

Solvents group	
Substance class	Chemical names
Very volatile solvents	n-Pentane, isopentane, cyclopentane, ethanol, 1-propanol, 2-propanol (isopropanol), acetone, methyl acetate
Volatile solvents: Aliphatics, aromatics <u>and their mixtures</u> , (also: aliphatic hydrocarbon mixtures, aromatic/aliphatic hydrocarbon mixtures), dearomatised hydrocarbon mixtures including cycloaliphatics, aromatic hydrocarbons	Aromatic mineral spirits, dearomatised mineral spirits, isoparaffins, n-hexane, n-heptane, isooctane, n-octane, n-nonane, n-decane, n-undecane, n-dodecane, n-tridecane, 2-methylpentane, 2,2,4-trimethylpentane (isooctane), 2,2,4,6,6-pentamethylheptane, 2,2,4,4,6,8,8-heptamethylnonane, isohexane, cyclopentane homologues, cyclohexane and homologues, toluene, ethylbenzene, xylene (mixture), n-propylbenzene, isopropylbenzene, ethyltoluene, 1,2,3-trimethylbenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2,4,5-tetramethylbenzene, n-butylbenzene, p-cymene, 1,3-diisopropylbenzene, 1,4-diisopropylbenzene, tetraline
Alcohols, polyvalent alcohols and their ethers (glycols and glycol ethers)	1-Butanol, isobutanol (2-methyl-1-propanol), pentanol (all isomers), 1-hexanol, 2-ethyl-1-hexanol, cyclohexanol, diacetone alcohol, 1-octen-3-ol, benzyl alcohol, propylene glycol, dipropylene glycols, methyl glycol, 2-methoxyethanol, butyl glycol, methyl diglycol, butyl diglycol, 1-methoxy-2-propanol (glycol ether PM), 1-butoxy-2-propanol (glycol ether PNB), dipropylene glycol monomethyl ether (DPM), dipropylene glycol n-butyl ether (DPnB), tripropylene glycol methyl ether (TPM), propylene glycol n-propyl ether (PnP), dipropylene glycol n-propyl ether (DPnP), propylene glycol phenyl ether (PPh)
Esters of mono- and bivalent alcohols, ester alcohols	Ethyl acetate, n-propyl acetate, isopropyl acetate, n-butyl acetate, isobutyl acetate, pentyl acetate, 2-methoxyethyl acetate, 2-ethoxyethyl acetate, butyl glycol acetate, 1-methoxy-2-propyl acetate (PMA)
Terpene hydrocarbons/natural oils	alpha-Pinenes, beta-pinenes, delta-3-carene, limonene, pine resin balsam, other terpenes eucalyptus oil, Swiss pine oil, orange citrus oil, bergamot oil, lavender oil
Ketones	2-Butanone, diisobutyl ketone, isophorone, 2-hexanone, methyl isobutyl ketone, 2-heptanone, 3-heptanone, acetophenone, cyclohexanone
Halogenated hydrocarbons	Dichloromethane, propylene dichloride, trichloroethylene/trichloroethane
Semi-volatile solvents	n-Tetradecane, butylated hydroxytoluene, polyethylene glycols, polypropylene glycols from tripropylene glycol, tripropylene glycol-n-butyl ether (TPnB), 2,2,4-trimethyl-1,3-pentanediol diisobutyrate (TXIB), 2,2,4-trimethyl-1,3-pentanediol monoisobutyrate (Texanol®), 1-isopropyl-2,2-dimethyltrimethylene diisobutyrate, dibutylester organic acid mixtures
Water	Water (also as thinner for dispersion systems)

Additives group	
Substance class	Chemical names
Antistatic agents	Anionic or cationic organic compounds, quaternary ammonium compounds
Brighteners (optical)	Stilbenes, ethylene *, phenyl ethylene *, thiophene derivatives, 1,3-diphenyl-2-pyrazoline, naphthalimides, thiazoles, pyrazoles, oxadiazoles, triazines
Biocides, in-can preservatives, film preservatives (see also 4.2: declaration of sensitising substances)	Bronopol, borax, boric salt, boric acid, dichlofluanid, diuron, formaldehyde depot substances, octyl *, chloromethyl *, methyl *, benzisothiazolinone, iodopropynyl butylcarbamate (IPBC), propiconazole, terbutryn, isoproturon, zinc pyrithione, citric acid, essential oils
Film builders	See VOCs, SVOCs, solvents, plasticisers (annexes 3 and 4)
Flame retardants	Aluminium hydroxide, magnesium hydroxide, ammonium sulphate, ammonium phosphate, red phosphorus, antimony trioxide, antimony pentoxide, zinc borate, slaked lime, aromatic and aliphatic esters of phosphoric acid, bromated flame retardants, chlorinated flame retardants, organophosphorus flame retardants, melamine, urea, polybrominated diphenyl ethers, chlorinated paraffins, ammonium polyphosphate, triaryl phosphates, melamine polyphosphate
Interface additives	Waxes (natural, dispersed, micronised, anionic, non-ionogenic), polyethylene wax, wax esters, stearates, oils (mineral, synthetic, natural, silicone, paraffinic), white oil, acrylate polymer, vinyl polymer, fluoro-modified flow additives, amine resin-modified mineral oil, monomethyl urea, polysiloxane (silicone oil), fatty acid derivatives, phosphoric acid esters, plant oil, polyurea, polyolefin wax, polyamide wax, polytetrafluoroethylene (PTFE) wax, carnauba wax, candelilla wax, beeswax, ozokerite wax, oxides, diatomaceous earths, silicates, pyrogenic silicas, modified silicas, talcum
Bonding agents /bonding resins	Unsaturated polyester resin, polyamidoamine PVC, isocyanate PVC, amino functional *, metallo-organic bonding resins, hybrid carboxy/hydroxy functional metallo-organic bonding resins, carboxy functional organic bonding resins, acrylate polymer, resin esters, urethane resin, alkyl phosphate esters, acryl phosphate esters, n-(3-(trimethoxysilyl)propyl)ethylenediamine, organic titanates, organic zirconates
Inhibitors, stabilisers, anti-skinning agents (skin protection agents), antioxidants, corrosion inhibitors, retarders, UV stabilisers, light stabilisers	Oximic anti-skinning agents (2-butanone oxime, 2-pentanone oxime, acetone oxime, cyclohexanone oxime), phenolic anti-skinning agents, aminic anti-skinning agents, enzymatic anti-skinning agents, oils, waxes, paraffins, stearins, hydroquinone, 4-tert-butylcatechol, nitrite corrosion inhibitors, thiourea corrosion inhibitors, organic corrosion inhibitors, aminic benzoates, phosphates, tannin corrosion inhibitors, ammonium benzoate, calcium silicophosphate, barium metaborate, salts of aromatic sulfonic acids, zinc molybdate, alkyl aminoamide, phosphates, hydroxycarboxylic acids, lignosulfonates, sucrose, benzotriazole, phenyl triazine, benzophenone, oxalanilides, micronised titanium dioxide/iron oxide pigment/zinc oxide, HALS (hindered amine light stabilisers) 2,2,6,6-tetramethyl piperidine derivatives

Catalysts, accelerants, drying agents (siccatives)	Octoates, naphthenates, ethyl hexanoates, zinc octoate, cobalt naphthenate, cobalt octoate, bismuth carboxylate, linolenates, resinates, tallates of manganese metal, cobalt, calcium, zinc, zirconium, barium, iron, copper, magnesium, bismuth, vanadium, cerium, potassium, strontium, lanthanum, tin (II) stearate/oxalate/octoate
Polyurethane catalysts, melamine catalysts, silicone resin catalysts, powder coating accelerants, epoxide/carboxyl group catalysts, metallo-organic compounds, metal complexes/polymers	Phenols, monobutyltin oxide, dibutyltin dilaurate, dibutyltin esters, dibutyltin oxide, organobismuth, tris-(dimethylaminomethyl)phenol, amines, dimethyl aniline, diazabicyclooctane (DABCO), aluminium complexes, titanates, titanate catalysts, tetraisopropyl titanate, zinc oxide, zinc sulfonate, zirconium complexes, enzymes
Acid catalysts	Phosphoric acid, alkyl acid phosphate (AAP), hydrochloric acid, sulfonates: p-toluenesulfonic acid (p-TSS), dinonylnaphthalenedisulfonic acid (DNNDSA), dodecylbenzenesulfonic acid (DDBSA)
UV initiators, photoinitiators	Benzophenone, alpha-hydroxyketones, alpha-aminoketones, benzyldimethylketal, acylphosphinoxides
Wetting agents/surfactants	Ethoxylates, alkylphenol ethoxylates, ammonium styrene/acrylate copolymer, alkylolaminoamide, lipids, soy lecithin, calcium octoate, metallo-organic compounds, alkylol ammonium salts, amine salts
Neutralising agents, pH adjustment: ammonia (ammonium chloride), amines or hydroxides	Dimethylethanolamine (DMEA), 2-amino-2-methylpropanol (AMP), aminoethyl propanediol (AEPD), 2-dimethylamino-2-methyl-1-propanol (DMAMP), triethylamine (TEA), potassium hydroxide (KOH), sodium hydroxide, amine soap
Radical starters	Organic peroxides, alkyl hydroperoxides, ketone peroxides, diacyl peroxides, benzoyl peroxides, azobisisobutyronitrile (AIBN)
Rheology additives: acrylates, cellulose derivatives, phyllosilicates, silicas, polyureas, ricinus oil derivatives, polyamides, associative/non-associative rheology additives	Acrylate polymers, polyacrylates, aluminium tristearate, stearates, polycarboxylate, aluminium hexanoate, amine salts, bentonite, hectorite, swelling clay, pyrogenic silica, cellulose ethers, polyethers, polyvinyl alcohol, urea derivatives, polyurethane thickeners, polyacrylamide, polyamide, polyvinyl pyrrolidone, polyester, carboxylic acid diamine
Hydrophilic additives	Triethyl orthoformate, p-toluenesulfonyl isocyanate (TSI), molecular sieves, natural or synthetic zeoliths, hydrocarbon molecular sieves
External plasticisers: acetates, adipates, benzoates, dibenzoates, citrates, glutarates, maleinates, phosphates, macromolecular $\geq 7C$ orthophthalates, plant oil-based, sebacates, terephthalates, trimellitates	Diethylhexyl adipate (DEHA), dioctyl terephthalate (DOTP), acetyl tributylcitrate (ATBC), diisodecyl adipate (DIDA), diisotridecyl adipate (DTDA), diisononyl adipate (DINA), dibutyl sebacate (DBS), dibutyl terephthalate (DBT), dimethyl sebacate (DMS), dipropyl heptylphthalate (DPHP), dimethyl succinate, dimethyl glutarate, dimethyl adipate, dibutyl maleinate, epoxidised linseed oil (ELO), epoxidised soybean oil (ESO), 1,2-cyclohexane dicarboxylic acid diisononyl ester, hydrated ricinus oil, isononyl benzoate (INB), isodecyl benzoate (IDB), trioctyl trimellitate (TOTM)

Annex 2: References to regulatory frameworks

- German Ordinance on Food Contact Materials and Articles (BedGgstV)
- Commission Decision of 28 May 2014 establishing the ecological criteria for the award of the EU Ecolabel for indoor and outdoor paints and varnishes (2014/312/EU)
- DIN EN 71-3 Safety of toys – Part 3: Migration of certain elements
- DIN EN 927-1 Coating materials – Coating materials and coating systems for exterior wood – Part 1: Classification and selection
- DIN EN 1062-1 Coating materials – Coating materials and coating systems for exterior masonry and concrete – Part 1: Classification
- DIN EN ISO 4618 Coating materials – Terms and definitions
- DIN EN ISO 11890-2 Coating materials – Determination of volatile organic compound (VOC) content – Part 2: Gas-chromatographic method
- DIN EN 13300 Coating materials – Water-borne coating materials and coating systems for interior walls and ceilings – Classification
- DIN EN 15824 Specifications for external renders and internal plasters based on organic binders
- DIN EN ISO 17895 Coating materials – Determination of the volatile organic compound content of low-VOC emulsion paints (in-can VOC)
- DIN 55683 Solvents for coating materials – Determination of solvents in coating materials containing solely organic solvents – Gas-chromatographic method
- DIN 55945 Coating materials and coatings – Terms and definitions – Further terms and definitions regarding DIN EN ISO 4618
- Commission Recommendation of 18 October 2011 on the definition of nanomaterial (2011/696/EU)
- Technical glossary of renders and coatings from the VdL Plaster and Decor Group
- ISO 18451 Pigments, dyestuffs and extenders – Terminology – Part 1: General terms
- Directive 2004/42/CE of the European Parliament and of the Council of 21 April 2004 on the elimination of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products and amending Directive 1999/13/EC
- Directive 2009/48/EC of the European Parliament and of the Council of 18 June 2009 on the safety of toys
- TRGS 900 Technical Rule for Hazardous Substances – Occupational exposure limits
- TRGS 905 Technical Rule for Hazardous Substances – Register of carcinogenic, mutagenic or teratogenic substances
- VdL-Guideline 03 on the determination of formaldehyde concentration in water-dilutable emulsion paints and related products

- VdL-Guideline 11 on the evaluation criteria for ecologically optimised serviceable decorative coatings for indoor DIY applications
- 'Blue Angel' RAL-UZ 102 basic criteria for low-emission interior wall paints and RAL-UZ 12a basic criteria for low-emission/-pollutant varnishes
- Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC
- Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006
- Regulation (EC) No 66/2010 of the European Parliament and of the Council of 25 November 2009 on the EU Ecolabel
- Regulation (EU) No 286/2011 of 10 March 2011 amending, for the purposes of its adaptation to technical and scientific progress, Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures
- Regulation (EU) No 528/2012 of the European Parliament and of the Council of 22 May 2012 concerning the making available on the market and use of biocidal products
- German Ordinance on Hazardous Substances (GefStoffV)
- German Ordinance of 20 January 2017 establishing new national regulations governing the distribution and supply of chemicals

These regulatory frameworks apply in their current version.

Annex 3: Terms for substance groups

1. Setting components/film builders
2. Pigments/fillers
3. Solvents/water
4. Additives

1. Setting components/film builders

Following the application and drying of the coating material, these substances form a contiguous layer (the 'film') or bind to the substrate – by silification, for example. They can be subdivided into binders, reactive thinners and curing agents.

Binders:

These form the non-volatile part of a coating material, excluding pigments and extenders but including drying agents and other non-volatile excipients. The binder binds the pigment particles both together and to the substrate and with them becomes part of the finished coating. Some are organic compounds: these are mostly copolymers, which in liquid coating materials are typically either dissolved in solvents or present as water-based emulsions, and form a film following physical drying (evaporation of the volatile components) and/or chemical curing (oxidative or by some other chemical reaction). There are also inorganic binders, such as lime, gypsum, cement, clay and (potassium) silicates. Depending on their origin, a distinction is made between natural (natural resins, oils, rosin, shellac, casein) and synthetic (= artificial resins: resins formed by polymerisation, polycondensation and polyaddition) binders.

Covalently integrated 'interior plasticisers' are considered polymer components and not listed separately.

Curing agents:

Reactive partners such as polyamines, polyisocyanate, for chemical cross-linking with other binder components such as epoxide or polyol in a polyaddition reaction.

Reactive thinners:

Substances that lower viscosity and become chemically integrated into the film during the drying or curing of the coating material. This Guideline therefore groups them together with setting components/film-forming agents.

Drying agents and external plasticisers:

Used only in small amounts and hence assigned to additives for the purposes of declaration pursuant to this Guideline.

2. Pigments/fillers

Organic and inorganic pigments:

These are fine solid particulates that are insoluble in the liquid phase of the coating material, and which are used for their optical, protective and/or decorative properties (see also DIN EN ISO 4618). Inorganic colour pigments are characterised by their high opacity and high resistance versus ageing, and inorganic pigments by their high chroma (colourfulness).

VdL members stopped including lead pigments, cadmium pigments and hexavalent chromium pigments in coating materials intended for use by consumers and professionals in the skilled trades many years ago. The only exceptions are when used in coating materials for the restoration of historical buildings or restoring historical vehicles. Alongside pigments used only for colouration, the pigments group also includes effect pigments, flame retardant pigments, pigments that reflect infrared, corrosion protection pigments, luminous pigments, magnetic pigments and thermochromic pigments.

Effect pigments:

These create optical effects that primarily involve the targeted reflection and/or interference with light.

Flame retardant pigments:

These are pigments designed to give combustible materials flame-retardant properties that reduce ignitability, delay combustion and/or make flame formation more difficult or impossible. One method is to reduce the temperature with the cooling effect created by the release of water of crystallisation (aluminium hydroxide, magnesium hydroxide, zinc borate).

Infrared-reflecting pigments:

These reflect a portion of near-infrared radiation (NIR), so that the coating does not heat up as quickly as conventional pigments. (These pigments can be used to control the temperature of dark surfaces.)

Corrosion protection pigments:

These use a chemical, electrochemical, protective cation or passive technique (e.g. barrier method) to prevent chemical changes in a metallic substrate.

Luminous pigments:

This describes a group of pigments that remit more light in the visible spectrum than the amount transmitted. This effect is also termed luminescence.

Magnetic pigments:

These are used in particular for magnetisable printing inks, toners or magnetic strips.

Thermochromic pigments:

These pigments change their optical properties when exposed to heat.

Fillers:

In accordance with DIN EN ISO 4618, these consist to a greater or lesser extent of fine particles that are insoluble in the application medium (binder) and which are used to increase the volume, achieve or improve technical properties (weathering resistance, packing density, reinforcement, matting, abrasion resistance) and/or to influence optical properties (opacity).

Fillers in the context of this Guideline are mineral inorganic fillers of the substance classes carbonates, sulphates, oxides, hydroxides, silicates of e.g. aluminium, barium, calcium, potassium, magnesium and sodium, and both those substances that are naturally-occurring as well as synthetic (precipitated), as well as fibre fillers and organic fillers. The most important naturally-occurring mineral fillers are calcite, dolomite, quartz, talcum, baryte, kaolin (porcelain clay), mica and chalk. Examples of synthetic, inorganic members of this product group include precipitated calcium carbonate, precipitated barium sulphate (blanc fixe) and precipitated aluminium silicate.

3. Solvents

These are used for dissolving or thinning raw materials, substances, preparations or coating materials, or as cleaning agents, as coalescing agents, as agents for configuring the working consistency, for extending the pot life of coating materials, for improving the surface smoothness or for reducing the surface tension.

Their classification as VOCs (volatile organic compounds) varies depending on the applicable regulatory framework. The commonest definition references the boiling point at standard pressure (WHO, 2004/42/EC, TRGS). Some definitions include details of the vapour pressure at a corresponding temperature (31st BImSchV) while others define VOCs by their photochemical reactivity as precursor gases to the formation of ground-level ozone. Lastly, some definitions also explicitly exclude certain organic substances from the definition of VOCs (Switzerland).

In light of the above, statements about the emission of VOCs can only be properly evaluated if details are also given of the exact definition used.

In the context of this Guideline, organic solvents are classified as VVOCs (very volatile organic compounds), VOCs or SVOCs (semi-volatile organic compounds) by their boiling point (or initial boiling point) under conditions of normal pressure (1013.25 hPa).

VVOCs boil at temperatures up to 50 °C, VOCs between 50 °C and 250 °C, and SVOCs between 250 °C and 350 °C).

The commonest VOC definitions are summarised in **annex 4** of this Guideline.

Solvents in the context of this Guideline are aliphatic hydrocarbons, aromatic hydrocarbons, mixtures of aliphatic hydrocarbons (isoparaffins), mixtures of aromatic hydrocarbons, alcohols, esters of mono- and bivalent alcohols, polyvalent alcohols and their ethers (glycols and glycol ethers), halogenated hydrocarbons, terpene hydrocarbons, ketones and water.

4. Additives

Also termed excipients, these are defined as substances that are added to a coating material in small quantities (total typically under 5%) in order to add, improve or modify specific properties of this coating material or coatings produced from this material. In practice, a coating material typically contains several additives that each possesses a separate profile in terms of effects and characteristics, and which therefore often affect different properties. Additives in the context of this Guideline include antistatic agents, brighteners, biocides, film-forming agents, flame retardants, interface additives, bonding agents/bonding resins, inhibitors, initiators, catalysts/accelerants, wetting agents and dispersion additives, neutralising agents, rheology additives and hydrophilic additives.

Antistatic agents:

These influence the electrical resistance of coating materials, thereby enabling application using electrostatic spraying techniques.

Brighteners (optical):

Substances whose function is to increase the whiteness of surfaces or materials and especially by compensating for a yellow colour cast. The paints industry distinguishes between fluorescent brighteners and toners.

Biocides:

Chemicals for combating harmful organisms.

Film builders (coalescing agents):

These reduce the minimum film-forming temperature (MFFT) for a polymer dispersion to enable full film formation even at low temperatures. In the context of this Guideline, VOCs and SVOCs are considered to be coalescing agents.

Flame retardants:

Flame retardants are substances that are added to many kind of materials in order to increase their fire safety profile.

Interface additives:

These take effect during production or processing in the coating material, during film formation or in the coating material at the interface to air, or to a pigment, extender or substrate. De-foaming agents, anti-foaming agents, foam inhibitors and aerators are surface-active substances with varying chemical compositions. These have the function of preventing the production of foam during manufacturing or application, or eliminating any foam present in the final product so as to allow a pore-free film to form. Anti-cratering or flow agents improve substrate wetting while promoting the coverage of the coating film on the substrate. Anti-stick agents, anti-blocking agents, lubricants, slipping agents and waterproofing agents improve crack and scratch resistance, improve sliding friction and block resistance, lower the tendency to attract dirt, achieve hydrophobic effects or can be used as release agents. Matting agents are additives for coating materials that alter the surface of the cured coating so that the material's gloss level is reduced (matting). Matting agents are typically used to deliberately create roughness on the coating surface so as to ensure diffuse light scattering.

Depending on the boiling point, the above substances can also be classified as VOCs, SVOCs or binders.

Bonding agents/bonding resins:

These improve bonding to the substrate. If the agent is a film-forming agent, quantities of up to 15% can be used. These bonding agents are then classified as binders.

Inhibitors/stabilisers:

Substances that slow down or stop chemical reactions such as the formation or degradation of polymer chains. Typical inhibitors in coating materials include anti-skinning agents, antioxidants, corrosion inhibitors, retarders and UV stabilisers (light stabilisers). Anti-skinning agents/antioxidants prevent the undesirable tendency that coatings have to form a (coating) film (skin) while they are still in the container. Skin formation can occur in systems using oxidative cross-linking (such as alkyd resin varnishes, for example), in systems using physical drying and in reactively cured varnishes. With unsaturated polyesters, they prevent the accumulation of oxygen and therefore the formation of sticky surfaces. Corrosion inhibitors prevent the formation of rust in ferrous metals, for example. Retardants delay the setting (curing) of cement during the production of concrete. UV stabilisers (light stabilisers) prevent the destruction of the coating or the substrate by light.

Catalysts/accelerants:

Substances that initiate or accelerate chemical reactions without themselves taking any part in this reaction. Typically, only a small amount of the catalyst will be required in order to accelerate reactions between large quantities of reactive substances. Catalysts are used for oils and alkyd resins that use oxidative drying (siccatives), varnish systems using acid curing (acid catalysts), and for polyurethane, epoxide, melamine, silicone resin, methacrylate resin and unsaturated polyester systems.

Wetting agents and dispersion additives/dispersants:

Substances with interfacial activity of a natural (e.g. soybean lecithin) or synthetic origin, which reduce the surface tension (interfacial tension) of water or other liquids, so that these can penetrate more fully into the surface structures of solid bodies and wet these while displacing the air trapped inside. They can be categorised as cationic, anionic or non-ionic wetting and dispersion additives.

Neutralising agents:

Since few polymeric film-forming agents are soluble themselves, they are modified by the integration of functional groups in such a way that enables them to be water-dilutable with the help of neutralising agents or, alternatively, dispersible in water. In the paints industry, commonly used neutralising agents include ammonia, amines or hydroxides.

Radical starters/UV initiators/photoinitiators:

Substances that initiate chemical reactions on their decomposition. Initiators are integrated in reaction processes and thereby consumed. In painting technology, these are very often organic peroxides, whose decomposition into radicals is able to initiate the polymerisation of polyesters. Photoinitiators are able to initiate the polymerisation of UV-curable systems when exposed to UV radiation.

Rheology additives:

All substances that, when used in small amounts during the manufacturing, processing and film formation of a coating material, are able to affect consistency, viscosity and flow behaviour. Examples of these effects include improving flow (= flow improving agents), optimising spreadability (= increasing brush resistance), lessening the tendency to spatter when applied with a roller, increasing viscosity (= thickeners), lowering the run-off tendency, preventing settling (anti-settling agents) or migration, or producing a thixotropic structure (= thixotropic agents). Rheology additives can be roughly subdivided into inorganic and organic rheology additives, as well as into rheology additives for solvent-based and aqueous systems.

Hydrophilic additives:

Chemicals or substances that can negate the effects of traces of water in a mixture if required. Example applications include polyisocyanate systems, so as to avoid undesirable secondary

reactions with water, which may have been brought into the system by residual moisture or raw material contamination.

The effect can be based on a chemical reaction or physical effects (adsorption).

Plasticisers:

These are substances that are added to a coating material in order to improve the formability/elasticity of the coating (see also DIN EN ISO 4618). A distinction is made between external and internal plasticisers. Unlike internal plasticisers, external plasticisers are not tightly (covalently) integrated with the polymer and do not become a permanent component of the coating. Accordingly, they can be released out of the coating material under some circumstances or very slowly diffuse out.

Annex 4: Definitions of VOCs

Country	Definition	Source
---	All organic compounds (substances primarily consisting of carbon and hydrogen) with boiling points in the range 50 °C to 260 °C, with the exception of pesticides.	World Health Organisation (WHO), cited in Total Volatile Organic Compounds fact sheet (NPI, Australia)
Australia	Any chemical compound based on carbon chains or rings (and containing hydrogen) with a vapour pressure greater than 2 mm Hg (0.27 kPa) at 25 °Cm excluding methane. These compounds can also contain oxygen, nitrogen and other elements. Specifically excluded are carbon dioxide, carbon monoxide, carbonic acid, carbonates, metallic carbides and methane.	NPI Volatile Organic Compound definition
Europe (EU) (industrial paints, fixed plants), Germany	Any organic compound having at 293.15 K a vapour pressure of 0.01 kPa or more, or having a corresponding volatility under the particular conditions of use.	Council Directive 1999/13/EC of 11 March 1999 on the limitation of emissions of volatile organic compounds 31st BImSchV (of 21 August 2001), section 2, para. 11
Europe (EU)	All organic compounds arising from human activities, other than methane, which are capable of producing photochemical oxidants by reactions with nitrogen oxides in the presence of sunlight.	Directive 2001/81/EC ... of 23 October 2001 on national emission ceilings for certain atmospheric pollutants
Europe (EU) (structural coating materials, vehicle repair paints)	Any organic compound having an initial boiling point less than or equal to 250 °C measured at a standard pressure of 101.3 kPa.	Directive 2004/42/CE ... of 21 April 2004 on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes
Europe (EU)	All organic compounds of anthropogenic or biogenic origin, other than methane, which are capable of producing photochemical oxidants by reactions with nitrogen oxides in the presence of sunlight.	Recommendation for a Directive ... on air quality and clean air for Europe (KOM (2005) 447 of 21 September 2005)
Europe (EU)	Carbon-based chemical compounds emitted into the atmosphere from natural sources or as a result of human activities (e.g. the use of solvents, paints and varnishes, the storage of motor fuel and the use of motor fuel in filling stations, and vehicle exhaust gases).	Thematic Strategy on Air Pollution (date: 1 December 2005)

Switzerland	Organic compounds with a vapour pressure of at least 0.1 mbar at 20 °C or a maximum boiling point of 240 °C at 1013.25 mbar.	Ordinance on the Incentive Tax on Volatile Organic Compounds (OVOC) of 12 November 1997 (status as of 8 October 2002)
USA	Any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions.	Code of Federal Regulation (CFR) 40, Part 51.100(s), US EPA

Source: http://www.chemeurope.com/en/encyclopedia/Volatile_organic_compound.html
(status as of June 2018)

Annex 5: Terms, other

1. Biocidal additives
2. Nanomaterials
3. Other

1. Biocidal additives

Biocides are indispensable for ensuring the high standards of health and hygiene in our society. They safeguard and improve the quality of products and industrial processes. As disinfectants, pest control agents or agents used to protect various kinds of materials, bactericides, algacides or fungicides guard against dangerous diseases or disease vectors, are used to preserve easily perishable materials or serve to maintain the value of products, goods and buildings.

To guard against microbial infestation in the container, the coating or the substrate, a biocide can be included as an additive in the coating material.

Pursuant to the Biocidal Products Regulation 528/2012/EU (BPR), coating materials manufactured with the use of biocidal products must either be considered as 'treated articles' or become biocidal products themselves.

Treated articles:

Substances, mixtures or articles that have been treated with one or more biocidal products or to which one or more biocidal products have been deliberately added. While treated articles do not primarily function as biocides, they can exhibit biocidal properties. If a biocidal property is stated or the conditions for approving the active substance or active substances make this a requirement, labelling is required pursuant to BPR art. 58(3). Examples of treated articles include container or in-can preservatives or coating materials equipped with film preservatives.

Container or in-can preservatives:

A container or in-can preservative is understood as a "preservative for products during storage" (BPR). This is a biocidal additive that is added to a liquid coating material and serves the sole purpose of protecting this against infestation by microorganisms such as bacteria, fungi or moulds. Container and in-can preservatives are classified in product type 6 of the BPR. Substances commonly used include isothiazolinones, formaldehyde depot substances and bronopol.

Film preservatives:

Products used "for the preservation of films or coatings" (BPR) are biocidal additives in the coating that become effective following application, i.e. once the coating has become cured and dried. They are intended to prevent the infestation of the surface of the coating material by microorganisms such as algae, fungi or moulds.

Film preservatives protect only the actual coating itself (paint film, render, etc.). There is no external effect and therefore no "primary biocidal function" (BPR).

Film preservatives (coating preservatives) are classified in product type 7 of the BPR. Substances commonly used include octyl isothiazolinone, terbutryn, triazine derivatives, diuron, iodpropynyl butylcarbamate (IPBC), zinc pyrithione, dichlofluanid and propiconazole. To optimise their efficacy, many of these biocides are utilised in an encapsulated format.

Biocidal product:

Pursuant to the BPR, biocidal products are defined as those substances or mixtures that consist of, contain or have the effect of producing one or more biocidal active substances. In accordance with the legal definition, a biocidal product must also be designed so that it uses methods other than simple mechanical or physical means to destroy, deter, render harmless or otherwise prevent the incursion of harmful organisms or counter them in some other way. For biocidal products, an approval pursuant to BPR is required, e.g. in the product types PT2 (disinfectants), PT 10 (construction material preservatives), PT8 (wood preservatives) or PT21 (antifouling products). A coating material

functioning primarily as a biocide since it contains a biocidal product additive itself becomes a biocidal product. The approval and labelling regulations then apply as for the respective BPR product type.

2. Nanomaterials

On 18 October 2011, the European Commission published a recommendation for a definition of nanomaterials (2011/696/EU) that was intended to be used as the basis for wording in legislation. In this recommendation, a nanomaterial is described as a “a natural, incidental or manufactured material containing particles, in an unbound state or as an aggregate or as an agglomerate and where, for 50% or more of the particles in the number size distribution, one or more external dimensions is in the size range 1 nm–100 nm.” As this recommendation would encompass all pigments and almost all extenders, this would mean that all coating materials would be affected by this recommended definition.

The VdL itself recommends a definition of the term ‘nanomaterial’ to describe substances at the nano scale (at least one dimension less than 100 nm) and their mixtures that have been classified as hazardous pursuant to the CLP, and to which people and the environment have an actual risk of exposure. Pursuant to this Guideline, substances are declared or listed as nanomaterials only if they are intended to generate certain properties related directly to particle size, are used as coating material additives and are classified as hazardous.

3. Other

Coating:

A coating material in a dried/cured state on a substrate. If this is also contiguous with the surface of a carrier material, then the coating is considered to be a coating film.

Coating material:

A liquid, paste-like or powdered product that consists of setting components, film-forming agents, pigments/extenders, solvents and additives in various proportions by weight, and which, when applied to a substrate, produces a protective, decorative and/or other specific kind(s) of property or properties. Coating materials pursuant to this Guideline are varnishes, paints, glazes, renders, levelling compounds and primers.

Chemical curing:

Formation of a coating as a result of the reaction of two reciprocally reactive binder components, such as e.g. with polyurethanes, epoxy resins or acid-cured varnishes.

Opacity:

Opacity is the capability of a coating material to cover – i.e. in the sense of mask – the colour or colour differences/contrasts of a particular substrate.

Electrostatic coating:

This is the general term for all electrostatic application methods. These are coating techniques that involve the simultaneous application of an electrostatic charge (either using high-voltage electricity or, for triboelectric powder spray systems, static electricity) so that the sprayed coating material is drawn to and coated onto the earthed workpiece.

Film formation:

The sum total of processes by which an applied liquid coating material is ultimately transformed into a contiguous film or coating.

Flash point:

The lowest temperature at which a substance/preparation is able to form an ignitable vapour-air mixture.

Fluorescence:

The spontaneous emission of light following excitation of a substance. The light emitted is typically of a lower energy than the light absorbed beforehand.

Primer:

Coating materials that have sealant or barrier properties or which are used to stabilise substrate particles, or to transfer hydrophobic properties to the substrate. Available primers include render consolidants, stone consolidants, deep primers, silicate solutions ('fixatives') and quartz primers.

Coalescence:

Procedure by which a contiguous film is formed from a polymer emulsion, whereby the individual polymer particles dispersed and separated from one another in the aqueous phase gradually come into contact as water is removed, make contact, become increasingly forced together and ultimately fuse together (from Latin coalescere = merge, fuse together).

Varnish/paint:

Coating material that ultimately forms a contiguous, solid film when applied to a substrate as a result of chemical or physical processes. Paints and varnishes declared pursuant to this Guideline can be described using a combination of their protective, decorative or functional properties, the nature and quantity of binders, the pigments used, the extenders, solvents or additives, the application method used, the consistency, as well as the substrate to which they are applied.

Glaze:

Name used to designate a coating material that, as a result of low pigment content or the fine particulate nature of the pigment results in a glaze coating that is translucent and/or transparent.

Oxidative drying:

Formation of a coating by cross-linking with oxygen – as is the case with fatty oils and alkyd resins.

Physical drying:

A drying process whereby the transition from the liquid coating material to the solid state of the final coating occurs solely as a result of the loss of liquid components such as water or a solvent, and therefore without any other change occurring to the binder. This category includes all types of dispersion-based renders and emulsion paints, and all aqueous and solvent-based primers whose binders are polymer emulsions or combinations of these or of resins dissolved in solvents. Physical drying also applies in the case of nitrocellulose (NC) paints if they contain *non*-drying alkyd resins.

Polyaddition:

Cross-linking of chemically separate reactive partners with one another without producing (emitting) byproducts. Polyurethane, polyureas and epoxide resins are manufactured using polyaddition reactions.

Polycondensation:

Cross-linking of chemically separate reactive partners with one another while producing (emitting) byproducts.

Render (plaster):

A coating material in powder or paste form applied in layers thicker than 1 mm to masonry, cement surfaces or other solid substrates on outer (= render) and inner (= plaster) walls as well as ceilings, and the surface of which is typically also structured.

Reflection:

In physics, describes the change in direction of a wavefront (here: of light waves) at an interface between two different media.

Filler/levelling compound:

The general term for bulky coating materials typically applied in a thick coat onto metal, wood or mineral substrates, primarily with the aim of smoothing out these surfaces by compensating for any unevenness present in the substrate surface.

Substrate:

The surface to which a coating material or coating is applied.

Mineral spirits:

This term is generally used in the paints industry to characterise common refined petroleum fractions with a flash point of > 23 °C. Mineral spirits are a mixture of aromatic and/or aliphatic hydrocarbons (isoparaffins). In some mineral spirit products, the proportion of aromatic compounds is reduced by hydrogenation from the typical 20–25% to under 1% (dearomatised mineral spirits).

Viscosity:

This is a metric for the 'thickness' of a coating material.

Further details can also be found in the technical glossary from the VdL Render & Decor Group.

Annex 6: Examples of declarations and full listings pursuant to Guideline 01

Dispersion paint 1

Declaration of constituents:

Styrene/acrylate copolymer, titanium dioxide, mineral extenders, water, glycol ethers, film-forming agents, cellulose derivatives, methyl- and benzisothiazolinone.

Full declaration of constituents:

Styrene/acrylate copolymer dispersion, titanium dioxide, calcite, silicates, water, propylene glycol, butyl glycol, polysiloxane, carboxy methyl ether, potassium hydroxide (KOH), methyl- and benzisothiazolinone.

Dispersion paint 2

Declaration of constituents:

Styrene/acrylate copolymer, titanium dioxide, mineral extenders, water, anti-foaming agent, polyurethane thickener, amines, 2-bromine-2-nitropropane-1,3-diol.

Full listing of constituents:

Styrene/acrylate copolymer dispersion, titanium dioxide, calcite, silicates, water, mineral oil, polyurethane thickener, DMEA, 2-bromine-2-nitropropane-1,3-diol.

Dispersion varnish

Declaration of constituents:

Polyacrylate, inorganic white and colour pigments, organic pigments, mineral extenders, water, glycols, film-forming agents, anti-foaming agents, polyurethane thickener, amines, methylisothiazolinone.

Full listing of constituents:

Pure acrylate polymer dispersion, titanium dioxide, inorganic and organic pigments, carbonate, silicates, water, propylene glycol, butyl diglycol, polysiloxane, polyurethane thickener, 2-amino-2-methylpropanol (AMP), methylisothiazolinone.

Alkyd resin varnish

Declaration of constituents:

Alkyd resin, titanium dioxide, aliphatic hydrocarbon mixtures, aromatic hydrocarbon mixtures, interface additives, water-proofing agents, anti-skinning agents, drying agents.

Or:

Alkyd resin, titanium dioxide, aliphatic mineral spirits, aromatic mineral spirits, interface additives, water-proofing agents, anti-skinning agents, drying agents.

Full listing of constituents:

Alkyd resin, titanium dioxide, aliphatic mineral spirits, aromatic mineral spirits, polysiloxane, polyamide wax, bentonite, 2-pentanone oxime, salts of organic acids with the metals cobalt, calcium and zirconium.

Alkyd resin varnish for wood (outdoor use)Declaration of constituents:

Alkyd resin, inorganic white and colour pigments, aliphates, flow agents, water-proofing agents, anti-skinning agents, drying agents, light stabilisers, iodpropynyl butylcarbamate.

Full listing of constituents:

Alkyd resin, inorganic white and colour pigments, isoparaffins, polysiloxane, polyamide wax, bentonite, 2-pentanone oxime, salts of organic acids with the metals cobalt, calcium and zinc, benzotriazole, iodpropynyl butylcarbamate.

Dispersion render (outdoor use)Declaration of constituents:

Synthetic copolymer film-forming agent, mineral extenders, inorganic white and colour pigments, organic pigments, water, dearomatised hydrocarbons, methylisothiazolinone, benzisothiazolinone, octylisothiazolinone, film preservatives, flame retardants.

Full listing of constituents:

Vinyl acetate ethylene copolymer dispersion, calcium carbonate, diatomaceous earth, titanium dioxide, inorganic and organic pigments, water, dearomatised hydrocarbon mixture, aluminium hydroxide, methylisothiazolinone, benzisothiazolinone, octylisothiazolinone, diuron.

Dispersion silicate plaster (indoor use)Declaration of constituents:

Inorganic and organic film-forming agents, mineral extenders, inorganic white and colour pigments, silicates

Full listing of constituents:

Potassium silicate, styrene acrylate copolymer dispersion, calcium carbonate, silicon dioxide, titanium dioxide, inorganic colour pigments, siliconates.

VdL, June 2018