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Description

[0001] The present invention relates to aqueous coating materials, in particular dispersion coating materials. The invention furthermore relates to a paint or primer coat on a substrate surface, obtained or obtainable by single or multiple application of the coating materials according to the invention on the substrate surface, and the use of the coating materials according to the invention as a paint or primer for an interior area.

[0002] Paints are constantly subject to further development. This is due to customer requirements as well as the aim of being able to provide the consumer with high-quality products as cost-effectively as possible. A wide variety of coating systems can be used for paint coats. Silicate paints, dispersion silicate paints and plastic dispersion paints are mentioned by way of example. Corresponding definitions for these systems are to be found in DIN 18363:2016-09.

[0003] It is frequently not only demanded of paint coats that they have good coverage, but also that they exhibit good mechanical resistance, for example good wet-abrasion resistance. Accordingly there has been no lack of attempt to achieve correspondingly improved paint coats.

[0004] For example, DE 10 2013 020 575 A1 has already presented the object of providing dispersion paints which, with a reduced titanium dioxide content, ensure both good coverage and good wet-abrasion resistance. The aim is to achieve this with a coating agent containing 0.5 to 30 wt.-% hollow particles in relation to the total amount of the coating agent, comprising an outer shell forming a cavity and an inner material at least partially enclosed by the outer shell, wherein the outer shell has to have a refraction index of 1.3 to 2.5 and the inner material has to have a refraction index of 1.4 to 3.2, and wherein the inner material partially fills the volume of the cavity, 0.5 to 40 wt.-% of at least one film-forming polymer and water and/or solvent.

[0005] According to DE 10 2014 013 455 A1, dispersion paints which contain 2 to 30% polymer dispersion calculated as the solids content, 10 to 60% pigment and/or filler, 0.5 to 5% silicate as an additive and water added to 100% are said to be adequate in terms of coverage and wet-abrasion.

[0006] According to WO 2015/193192 A1, aqueous polymer dispersions such as those which are obtainable by radical aqueous emulsion polymerisation of a monomer mixture,

containing 30 to 70 parts by weight of at least one monomer whereof the homopolymer has a glass transition temperature $T_g < 25^\circ\text{C}$, 30 to 70 parts by weight of at least one monomer whereof the homopolymer has a glass transition temperature $T_g > 25^\circ\text{C}$ and
5 0.1 to 5 parts by weight of at least one compound containing stabilising groups and 0.05 to 5 parts by weight of at least one copolymerisable monomer containing one or more hydrolysable silane monomers are said to exhibit improved wet-scrub resistance.

[0007] DE 10 2007 034 865 A1 discloses a coating substance composition, which contains substantially:

10 1.0.1 to 80 wt.-% of a non-yellowing, low-viscosity, unsaturated, amorphous polyester, which is substantially free of benzene and formaldehyde, consisting of

I. an acid component consisting of

A) 10 to 100 mol-% of α,β -unsaturated dicarboxylic acid,

15 B) 0 to 90 mol-% of linear and/or branched, aliphatic and/or cycloaliphatic and/or aromatic di- and/or polyfunctional carboxylic acid which does not have α,β -unsaturated groupings,

wherein the sum of A) and B) being 100 mol-%,

II. an alcohol component consisting of

C) 5 to 100 mol% of a didiol mixture,

20 D) 0 to 95 mol-% of di- and/or polyfunctional alcohols, wherein the sum of C) and D) being 100 mol-%, and wherein

- the benzene content and 10 mg/kg and the formaldehyde content is less than 10 mg/kg, based on the polyester,
- the polydispersity of the molecular weight distribution of the polyester is between 1.3 and 4.5, and
- 25 - the content of tricyclodecane(mono/di-)aldehyde in the didiol mixture C) is below 2 wt.-%,

- the content of mono(hydroxymethyl)tricyclo[5.2.1.0^{2.6}]decane in the dicidol mixture C) is below 10 wt.-%,
 - the content of the metals chromium, nickel, copper, cadmium, lead and rhodium in the dicidol mixture C) is in each case individually below 2 mg/kg, and
2. 99.9 to 20 wt.-% of at least one further binding agent,
 3. 0 to 80 wt.-% of at least one auxiliary product and/or additive,
 4. 0 to 70 wt.-% of at least one colorant and/or filler,
- wherein the sum of the weight specifications of the components 1. to 4. is 100 wt.-%.

[0008] In addition to very good adhesion, even under critical climatic conditions, these coating compositions should have a high corrosion protection, a high gloss, a high solids content respectively a low viscosity with a given solids content as well as a very good stone chip resistance and resistance to salt solutions and being substantially free of benzene and formaldehyde.

[0009] DE 195 15 539 A1 discloses an aqueous coating composition containing (A) aqueous binding agents containing (a) organopolysiloxane resins, (b) mono organosilanoates and/or their condensation products produced by dehydration, (c) aqueous solutions of colloidal silicas and (d) water, (B) metal powder and/or inorganic pigments, (C) optionally silicon dioxide with a BET surface area of at least 50 m²/g, which are optionally hydrophobised, and (D) optionally water. These aqueous coating compositions should no longer require long drying times and should also have sufficient solvent and water resistance, in particular when higher amounts of monoorganosilanolates are added, without

at the same time show an increased hydrogen formation due to the increase of the pH-value.

[0010] DE 43 09 625 C1 discloses a method for manufacturing a synthetic resin dispersion-tempered silicate-bound coating system in the form of paints, filling compounds, primers, wall coverings and plasters, wherein the mixture of potassium

water glass and acrylate copolymer based on synthetic resin dispersion is temporarily heated to ca. 50°C whilst stirring. In this way, it should be possible to obtain storage-stable, coagulate-free formulations which result in alkali, saponification and water glass resistant dispersions even in the presence of potassium water glass.

5 [0011] It would be desirable to use aqueous coating compounds which can be manufactured cost-effectively and which are simultaneously notable for user-friendly properties in terms of colour impression and mechanical durability. Accordingly, the present invention is based on the object of providing aqueous coating compounds, which no longer have the disadvantages of the prior art and which, in particular, demonstrate
10 good coverage and/or a good, enduring colour impression, determined in particular on the basis of the whiteness and/or yellowness index values, and possibly additionally also a satisfactory wet-abrasion resistance.

[0012] Accordingly, aqueous coating materials, in particular dispersion coating materials, have been found, containing

- 15 a) organic binding agents in an amount in the range of 4.0 to less than 30.0 wt.-% (solids content), wherein the organic binding agent a) in the coating materials is present in the form of an aqueous dispersion based on vinyl acetate/ethylene copolymers, copolymers based on vinyl aromates and acrylates and/or copolymers based on pure acrylates and/or wherein the organic binding agent a)
20 and water glass and/or silica sol are present in the form of a hybrid binding agent,
- b) water glass and/or silica sol in an amount less than 1.5 wt.-% (solids content) and
- c) 15 to 70 wt.-% of at least one pigment and/or at least one filler, wherein the aqueous coating materials have a pH value in the range of 8.5 to 12 or are
25 adjusted to a pH value in the range of 8.5 to 12.

[0013] Coating materials in the sense of the present invention should comprise compositions according to DIN EN ISO 4618:2015-01. These include, in particular, coating materials such as dispersion paints and filling compounds.

[0014] In a suitable embodiment of the coating materials according to the invention, the
30 organic binding agent a) is present in an amount in the range of 4.0 to 12.5 wt.-%, preferably in the range of 4.5 to 10.0 wt.-% and particularly preferably in the range of 5.0

to 9.0 wt.-%. With the said binding agent contents, a low wet abrasion which is sufficient for interior and exterior use can generally be achieved with the coating materials according to the invention. Furthermore, in a further suitable embodiment, the water glass and/or silica sol is alternatively or additionally present in an amount in the range of 0.1 to 1.45 wt.-% and preferably in the range of 0.25 to 1.40 wt.-%. For many applications, it has been demonstrated that, with an amount of less than 1.5 wt.-% (solids content) of water glass, adequate coverage can be achieved with the coating compounds according to the invention. Water glass can be obtained, for example, by reacting alkali carbonate and/or alkali hydroxide with quartz sand. It is conventionally present in the form of aqueous solutions. These can have different concentrations. In general, sodium and potassium water glass and also lithium water glass are of technical significance. Potassium water glass is preferably used for the coating materials according to the invention.

[0015] The organic binding agent a) in the coating materials according to the invention is present in particular in the form of an aqueous dispersion based on copolymers based on styrene and acrylates. Suitable organic binding agents for the aqueous coating materials according to the invention are vinyl acetate/ethylene copolymers, copolymers based on vinyl aromates, in particular styrene, and acrylates or based on pure acrylates, in particular based on pure acrylates. Pure acrylates comprise homopolymers and, in particular, copolymers of (meth)acrylates, i.e. acrylates and/or methacrylates, optionally also with (meth)acrylic acid, i.e. acrylic acid and/or methacrylic acid, as a comonomer component. In a suitable embodiment, the organic binding agent is used in the form of an aqueous binding agent dispersion. Accordingly, possible organic binding agents are, in particular, also those in which the polymers which are dispersed or dispersible in water are formed from the same or different monomers, wherein at least one of the monomers constitutes acrylic acid ester, methacrylic acid ester, acrylic acid, methacrylic acid, vinyl acetate, vinyl chloride, versatate, acrylonitrile or a vinyl aromatic compound. In a suitable embodiment, the polymer which is dispersed or dispersible in water is, in this case, based on i) acrylic acid esters and vinyl aromates, in particular styrene, or on ii) acrylic acid esters and vinyl esters at least of a Koch acid, in particular versatic acid, or vinyl aromates, in particular styrene.

[0016] In the sense of the invention, the term organic binding agents also includes dispersions based on the above-mentioned polymers and copolymers, but containing, incorporated by polymerisation, a) at least one monomer with at least one hydrolysable

silane as a functional group, wherein this functional group does not participate in the polymerisation reaction in a chain-extending manner, and/or b) at least one monomer with at least one hydroxyl group as a functional group, wherein this group does not participate in the polymerisation reaction in a chain-extending manner. Furthermore, organic binding agents also comprise, in particular, hybrid binding agents. In the sense of the present invention, hybrid agents also include reaction products formed from at least one organic binding agent selected from the group of the above-mentioned organic binding agents containing, incorporated in the polymers and copolymers by polymerisation, a) at least one monomer with at least one hydrolysable silane as a functional group, wherein this functional group does not participate in the polymerisation reaction in a chain-extending manner, and/or b) at least one monomer with at least one hydroxyl group as a functional group, wherein this functional group does not participate in the polymerisation reaction in a chain-extending manner, and silica sol and/or water glass, in particular water glass. Without being tied to a theory, it is presumed that the hydrolysable silane group a) and/or the hydroxyl group b) undergo a condensation reaction with the functional groups of the silica sol and/or water glass.

[0017] Inorganic pigments such as coloured, black and white pigments (colour pigments) and lustre pigments and organic pigments such as coloured and black pigments are mentioned as examples of suitable pigments. Possible suitable inorganic white pigments are, for example, titanium dioxide, zinc white, pigment grade zinc oxide, zinc sulphide and/or lithopone and/or ettringite. From the inorganic black pigments, it is possible to select from iron oxide black, iron manganese black, spinel black and/or carbon black, for example. As suitable inorganic coloured pigments, it is possible to use, for example, chromium oxide, chromium oxide hydrate green, chrome green, cobalt green, ultramarine green, cobalt blue, ultramarine blue, manganese blue, ultramarine violet, cobalt and manganese violet, iron oxide red, cerium sulphide, molybdate red, ultramarine red, iron oxide brown, mixed brown, spinel and corundum phases, chromium titanium yellow, tin-zinc titanate, chrome orange, cerium sulphide, iron oxide yellow, nickel titanium yellow, chromium titanium yellow, spinel phases, chrome yellow and/or bismuth vanadate.

[0018] In this case, suitable organic pigments can be selected, for example, from the group consisting of monoazo pigments, diazo pigments, diazo condensation pigments, anthraquinone pigments, anthrapyrimidine pigments, quinacridone pigments, diketopyrrolopyrrole pigments, dioxazine pigments, flavanthrone pigments, indanthrone

pigments, isoindoline pigments, isoindolinone pigments, isoviolanthrone pigments, metal complex pigments, perinone pigments, perylene pigments, phthalocyanine pigments, pyranthrone pigments, pyrazoloquinazolone pigments, thioindigo pigments, triarylcarbonium pigments and any mixtures thereof. Coloured and black pigments are mentioned as examples of example of suitable organic pigments. For example, C.I. Pigment Blue 15, C. I. Pigment Blue 15:1, C.I. Pigment Blue 15:2, C.I. Pigment Blue 15:3, C. I. Pigment Blue 15:4, C. I. Pigment Blue 15:6, C. I. Pigment Blue 16, C.I. Pigment Green 7, C.I. Pigment Green 36, C. I Pigment Orange 36, C.I. Pigment Orange 43, C.I. Pigment Orange 73, C.I. Pigment Red 122, C.I. Pigment Red 168, C.I. Pigment Red 179, C.I. Pigment Red 188, C.I. Pigment Red 254, C.I. Pigment Red 264, C.I. Pigment Red 282, C.I. Violet 19, C.I. Pigment Violet 23, Pigment Yellow 74, Pigment Yellow 83, Pigment Yellow 97, C.I. Pigment Yellow 110, C.I. Pigment Yellow 138, C.I. Pigment Yellow 154 or any mixtures of these pigments are mentioned as examples of suitable organic coloured pigments.

[0019] Suitable pigment mixtures can comprise mixtures of inorganic and organic pigments and mixtures of different inorganic pigments and mixtures of different organic pigments.

[0020] Particularly suitable pigments comprise, for example, titanium dioxide, zinc sulphide, zinc oxide, barite, carbon black, iron oxide, chromium oxide, cobalt blue, phtalocyanine pigment, spinel pigment, nickel titanate, chromium titanate and any mixtures thereof.

[0021] Suitable fillers can essentially be selected from the group consisting of silicates, carbonates, fluorspar, sulphates, oxides and any mixtures thereof. Calcitic fillers, in particular calcium carbonate, dolomite, calcite and/or aragonite, siliceous fillers, in particular quartzite, sheet silicate, feldspars, vulcanite and/or siliceous earths such as kieselgur and diatomaceous earths, sulphate fillers, in particular barium sulphate, and chemically modified fillers are mentioned by way of example.

[0022] In a suitable embodiment, the at least one pigment and/or the at least one filler c) are present in the coating materials according to the invention in an amount in the range of 20 to 70 wt.-%, preferably in the range of 25 to 70 wt.-% and particularly preferably in the range of 35 to 60 wt.-%.

[0023] In a preferred embodiment, the coating materials according to the invention have a pH value in the range of 9 to 11.5 or are adjusted to a pH value in the range of 9 to 11.5. The adjustment of the pH value can be realized via the added water glass and/or silica sol. Alkali hydroxides and/or alkaline earth hydroxides, e.g. KOH, ammonia and/or amine compounds, preferably in the form of aqueous solutions, can be optionally added. Accordingly, the coating materials according to the invention can furthermore contain at least one alkali hydroxide and/or alkaline earth hydroxide, ammonia and/or an amine compound (component d)). Suitable amine compounds also comprise amino alcohols, for example. It has been surprisingly discovered that these amino alcohols in the aqueous coating materials according to the invention can also have a stabilising effect. In the coating materials according to the invention, they can moreover also be used, for example, as neutralising agents and/or as dispersing agents. 2-amino-2-methyl-1-propanol, 2-amino-2-ethyl-1,3-propanediol, N,N,N',N'-tetrakis(2-hydroxypropyl)-ethylenediamine and mixtures thereof as well as polyhydroxyamine, in particular polyhydroxyamine in which the polyhydroxy unit is based on a hexose, preferably glucose, are also mentioned as examples of preferred amino alcohols. Particularly suitable polyhydroxyamines include alkylglucamine, in particular tertiary alkylglucamine such as dimethylglucamine, hydroxyethyl and hydroxypropyl-N-methylglucamine and mixtures thereof. Of course, any mixtures of polyhydroxyamines, in particular the preferred polyhydroxyamines, and 2-amino-2-methyl-1-propanol, 2-amino-2-ethyl-1,3-propanediol and/or N,N,N',N'-tetrakis(2-hydroxypropyl)-ethylenediamine, can be used. Of the amino alcohols, 2-amino-2-methyl-1-propanol, 2-amino-2-ethyl-1,3-propanediol and/or N,N,N',N'-tetrakis(2-hydroxypropyl)-ethylenediamine are preferably used.

[0024] The coating materials according to the invention can furthermore be provided with f) at least one alkylalkoxysilane, alkylalkoxysiloxane, water-soluble alkyl siliconate, in particular potassium methyl siliconate, monoalkylsilanetriol, dialkylsilanediol, trialkyl silanol, alkali salt of monoalkylsilanetriol, in particular potassium methylsilanetriolate and/or potassium methylsilanetriolate, dialkylsilanediol or trialkyl silanol or any mixtures hereof and optionally g) at least one chelating agent (also referred to as complexing agent) and/or g) optionally at least one additive. Ethylenediamine tetraacetic acid (EDTA), diethylenetriamine pentaacetic acid (DPTA), nitrilo-triacetic acid hydroxyethyl ethylenediaminetriacetic acid, amino polycarboxylic acids, in particular containing one or more amino groups and two or more carboxylic acid groups and polyphosphonic acids, e.g. phosphonopolycarboxylic acids such as 2-phosphonobutane-1,2,4-tricarboxylic acid

and any mixtures thereof are mentioned as suitable complexing agents or chelating agents.

[0025] Conventional additives as used for aqueous coating materials in general can be used as additives. By way of example, suitable additives can be selected from the group consisting of at least one wetting and/or dispersing agent, defoaming agents, stabilizing agents, flame retardants, hydrophobing agents, matting agents, in particular precipitated silicas, sheet silicates, organically modified sheet silicates and/or thixotropic alkyd resins, surface additives, in particular silicone surface additives, for example polyether modified polymethylalkylsiloxane and/or silicone polyether copolymers, buffer substances, UV absorbers, free-radical scavengers and mixtures of these compounds. The aqueous coating materials according to the invention contain, as an additive, preferably at least one thickener and/or a defoamer. Particularly preferably, both thickeners and defoamers are present in the aqueous coating materials according to the invention.

[0026] In a preferred embodiment, the said additives in the aqueous coating materials according to the invention are preferably present in an amount in the range of 0.001 to 5 wt.-%, preferably in the range of 0.01 to 4 wt.-% and particularly preferably in the range of 0.1 to 3.5 wt.-%, based on the solids content in each case, or, if these additives are not present as a solid at room temperature, based on the proportion of non-aqueous active ingredients in these additive components.

[0027] Suitable thickeners can be selected from the group consisting of polyacrylate thickeners, polyurethane thickeners, polyurea thickeners, cellulose thickeners, in particular hydroxyethyl cellulose and/or methyl cellulose here, polyvinyl alcohol thickeners, polyether polyol thickeners, polysaccharide thickeners, in particular xanthan and/or agar agar here, and any mixtures hereof.

[0028] Suitable thickener systems can also be based on the combined use of sheet silicates, in particular organically modified sheet silicates, and polysaccharide thickeners, in particular xanthan here.

[0029] In a further preferred embodiment, the coating materials according to the invention can contain i) 4 to 12.5 wt.-%, in particular 4 to 7 wt.-%, polymer dispersion (component a)), ii) 0 to 30 wt.-%, in particular 2.0 to 15 wt.-%, pigments (component c)), iii) 15 to 70 wt.-%, in particular 20 to 65 wt.-%, fillers (component c)) and/or, preferably and, iv) 0.1

to 1.5 wt.-%, in particular 0.2 to 1.25 wt.-%, water glass (component b)) and v) water added to 100 wt.-%.

5 [0030] The aqueous coating materials according to the invention are, in particular, also notable in that they can be substantially free of preservatives. It is particularly advantageous here that, even without any organic biocide preservatives, these coating materials exhibit no fungal and/or bacterial infestation over a relative long time period. With the coating materials according to the invention it is therefore no longer imperative to use in-can and/or film preservatives. The aqueous coating materials according to the invention are associated with the further advantage that, as a result of substituting
10 pigments, in particular white pigments such as titanium dioxide, with water glass and/or silica sol, in particular water glass, with the same solids content, the coverage, measured according to DIN EN ISO 6504-3 in conjunction with DIN EN 13300 (November 2002) is, in many cases, not impaired.

15 [0031] The coating materials according to the invention are suitable, for example, as a primer and as an exterior or interior paint.

[0032] The object on which the invention is based is furthermore achieved by a paint or primer coat on a substrate surface, obtained or obtainable by single or multiple application of the coating substance according to the invention on the substrate surface. The coating materials according to the invention, in particular in the form of dispersion
20 coating materials, are therefore suitable as a paint or primer for an interior area.

[0033] With the aqueous coating materials according to the invention, it is possible to obtain relative cost-effective primer or base coats which are notable for good coverage and good wet-abrasion resistance. The coatings obtained with the coating materials according to the invention moreover generally have a better whiteness index and a low
25 yellowness index.

[0034] The two measurement parameters, whiteness index and yellowness index, were determined according to ASTM E 313:2015. Standard EN 13300 (November 2002) was used to determine the wet abrasion. The coverage was determined according to DIN EN ISO 6504-3 : 2007-05.

30 [0035] The invention is described by the exemplary compositions below, although these do not represent a restriction of the invention. Based on the present description and

general specialist knowledge, the person skilled in the art will be able to derive further embodiments of the invention without the need for inventive activity. All specifications are in percent by weight. Where water-containing and/or solvent-containing formulations were used, the specifications relate to the solids content of this formulation.

- 5 [0036] In the exemplary embodiments 1.2, 1.3 and 1.4 as well as 2.2 and 2.3, starting with the examples 1.1 and 2.1 for comparison, an exemplary organic binding agent was progressively replaced by an inorganic binding agent with substantially the same solids content.

Formulation	1.1 (comp.)	1.2 (according to the invention)	1.3 (according to the invention)	1.4 (according to the invention)
Water	48	48	48	48
Thickener	0.50	0.50	0.50	0.50
Alkali hydroxide	0.26	0.26	0.26	0.26
Additives	0.94	0.94	0.94	0.94
Fillers/pigments	44	44	44	44
Organic binding agent	6.0	5.7	5.2	4.6
Inorganic binding agent (water glass)	0.0	0.28	0.84	1.4
Wet abrasion according to standard DIN EN 13 300:2002	7.2	4.3	7.2	13
Coverage for 7 qm/l according to standard DIN EN ISO 6504- 3:2007-05	99.1	99.1	99.6	99.6
Whiteness Index according to ASTM E 313:2015; Equipment used: Spectro-guide sphere gloss colorimeter; Byk	75.6	76.0	78.9	79.4
Yellowness Index according to ASTM E 313:2015; Equipment used: Spectro-guide sphere gloss colorimeter; Byk	4.4	4.3	4.0	4.0

Formulation	2.1 (comp.)	2.2 (according to the invention)	2.3 (according to the invention)
Water	65	65	65
Thickener	0.55	0.55	0.55
Alkali hydroxide	0.26	0.26	0.26
Additives	0.84	0.84	0.84
Fillers/pigments	44	44	44
Organic binding agent	9.0	8.7	7.6
Inorganic binding agent (water glass)	0.0	0.30	0.84
Wet abrasion according to standard DIN EN 13 300:2002	2.6	3.0	4.8
Coverage for 7 qm/l according to standard DIN EN ISO 6504-3:2007-05	99.6	99.7	99.8
Whiteness Index according to ASTM E 313:2015; Equipment used: Spectro-guide sphere gloss colorimeter; Byk	83.1	83.5	84.0
Yellowness Index according to ASTM E 313:2015; Equipment used: Spectro-guide sphere gloss colorimeter; Byk	2.9	2.9	2.8

[0037] The features of the invention which are disclosed in the description above and in the claims can be essential to the realisation of the invention in its various embodiments both individually and in any combination.

PATENTKRAV

1. Vandige coatingmaterialer, indeholdende
 - a) organiske bindemidler
5 i en mængde i området fra 4,0 til mindre end eller lig med 30 vægtprocent (faststofandel),
hvor det organiske bindemiddel a) er til stede i det vandige coatingmateriale i form af en vandig dispersion på basis af vinylacetat/ethylen-copolymerer, copolymerer på basis af vinylaromater og acrylater og/eller copolymerer på basis af rene acrylater, og/eller
10 hvor det organiske bindemiddel a) og vandglas og/eller kiselisol er til stede i det vandige coatingmateriale i form af et hybridt bindemiddel,
 - b) vandglas og/eller kiselisol
i en mængde på mindre end 1,5 vægtprocent (faststofandel), og
15 c) 15 til 70 vægtprocent af mindst ét pigment og/eller mindst ét fyldstof, hvor de vandige coatingmaterialer har en pH-værdi i området fra 8,5 til 12 eller er justeret til en pH-værdi i området fra 8,5 til 12.
2. Coatingmaterialer ifølge krav 1, indeholdende
20 det organiske bindemiddel a) i en mængde i området fra 4,0 til 12,5 vægtprocent, fortrinsvis i området fra 4,5 til 10,0 vægtprocent og særligt foretrukket i området fra 5,0 til 9,0 vægtprocent, og/eller vandglasset og/eller kiselisolen i en mængde på mindre end 1,45 vægtprocent, fortrinsvis i området fra 0,1 til 1,45 vægtprocent og særligt foretrukket i området
25 fra 0,25 til 1,40 vægtprocent.
3. Coatingmaterialer ifølge krav 1 eller 2, kendetegnet ved, at copolymeren på basis af vinylaromater og acrylater udgør en copolymer på basis af styren og acrylater.
- 30 4. Coatingmaterialer ifølge et hvilket som helst af de foregående krav, indeholdende det mindst ene pigment og/eller det mindst ene fyldstof c) i en mængde i området fra 20 til 70 vægtprocent, fortrinsvis i området fra 25 til 70 vægtprocent og særligt foretrukket i området fra 35 til 60 vægtprocent.

5. Coatingmaterialer ifølge et hvilket som helst af de foregående krav, kendetegnet ved, at de har en pH-værdi i området fra 9 til 11,5 eller er justeret til en pH-værdi i området fra 9 til 11,5.

5 6. Coatingmaterialer ifølge et hvilket som helst af de foregående krav, som yderligere indeholder

d) mindst ét pH-justeringsmiddel, især valgt fra gruppen bestående af alkalihydroxider, jordalkalihydroxider, ammoniak, aminforbindelser og en hvilken som helst blanding deraf, især mindst én aminoalkohol,

10 e) mindst ét rheologiadditiv, især fortykningsmidler,

f) mindst én alkylalkoxysilan, alkylalkoxysiloxan, vandopløseligt alkylsilikonat, især kaliummethyilsilikonat, monoalkylsilantriol, dialkylsilandiol, trialkylsilanol, alkaliskt af monoalkylsilantriol, især kaliummethyilsilantriolat og/eller kaliumethylsilantriolat, dialkylsilandiol eller trialkylsilanol eller en hvilken som helst blanding deraf, og

15

g) eventuelt mindst ét chelateringsmiddel og/eller

h) eventuelt mindst ét additiv.

7. Coatingmaterialer ifølge krav 6, kendetegnet ved, at det mindst ene additiv h) er valgt fra gruppen bestående af mindst ét befugtnings- og/eller dispergeringsmiddel, skumdæmpende midler, stabiliseringsmidler, flammehæmmere, hydrofoberingsmidler, matteringsmidler, især udfældet kiselsyre, lagsilikater, organisk modificerede lagsilikater, overfladeadditiver, især silikoneoverfladeadditiver, f.eks. polyethermodificeret polymethylalkylsiloxan og/eller silikonepolyethercopolymerer, bufferstoffer, UV-absorbanter, radikalopfangere og blandinger af disse forbindelser.

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8. Coatingmaterialer ifølge krav 6 eller 7, kendetegnet ved, at fortykningsmidlet er valgt fra gruppen bestående af polyacrylatfortykningsmidler, polyurethanfortykningsmidler, polyurinstoffortykningsmidler, cellulosefortykningsmidler, især hydroxyethylcellulose og/eller methylcellulose, polyvinylalkoholfortykningsmidler, polyetherpolyolfortykningsmidler, lagsilikatfortykningsmidler, polysaccharidfortykningsmidler, især xanthan, og en hvilken som helst blanding deraf.

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9. Coatingmaterialer ifølge et hvilket som helst af de foregående krav, kendetegnet ved, at de er i det væsentlige fri for konserveringsmidler, fortrinsvis fri for organiske biocid konserveringsmidler, særligt foretrukket fri for konserveringsmidler i dåse og/eller film.
- 5
10. Coatingmaterialer ifølge et hvilket som helst af de foregående krav, kendetegnet ved, at pigmenterne er valgt fra gruppen bestående af titandioxid, zinksulfid, zinkoxid, baryt, kønrøg, jernoxid, chromoxid, cobaltblåt, phtalocyaninpigmenter, spinelpigmenter, nikkel- og chromtitanat og en hvilken som helst blanding deraf.
- 10
11. Coatingmaterialer ifølge et hvilket som helst af de foregående krav, kendetegnet ved, at fyldstofferne er valgt fra gruppen bestående af silikater, carbonater, flussspat, sulfater og oxider.
- 15
12. Coatingmaterialer ifølge et hvilket som helst af de foregående krav, kendetegnet ved, at vandglasset er valgt fra gruppen bestående af natrium-, kalium-, lithiumvandglas og en hvilken som helst blanding deraf.
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13. Coatingmaterialer ifølge et hvilket som helst af de foregående krav, indeholdende
- i) 4 til 12,5 vægtprocent, især 4 til 7 vægtprocent, polymerdispersion,
 - ii) 0 til 30 vægtprocent, især 2,0 til 15 vægtprocent, pigmenter,
 - iii) 15 til 70 vægtprocent, især 20 til 65 vægtprocent, fyldstoffer,
 - iv) 0,1 til 1,5 vægtprocent, især 0,2 til 1,25 vægtprocent, vandglas og
 - v) yderligere andele af vand op til 100 vægtprocent.
- 25
14. Coatingmaterialer ifølge et hvilket som helst af de foregående krav, kendetegnet ved, at pH-justeringsmidlet har en pKa-værdi på mere end eller lig med 9,9, især mere end eller lig med 12,0.
- 30
15. Coatingmaterialer ifølge et hvilket som helst af de foregående krav, kendetegnet ved, at de er en grunder eller en facade- eller indvendig maling.
16. Lag maling eller grunder på en substratoverflade, som er opnået eller kan opnås ved en enkelt eller flere påføringer af coatingmaterialerne ifølge et hvilket som helst af

de foregående krav på substratoverfladen.

17. Anvendelse af coatingmaterialer, især dispersionscoatingmaterialer, ifølge et hvilket som helst af kravene 1 til 15 som maling eller grunder til indvendige rum.