- at least one addition from the group consisting of particulate metals, metal alloys and/or metal compounds, ~~and~~wherein the particulate metals, metal alloys and/or metal compounds, is selected from the group consisting of zinc powders, zinc flakes, zinc dust, powders or flakes or dust of zinc alloys, zinc-bismuth alloys, aluminium powders, aluminium flakes, powders or flakes or dust of aluminium alloys, magnesium powders, magnesium flakes, powders or flakes of magnesium alloys, zinc oxide, and
- optionally at least one additive,

the pH in the composition being 1 to 14 and the dry residue of the binder being 1% to 50% by weight, based on the binder used.

2. Composition according to Claim 1,
where for preparing the binder
water is introduced in a molar excess, based on the silanes of the formulae I and II and also, optionally, on the aforementioned silicon compounds used and is adjusted to an acidic pH with addition of an organic or inorganic acid, a silica sol being added optionally,
an ω-glycidyloxyalkylalkoxysilane of the formula I is metered in and the mixture is heated,
optionally further acid is metered in,
and at least one bis(alkoxysilylalkyl)amine of the general formula II and also optionally at least one further silicon compound from the group consisting of tetraalkoxysilane, alkylalkoxysilane, mercaptoalkylalkoxysilane, carboxyalkylalkoxysilane, aminoalkylalkoxysilane, ureidoalkylalkoxysilane and thiocyanatoalkylalkoxysilane is metered in and the system is caused to react,
subsequently the resultant hydrolysis alcohol is removed at least proportionately from the reaction mixture under reduced pressure,
the binder thus obtained is optionally diluted with water and/or an aqueous acid and is subsequently filtered,
the dry residue of the binder being 1% to 50% by weight, preferably 5% to 40% by weight, more preferably 8% to 35% by weight, more particularly 10% to 25% by weight, based on the binder used.

3. Composition according to Claim 1 or 2,

characterized by

a dry residue (solids content) of 1% to 50% by weight, preferably 3% to 45% by weight, more preferably 3% to 35% by weight, based on the composition.

4. Composition according to any of Claims 1 to 3,

characterized in that
amount of the particulate metals, metal alloys and/or metal compounds in the composition is 1% to 95% by weight, preferably 3% to 90% by weight, more preferably 5% to 85% by weight, very preferably 10% to 80% by weight.

~~5. Composition according to any of Claims 1 to 4,~~
~~characterized in that~~
~~the addition of particulate metals, metal alloys and/or metal compounds, more particularly metal oxides, is selected from the group consisting of conductive and non-conductive fillers, zinc powders, zinc flakes, zinc dust, powders or flakes or dust of zinc alloys, zinc-bismuth alloys, aluminium powders, aluminium flakes, powders or flakes or dust of aluminium alloys, magnesium powders, magnesium flakes, powders or flakes of magnesium alloys, titanium dioxide, red iron oxide, yellow iron oxide, calcium carbonate, talc, aluminium silicates, barium sulphate, kaolin, magnesium silicates, crystalline quartz, amorphous quartz, calcium magnesium carbonate, calcium silicates, aluminium oxide, zeolites, wollastonites, zinc oxide, zinc phosphate, bismuth vanadate, lead chromate, silicon carbide and inorganic colour pigments.~~

~~6~~5. Composition according to any of Claims 1 to ~~4~~5,
characterized in that
the additives are selected from the group consisting of defoamers, thickeners, rheological assistants, dispersion assistants, anti-settling agents, rust inhibitors, wetting agents, organic pigments, polymers and polymer dispersions, and also catalysts for the condensation and curing.

~~7~~6. Composition according to any of Claims 1 to ~~6~~5,
characterized by
an amount of additives, more particularly of thickener, of 0% to 5% by weight and/or of anti-settling agent of 0% to 5% by weight and/or of wetting agent of 0% to 3% by weight of corrosion inhibitor of 0% to 1% by weight, based in each case on the composition, the sum of all the constituents present in the composition making 100% by weight.

87. Process for preparing a composition according to any of Claims 1 to 76, characterized in that
first of all a binder comprising at least one cocondensate based on an ω-glycidyloxyalkylalkoxysilane of the formula I

$$X\text{-}Si(R^2)_x(OR^1)_{3-x} \qquad (I),$$

in which X is a 2-(3,4-epoxycyclohexyl)ethyl, 1-glycidyloxymethyl, 2-glycidyloxyethyl, 3-glycidyloxypropyl or 3-glycidyloxyisobutyl group, R^1 and R^2 independently of one another are each a linear or branched alkyl group having 1 to 4 C atoms, and x is 0 or 1,

and
on at least one bis(alkoxysilylalkyl)amine of the general formula II

$$(OR^1)_3Si - A - Si(OR^1)_3 \qquad (II),$$

in which the groups R^1 are identical or different and R^1 is a linear or branched alkyl group having 1 to 4 C atoms and A is a bis-amino-functional group of the formula IIa

$$-(CH_2)_i-[NH(CH_2)_f]_gNH[(CH_2)_{f^*}NH]_{g^*}-(CH_2)_{i^*}- \qquad (IIa),$$

in which i, i*, f, f*, g or g* are identical or different, with i and/or i* = 1, 2, 3 or 4, f and/or f* = 1 or 2, g and/or g* = 0 or 1,

and also, optionally, on at least one further silicon compound from the group consisting of tetraalkoxysilane, alkylalkoxysilane, mercaptoalkylalkoxysilane, carboxyalkylalkoxysilane, aminoalkylalkoxysilane, ureidoalkylalkoxysilane, thiocyanatoalkylalkoxysilane and silica sols

is prepared by a procedure in which

water is introduced in a molar excess, based on the silanes of the formulae I and II and also, optionally, on the aforementioned silicon compounds used, and is adjusted to an acidic pH with addition of an organic or inorganic acid, a silica sol being added with stirring optionally,

an ω-glycidyloxyalkylalkoxysilane of the formula I is metered in and the mixture is heated,

optionally further acid is metered in,

and at least one bis(alkoxysilylalkyl)amine of the general formula II and also optionally at least one further silicon compound from the group consisting of tetraalkoxysilane, alkylalkoxysilane, mercaptoalkylalkoxysilane, carboxyalkylalkoxysilane, aminoalkylalkoxysilane, ureidoalkylalkoxysilane and isocyanatoalkylalkoxysilane is metered in and the system is caused to react,

subsequently the resultant hydrolysis alcohol is removed at least proportionately from the reaction mixture under reduced pressure,

the binder thus obtained is optionally diluted with water and/or an aqueous acid and/or an aqueous base, or the pH is adjusted, and the binder is subsequently filtered,

and

at least one addition from the group consisting of particulate metals, metal alloys and/or metal compounds is dispersed into the resulting binder, wherein the particulate metals, metal alloys and/or metal compounds, is selected from the group consisting of zinc powders, zinc flakes, zinc dust, powders or flakes or dust of zinc alloys, zinc-bismuth alloys, aluminium powders, aluminium flakes, powders or flakes or dust of aluminium alloys, magnesium powders, magnesium flakes, powders or flakes of magnesium alloys, zinc oxide, and also, optionally, at least one additive is incorporated with stirring and optionally the pH in the composition is adjusted.

~~98~~. Process according to Claim ~~87~~,
characterized in that
the ω-glycidyloxyalkylalkoxysilane of the formula I is used in a molar ratio to the bis(alkoxysilylalkyl)amine of the general formula II of 0.1:99.9 to 99:1; more particularly the ω-glycidyloxyalkylalkoxysilane is used in the binder at 0.001 to 42 mol%, preferably from 0.01 to 30 mol%, more preferably from 0.1 to 15 mol%, very preferably from 0.2 to 1.5 mol%.

~~109~~. Process according to Claim ~~8~~ 7 or ~~89~~,
characterized in that

water is introduced in a molar excess, based on the silanes of the formulae I and II and also, optionally, the aforementioned silicon compounds used, of suitably 2 to 1000 mol of water, preferably 5 to 500 mol, more particularly 10 to 100 mol of water per mole of the Si-bonded alkoxy groups present in the silanes used, under inert gas, the reaction being carried out preferably under nitrogen or argon.

10~~11~~. Process according to any of Claims ~~8~~ 7 to 9~~10~~, characterized in that the organic or inorganic acid is selected from the group consisting of formic acid, acetic acid, propionic acid, hydrochloric acid, nitric acid, sulphuric acid and phosphoric acid and the aqueous base is selected from the group consisting of sodium hydroxide, potassium hydroxide, N,N-dimethylethanolamine and tetrakis(triethanolamine) zirconate, and the pH is adjusted during and/or after the reaction in the binder and/or after formulation in the composition to 1 to 14, preferably 2 to 12, more preferably 2.5 to 9, very preferably 3 to 8, more particularly to 3.5; 4; 4.5; 5; 5.5; 6; 6.5; 7; 7.5; 8 and also 8.5, it also being possible for the addition of the particulate metal, metal alloy and/or metal compound to the binder to result in a change in the pH, preferably on addition of micaceous iron ore, zinc, zinc oxide or a zinc alloy to an acidified binder.

~~12~~11. Process according to any of Claims 7~~8~~ to 10~~11~~, characterized in that 3-glycidyloxypropyltrimethoxysilane and/or 3-glycidyloxypropyltriethoxysilane are used and metered in as ω-glycidyloxyalkylalkoxysilane of the formula I, and the acidic aqueous mixture obtained is heated over 0.1 to 3 hours, preferably 0.5 to 2 hours, with stirring and/or mixing, to a temperature of 50 to 90 °C, preferably 60 to 65 °C.

12~~13~~. Process according to any of Claims 7~~8~~ to 11~~12~~, characterized in that the heated, acidic and ω-glycidyloxyalkylalkoxysilane-containing mixture is admixed in metered form with bis(trimethoxysilylpropyl)amine and/or

bis(triethoxysilylpropyl)amine and optionally as further silicon compound with a tetraalkoxysilane, preferably tetramethoxysilane, tetraethoxysilane, an alkylalkoxysilane, preferably C1-C16-alkylalkoxysilanes, more particularly methyltrimethoxysilane, methyltriethoxysilane, n-propyltrimethoxysilane (PTMO), n-propyltriethoxysilane (PTEO), isobutyltrimethoxysilane (IBTMO), isobutyltriethoxysilane (IBTEO), octyltrimethoxysilane (OCTMO), octyltriethoxysilane (OCTEO), mercaptoalkylalkoxysilane, preferably 3-mercaptopropyltrimethoxysilane (MTMO), mercaptopropyltrimethoxysilane (MTEO), aminoalkylalkoxysilane, preferably 3-aminopropyltrimethoxysilane (AMMO), 3-aminopropyltriethoxysilane (AMEO), N-(2-aminoethyl)-3-aminopropyltrimethoxysilane (DAMO), N-(2-aminoethyl)-3-aminopropyltriethoxysilane, N,N'-diaminoethyl-3-aminopropyltrimethoxysilane (TriAMO), N,N'-diaminoethyl-3-aminopropyltriethoxysilane, a carboxyalkyltrialkoxysilane, a ureidoalkylalkoxysilane, preferably 3-ureidopropyltrimethoxysilane, 3-ureidopropyltriethoxysilane, and/or a thiocyanatoalkylalkoxysilane, preferably 3-thiocyanatopropyltrimethoxysilane, 3-thiocyanatopropyltrimethoxysilane, at a pH of 2 to 6, preferably 3 to 5, and is caused to react with stirring at 50 to 90 °C, preferably 60 to 65 °C, over 0.3 to 6 hours, preferably 1 to 4 hours, i.e. the alkoxysilanes used are substantially completely hydrolysed and condensed or cocondensed.

13~~14~~. Use of a composition according to any of Claims 1 to 6~~7~~ or prepared according to any of Claims ~~8~~ 7 to ~~13~~12 for coatings which cure in the air at a temperature of 16 to 26 °C.

14~~15~~. Use according to Claim 13~~14~~ for coatings on metals and metal alloys for protection from corrosion.