Claims

[Claim 1] Hydraulic binder, in particular for mortars, more particularly for adhesive mortars, comprising (in % by dry weight):

A. at least 50 of at least one ground and granulated blast-furnace slag;

B. more than 5, preferably from 5.5 to 30, and, more preferably still, from 6 to 20, of at least one calcium aluminate cement and/or of at least one calcium sulfoaluminate cement;

C. more than 5, preferably from 6 to 30, and, more preferably still, from 8 to 20, of at least one source of sulfate ions selected from the group consisting of natural or synthetic gypsum, calcium sulfate hemihydrate, bassanite, anhydrite, selenite, alabaster, fibrous gypsum, saccharoidal gypsum, marine gypsum, gypsum flower, phosphogypsum, desulfurization gypsum, titanogypsum, citrogypsum, tartarogypsum, borogypsum, lactogypsum and mixtures thereof;

D. between 1 and 5 of $Ca(OH)_2$ and/or of Portland cement;

E. between 0.01 and 1 of at least one alkali metal carbonate, preferably Li_2CO_3;

F. and at least one alkalifying reagent consisting of at least one alkali metal carbonate and/or bicarbonate, different from E, preferably selected from the group comprising – or better still consisting of –: $NaHCO_3$; Na_2CO_3; K_2CO_3; and mixtures thereof;

subject to the following conditions:

(i) the amount of C is sufficient to allow the sulfate ions of C to react with B and with A;

(ii) the amount of F is sufficient so that its reaction with component D in the presence of water brings the pH of the resulting wet formulation to a value of not less than 12, preferably than 13, for a water-to-binder mixing rate of between 10 and 35% by weight

wherein

$0.1 < [C] / [A]$ and $1 \leq [C] / [B] \leq 2$.

[Claim 2] Hydraulic binder according to Claim 1, wherein

$0.1 \leq [C] / [A] \leq 1$, preferably $0.1 \leq [C] / [A] \leq 0.3$.

[Claim 3] Hydraulic binder according to at least one of the preceding claims, comprising (in % by dry weight):

A. 55 to 90, preferably 60 to 85, of at least one ground and granulated blast-furnace slag;

B. 5.5 to 30, preferably 6 to 20, of at least one calcium aluminate cement and/or of at least one calcium sulfoaluminate cement;

C. 6 to 30, preferably from 8 to 20, of at least one source of sulfate ions selected from the group consisting of natural or synthetic gypsum, calcium sulfate hemihydrate, bassanite, anhydrite, selenite, alabaster, fibrous gypsum, saccharoidal gypsum, marine gypsum, gypsum flower, phosphogypsum, desulfurization gypsum, titanogypsum, citrogypsum, tartarogypsum, borogypsum, lactogypsum and mixtures thereof;

D. 1 to 5, preferably 2 to 4, of $Ca(OH)_2$ and/or of Portland cement;

E. 0.01 to 1, preferably 0.1 to 0.5, of Li_2CO_3;

F. and at least one alkalifying reagent consisting of at least one alkali metal carbonate and/or bicarbonate, different from E, preferably selected from the group comprising – or better still consisting

of –: $NaHCO_3$; Na_2CO_3; K_2CO_3; and mixtures thereof, with $NaHCO_3$ being preferred;

G. 0 to 10, preferably from 0 to 20, of at least one binder different from A, B and D, preferably selected from the group comprising – or better still consisting of –: silica or silica-alumina binders, fly ashes, advantageously silica-alumina fly ashes, silica-calcium-alumina fly ashes, expanded or calcined clay dusts and/or metakaolins.

[Claim 4] Adhesive mortar composition comprising (in % by dry weight):

A. 10 to 50, preferably 15 to 40, of at least one ground and granulated blast-furnace slag;

B. 0.5 to 20, preferably 1 to 15, of at least one calcium aluminate cement and/or of at least one calcium sulfoaluminate cement;

C. 1 to 20, preferably from 2 to 15, of at least one source of sulfate ions selected from the group consisting of natural or synthetic gypsum, calcium sulfate hemihydrate, bassanite, anhydrite, selenite, alabaster, fibrous gypsum, saccharoidal gypsum, marine gypsum, gypsum flower, phosphogypsum, desulfurization gypsum, titanogypsum, citrogypsum, tartarogypsum, borogypsum, lactogypsum and mixtures thereof with

$1 \leq [C] / [B] \leq 2$;

D. 0.05 to 5, preferably 0.5 to 2, of $Ca(OH)_2$ and/or of Portland cement;

E. 0.02 to 0.8, preferably 0.05 to 0.15, of Li_2CO_3;

F. and at least one alkalifying reagent consisting of at least one alkali metal carbonate and/or bicarbonate, different from E, preferably selected from the group comprising – or better still consisting of –: $NaHCO_3$; Na_2CO_3; K_2CO_3; and mixtures thereof, with $NaHCO_3$ being preferred;

G. 30 to 80, preferably from 40 to 70, of at least one type of aggregates preferably selected from the group comprising – or better still consisting of –: mineral sands such as silica sands, lime sands and silica-lime sands, light mineral sands such as perlite, vermiculite, expanded glass beads, sands obtained from the recycling of mineral materials such as demolition concrete, ground glass, sands obtained from the recycling of organic materials such as ground tyres, ground polyurethanes, and mixtures thereof;

H. 1 to 10, preferably 1 to 5, of at least one redispersible polymer;

I. 0.01 to 5, preferably 0.05 to 1, of at least one thickener;

J. 0.01 to 0.5, preferably 0.05 to 0.3, of at least retarder, preferably selected from the group comprising – or better still consisting of –: tartaric acid and its salts, citric acid and its salts, gluconic acid and its salts, and mixtures thereof,

wherein

$0.1 < [C] / [A]$.

[Claim 5] Screed or render composition it comprising (in % by dry weight):

A. 3 to 50, preferably 4 to 30, of at least one ground and granulated blast-furnace slag;

B. 0.5 to 20, preferably 1 to 15, of at least one calcium aluminate cement and/or of at least one calcium sulfoaluminate cement;

C. 1 to 20, preferably from 2 to 15, of at least one source of sulfate ions selected from the group consisting of natural or synthetic gypsum, calcium sulfate hemihydrate, bassanite, anhydrite, selenite, alabaster, fibrous gypsum, saccharoidal gypsum, marine gypsum, gypsum flower, phosphogypsum,

desulfurization gypsum, titanogypsum, citrogypsum, tartarogypsum, borogypsum, lactogypsum and mixtures thereof with

$1 \leq [C] / [B] \leq 2$;

D. 0.05 to 5, preferably 0.5 to 2, of $Ca(OH)_2$ and/or of Portland cement;

E. 0.02 to 0.8, preferably 0.05 to 0.15, of Li_2CO_3;

F. and at least one alkalifying reagent consisting of at least one alkali metal carbonate and/or bicarbonate, different from E, preferably selected from the group comprising – or better still consisting of –: $NaHCO_3$; Na_2CO_3; K_2CO_3; and mixtures thereof, with $NaHCO_3$ being preferred;

G. 30 to 80, preferably from 40 to 70, of at least one type of aggregates preferably selected from the group comprising – or better still consisting of –: mineral sands such as silica sands, lime sands and silica-lime sands, light mineral sands such as perlite, vermiculite, expanded glass beads, sands obtained from the recycling of mineral materials such as demolition concrete, ground glass, sands obtained from the recycling of organic materials such as ground tyres, ground polyurethanes, and mixtures thereof;

H. 1 to 10, preferably 1 to 5, of at least one redispersible polymer;

I. 0.01 to 5, preferably 0.05 to 1, of at least one thickener;

J. 0.01 to 0.5, preferably 0.05 to 0.3, of at least retarder, preferably selected from the group comprising – or better still consisting of –: tartaric acid and its salts, citric acid and its salts, gluconic acid and its salts, and mixtures thereof,

wherein

$0.1 < [C] / [A]$.

[Claim 6] Use of a binder according to at least one of Claims 1 to 3 in a dry mortar composition or wet mortar formulation, more particularly an adhesive mortar, render or screed composition or formulation.