CLAIMS

1. A method for continuously forming gypsum-based panels, comprising:

forming a mixture comprising stucco, non-pregelatinized migratory starch, glass fibre, water and a fluidiser;

casting the mixture in a continuous band;

maintaining the band under conditions sufficient for the stucco to form an interlocking matrix of set gypsum;

cutting the band to form one or more wet panel precursors; and

drying the wet panel precursor to form one or more gypsum-based panels;

in which:

the fluidiser is a polycarboxylate-based fluidiser, a phosphate polycondensate fluidiser or a naphthalenesulphonate-based fluidiser;

in which the starch is an acid-thinned starch or an oxidised starch;

in which:

the weight ratio of water to stucco in the mixture is less than 0.7;

the stucco is present in the mixture in an amount of over 60 wt% relative to the total solids content of the mixture;

the starch is present in an amount of at least 5 wt% relative to the stucco;

the glass fibre is present in the mixture in an amount of over 1 wt% relative to the stucco;

the fluidiser is present in an amount of at least 0.1 wt% relative to the stucco; and

the density of the gypsum-based panel is greater than 700 kg/m^3.

2. A method according to Claim 1, in which the weight ratio of water to stucco in the mixture is less than 0.65, preferably less than 0.6, more preferably less than 0.55.

3. A method according to Claim 1, further comprising the step, before the step of forming a mixture, of conditioning the stucco by subjecting it to an annealing treatment to reduce the extent of microcracking in the stucco.

4. A method according to Claim 1, 2 or 3, in which the glass fibres have an average length in the range 3-12 mm.

5. A method according to claim 4, in which the glass fibres have an average diameter in the range 5-50 micron.

6. A stucco slurry for use in a continuous method for preparing a gypsum-based panel having a density of at least 700 kg/m^3, the slurry comprising stucco, non-pregelatinised migratory starch, glass fibre, water and a fluidiser;

in which:

the fluidiser is a polycarboxylate-based fluidiser, a phosphate polycondensate fluidiser or a naphthalenesulphonate-based fluidiser; and

in which the starch is an acid-thinned starch or an oxidised starch;

in which:

the weight ratio of water to stucco in the mixture is less than 0.7;

the stucco is present in the slurry in an amount of over 60 wt% relative to the total solids content of the slurry;

the starch is present in an amount of at least 5 wt% relative to the stucco

the glass fibre is present in the slurry in an amount of over 1 wt% relative to the stucco; and

the fluidiser is present in an amount of at least 0.1 wt% relative to the stucco.

7. A panel having a gypsum-based core that comprises a gypsum matrix made from a slurry defned in Claim 6, the panel having a maximum dimension greater than 1m,

in which the density of the gypsum-based core is greater than 700 kg/m^3, and the amount of gypsum in the gypsum-based core is greater than 60 wt%,

and further in which the total volume of water voids in the gypsum-based core is less than the total volume of the gypsum in the panel core.