CLAIMS

1.- A process for preparing a mineral composition containing a mixed solid phase of calcium and magnesium carbonates, comprising:

- i) preparing, in an aqueous phase, a suspension of a solid phase containing at least one calcium compound selected from among calcium hydroxide, calcium carbonate and the mixtures thereof and at least one magnesium compound selected from among magnesium oxide, magnesium hydroxide, at least party slaked dolomite, and the mixtures thereof, the weight of said solid phase being between 5 and 15 % of the total weight of the suspension, placing of solely dolomite in suspension being disclaimed;

-ii) conducting carbonatation of said solid phase in suspension by injecting a CO_2 - containing gas into said suspension heated to a temperature of 55 to 90 °C at a CO_2 flow rate of 2.5 to 15 dm^3/min/kg of said solid phase of the suspension, with a drop in the pH of the suspension down to a value below 9 and stabilisation of the electrical conductivity of the suspension, carbonatation being halted as soon this stabilisation of electrical conductivity is observed; and

-iii) obtaining a mixed solid phase of synthetic calcium and magnesium carbonates formed of a crystallized calcic portion and a plate-like crystallized magnesian portion, the crystals of the calcic portion and those of the magnesian portion being aggregated in the form of composite aggregates, these aggregates themselves being at least partly agglomerated in the form of agglomerates, said calcic portion comprising at least one carbonate selected from the group formed by calcite and mixtures of calcite and aragonite, said magnesian portion comprising hydromagnesite in plate-like form, said mixed solid phase of carbonates of said mineral composition having a bulk density of 250 kg/m^3 or lower and of 80 kg/m^3 or higher measured in accordance

with standard EN 459.2, and a Ca/Mg molar ratio higher than 1.2 and equal to or less than 4.0.

2. The process according to claim 1, characterized in that the solid phase of the suspension has a Ca/Mg molar ratio of 3.0 or lower, in particular 2.5 or lower.

3. The process according to one of claims 1 and 2, characterized in that said at least one magnesium compound is selected from among magnesium oxide, magnesium hydroxide and the mixtures thereof.

4. The process according to one of claims 1 and 2, characterized in that said at least one magnesium compound is at least partly slaked dolomite, optionally in a mixture with magnesium oxide, magnesium hydroxide or a mixture thereof, so as to obtain a Ca/Mg molar ratio higher than 1.2 and of 4.0 or lower, in particular 3.0 or lower in said solid phase of the suspension.

5. The process according to one of claims 1 to 4 characterized in that, at said preparing of a suspension, it comprises slaking by said aqueous phase of calcium oxide (CaO) to said calcium hydroxide.

6. The process according to one of claims 1 to 4 characterized in that, before said preparation of a suspension, it comprises preliminary at least partial slaking of calcium oxide (CaO) to said calcium hydroxide.

7. The process according to claim 6, characterized in that said preliminary slaking is dry slaking or near-dry slaking.

8. The process according to claim 6, characterized in that said preliminary slaking is wet slaking to produce a milk of lime which is then optionally screened, milled and/or diluted for said preparation of the suspension.

9. The process according to any of claims 6 to 8, characterized in that said preliminary slaking is performed with water, water containing at least one additive or

water already containing at least a portion of said at least one magnesium compound that is part of said solid phase in suspension.

10. The process according to one of claims 1 to 9 characterized in that, at said preparation of a suspension, it comprises at least partial slaking by said aqueous phase of magnesium oxide (MgO) to said magnesium hydroxide.

11. The process according to one of claims 1 to 9 characterized in that, before said preparation of a suspension, it comprises prior at least partial slaking of magnesium oxide (MgO) to said magnesium hydroxide.

12. The process according to claim 11, characterized in that said prior slaking is dry or near-dry slaking.

13. The process according to claim 11, characterized in that said prior slaking is wet slaking so as to produce a milk of magnesia which is optionally screened, milled and/or diluted for said preparation of the suspension.

14. The process according to any of claims 11 to13, characterized in that said prior slaking is performed with water, water containing at least one additive or water already containing at least a portion of said at least one calcium compound that is part of said solid phase in suspension.

15. The process according to one of claims 1 to 14 further comprising, after carbonatation, a solid-liquid separation step between said carbonatated solid mixed phase and said aqueous phase of said suspension.

16. The process according to claim 15 wherein said mixed solid phase is subsequently at least partly dried.

17. The process according to any of claims 1 to 16 wherein said mixed solid phase is milled to obtain particles of size 2 mm or smaller.

18. The process according to any of claims 1 to 17 wherein said carbonatation temperature is between 60 and 80 °C.

19. The process according to any of claims 1 to 18, characterized in that the gas injected into said suspension contains CO_2 at a concentration of 10 to 100 % by volume.

20. A mineral composition containing a mixed solid phase of synthetic calcium and magnesium carbonates, formed of a crystallized calcium portion and a plate-like crystallized magnesium portion, the crystals of the calcium portion and those of the magnesium portion being aggregated in the form of composite aggregates, these aggregates themselves being at least partly agglomerated in the form of agglomerates, said calcic portion comprising at least one carbonate selected from the group formed by calcite and mixtures of calcite and aragonite, said magnesian portion comprising hydromagnesite in plate-like form, said mixed solid phase of carbonates of said mineral composition having a bulk density of 250 kg/m^3 or lower and of 80 kg/m^3 or higher measured in accordance with standard EN 459.2, and a Ca/Mg molar ratio higher than 1.2 and equal to or less than 4.0.

21. The composition according to claim 20 wherein the mixed solid phase has a Ca/Mg molar ratio higher than 1.2 and of 3.0 or lower, in particular 2.5 or lower.

22. The mineral composition according to one of claims 20 and 21 further comprising an aqueous phase, said mineral composition being in the form of a suspension or paste.

23. The mineral composition according to one of claims 20 to 21 wherein said mineral composition is in solid form, powder form in particular, and has a humidity level of between 0 and 4 % by weight of water relative to the total weight of the composition.

24. The mineral composition according to any of claims 20 to 21, characterized in that the aggregates of the mixed solid phase are formed of a calcic core on which hydromagnesite plates are aggregated.

25. The use of a composition according to any of claims 20 to 24, or of a composition obtained with the process according to any of claims 1 to 19, in building materials.

26. The use of a composition according to any of claims 20 to 24, or of a composition obtained with the process of any of claims 1 to19, as constituent of thermal insulating materials, in particular in thermal insulation panels.