CLAIMS

1. A calcium sulphate-based product comprising gypsum and a shrinkage resistance additive provided in an amount between 4 and 40 wt% based on the weight of gypsum and additive wherein the shrinkage resistance additive is a metal nitrate, hydroxide, acetate or sulphate.

2. A calcium sulphate-based product comprising gypsum and a shrinkage resistance additive wherein the product is produced by drying an aqueous slurry comprising calcined gypsum and between 4.5 and 50 wt% shrinkage resistance additive (based on the weight of gypsum and additive), the shrinkage resistance additive being a metal nitrate, hydroxide, acetate or sulphate.

3. A product according to claim 1 or 2 wherein the shrinkage resistance additive is a nitrate of an alkali metal, an alkaline earth metal, a transition metal or aluminium.

4. A product according to claim 3 wherein the shrinkage resistance additive is a nitrate of magnesium, aluminium, zinc, iron or copper.

5. A product according to any one of claims 1 to 4 wherein the shrinkage resistance additive is selected from: the nitrate, hydroxide, acetate or sulphate of magnesium, aluminium or zinc; or the nitrate, hydroxide or acetate of iron.

6. A calcium sulphate-based product comprising gypsum and a shrinkage resistance additive provided in an amount less than 40 wt% based on the weight of gypsum and additive wherein the shrinkage resistance additive is a nitrate of an alkali metal, an alkaline earth metal, a transition metal or aluminium, the hydroxide or acetate of magnesium, aluminium, zinc or iron, or the sulphate of magnesium, aluminium or zinc.

7. A calcium sulphate-based product comprising gypsum and a shrinkage resistance additive wherein the product is produced by drying an aqueous slurry comprising calcined

gypsum less than 50 wt% shrinkage resistance additive (based on the weight of gypsum and additive), the shrinkage resistance additive being a nitrate of an alkali metal, an alkaline earth metal, a transition metal or aluminium, the hydroxide or acetate of magnesium, aluminium, zinc or iron, or the sulphate of magnesium, aluminium or zinc.

8. A product according to claim 6 or 7 wherein the shrinkage resistance additive is a nitrate of magnesium, aluminium, zinc, iron or copper.

9. A product according to any one of the preceding claims wherein the product is a building material or a mould for metal casting.

10. A product according to claim 9 wherein the product is a composite wallboard comprising a core of the gypsum and shrinkage resistance additive sandwiched between two liners.

11. A calcium sulphate-based composition for use in forming a calcium sulphate-based product by drying an aqueous slurry of the calcium sulphate-based composition, the calcium sulphate-based composition comprising calcined gypsum and between 4.5 and 50 wt% of a shrinkage resistance additive (based on the amount of gypsum and additive), wherein the shrinkage resistance additive is a metal nitrate, hydroxide, acetate or sulphate.

12. A composition according to claim 11 wherein the shrinkage resistance additive is a nitrate of an alkali metal, an alkaline earth metal, a transition metal or aluminium.

13. A composition according to claim 12 wherein the shrinkage resistance additive is a nitrate of magnesium, aluminium, zinc, iron or copper.

14. A composition according to any one of claims 11 to 13 wherein the shrinkage resistance additive is selected from the nitrate, hydroxide, acetate or sulphate of magnesium, aluminium or zinc or the nitrate, hydroxide or acetate of iron.

15. A calcium sulphate-based composition for use in forming a calcium sulphate-based product by drying an aqueous slurry of the calcium sulphate-based composition, the calcium sulphate-based composition comprising calcined gypsum and less than 50 wt% of a shrinkage resistance additive (based on the amount of gypsum and additive), wherein the shrinkage resistance additive is a nitrate of an alkali metal, an alkaline earth metal, a transition metal or aluminium, the hydroxide or acetate of magnesium, aluminium, zinc or iron, or the sulphate of magnesium, aluminium or zinc.

16. A composition according to claim 15 wherein the shrinkage resistance additive is a nitrate of magnesium, aluminium, zinc, iron or copper.

17. A method of forming a calcium sulphate-based product by drying an aqueous slurry comprising a composition according to any one of claims 11 to 16.

18. A method according to claim 17 wherein the product is a building material or a mould for casting metal.

19. A method according to claim 18 wherein the product is a composite wallboard and the method comprises drying the aqueous slurry between two liners.

20. Use of between 4 and 40 wt% (based on the amount of additive and gypsum) of a metal nitrate, hydroxide, acetate or sulphate as an additive in a gypsum matrix for reducing shrinkage in a calcium sulphate-based product during heat exposure.

21. Use according to claim 20 wherein the additive is a nitrate of an alkali metal, an alkaline earth metal, a transition metal or aluminium.

22. Use according to claim 21 wherein the additive is a nitrate of magnesium, aluminium, zinc, iron or copper.

23. Use according to claim 20 or 22 wherein the shrinkage resistance additive is selected from the nitrate, hydroxide, acetate or sulphate of magnesium, aluminium or zinc or the nitrate, hydroxide or acetate of iron.

24. Use of up to 40 wt% (based on the amount of additive and gypsum) of a nitrate of an alkali metal, an alkaline earth metal, a transition metal or aluminium, the hydroxide or acetate of magnesium, aluminium, zinc or iron, or the sulphate of magnesium, aluminium or zinc as an additive in a gypsum matrix for reducing shrinkage in a calcium sulphate-based product during heat exposure.

25. Use according to claim 24 wherein the shrinkage resistance additive is a nitrate of magnesium, aluminium, zinc, iron or copper.

26. Use according to any one of claims 20 to 25 wherein the calcium sulphate-based product is a building material or a mould for casting metal.

27. Use according to claim 26 wherein the product is a composite wallboard comprising a core of the gypsum matrix and shrinkage resistance additive sandwiched between two liners.