CLAIMS

1. An environmentally sustainable cement composition which comprises a sulfoaluminate clinker in a percentage ranging from 75 to 97.9% by weight with respect to the weight of the cement, preferably from 89 to 94.5%, ferrous sulfate (FeSO4) in a percentage ranging from 2 to 20% by weight with respect to the weight of cement, preferably from 5 to 10%, and an accelerating agent of the hydration reaction in a percentage ranging from 0.1 to 5% by weight with respect to the weight of the cement, preferably from 0.5 to 2%.

2. The cement composition according to claim 1, wherein the sulfoaluminate clinker has a content of 4CaO.3Al2O3.SO3 higher than 5% by weight with respect to the total weight of the clinker and a content of C2S lower than 75% by weight with respect to the total weight of the clinker.

3. The cement composition according to one or more of the previous claims, wherein the sulfoaluminate clinker comprises from 40% to 80% by weight of C4A3$ and from 15% to 25% by weight of C2S belite, with respect to the total weight of the clinker, preferably from 54% to 62% by weight of C4A3$ and from 18% to 22% by weight of C2S, with respect to the total weight of the clinker, preferably the complement to 100 consisting of oxides/minor phases.

4. The cement composition according to one or more of the previous claims, wherein FeSO4 is present in a percentage ranging from 2 to 20% by weight with respect to the weight of cement, preferably from 5 to 10% by weight with respect to the weight of cement.

5. The cement composition according to one or more of the previous claims, wherein the accelerating agent of the hydration reaction is a salt of an alkaline metal selected from carbonate, sulfate or nitrate, and is more preferably lithium or sodium carbonate or even more preferably lithium carbonate.

6. The cement composition according to one or more of the previous claims, wherein the cement composition is composed of:

- a sulfoaluminate clinker comprising from 54% to 62% by weight of C4A3$ and from 18% to 22% by weight of C2S with respect to the total weight of the clinker, said sulfoaluminate clinker being present in a quantity ranging from 90 to 94% by weight with respect to the weight of cement;

- FeSO4 in a quantity ranging from 5 to 10% by weight with respect to the weight of cement;

- Li2CO3 in a quantity ranging from 0.5 to 2% by weight with respect to the weight of cement.

7. Use of a cement composition according to one or more of the previous claims, for inerting sediment/dredging sludge, both in situ and ex situ.

8. Use according to claim 7, wherein the cement composition is added to the sediment/dredging sludge in a percentage ranging from 30 to 80% by weight with respect to the weight of the sediment/sludge, preferably from 40 to 60% by weight.

9. Use according to one or more of the previous claims 7 and 8, wherein the sediment/dredging sludge contain a quantity of water ranging from about 25 to 95% by weight, with respect to the total weight of the suspension.

10. Use according to one or more of the previous claims 7-9, wherein the cement composition is added to the sediment/dredging sludge on the bottom of a water basin, i.e. in situ.

11. A method for inerting sediment/dredging sludge, which comprises the following phases:

- mixing of the sediment/dredging sludge with a cement composition according to any of the claims from 1 to 6 for a time ranging from 10 seconds to 5 minutes;

- sedimentation of the mixture thus obtained for a time ranging from 2 to 120 minutes;

- solidification of the sediment thus obtained for a time ranging from 1 to 24 hours.

12. The method for inerting sediment/dredging sludge according to claim 11, comprising the prior steps consisting in:

- sucking/removing sediment from a bottom of a water basin forming dredging sludge;

- feeding the dredging sludge to a mixing and sedimentation chamber;

- feeding the cement composition to the mixing and sedimentation chamber.

13. The method for inerting sediment/dredging sludge according to claim 12, comprising the step of filtering and sieving the dredging sludge before feeding it to the mixing chamber.

14. The method for inerting sediment/dredging sludge according to claim 12 or 13, comprising the step of transferring the sedimented mixture to a maturation tank, before the solidification step.

15. The method for inerting sediment/dredging sludge according to claim 11, comprising the prior steps consisting in:

- covering at least a portion of the bottom (20) of a water basin with a hollow structure open below (11) for defining a confined mixing chamber (12) containing sediment (21) to be treated;

- introducing the cement composition (22) into the mixing chamber (12); and

- stirring a fluid present in the mixing chamber (12) to lift at least part of the sediment (21) covered by the hollow structure (11).

16. The method for inerting sediment/dredging sludge according to claim 15, wherein the step of covering at least a portion of the bottom (20) of a water basin with the hollow structure (11) comprises allowing an open end (11a) of the hollow structure (11) to penetrate the bottom (20) for at least a certain length.

17. The method for inerting sediment/dredging sludge according to claim 15 or 16, comprising the step of expelling the mixture of cement composition (22) and sediment (21) from the mixing chamber (12) through an expulsion opening (15) of said chamber (12), before the sedimentation and solidification steps take place.

18. The method for inerting sediment/dredging sludge according to claim 17, comprising the step of gradually advancing the hollow structure (11) in an advance

direction and expelling the material treated in the opposite direction with respect to the advance direction.

19. The method for inerting sediment/dredging sludge according to claim 15 or 16, comprising the step of removing the hollow structure (11) from the portion of the bottom (20) once the sedimentation step has been substantially completed.