CLAIMS

1. A cementitious composition comprising:
   a mixture comprising:
   a binder component comprising reactive magnesium oxide cement; and water; and
   one or more fibers dispersed in the mixture.

2. The cementitious composition according to claim 1,
   wherein the binder component further comprises any one or more binders selected from a group consisting of hydraulic cement, coal fly ash, silica fume, and ground granulated blast furnace slag.

3. The cementitious composition according to claim 1 or claim 2,
   wherein a percentage of reactive magnesium oxide cement in the binder component by mass is any one percentage value selected from a range from 40 % to 100%.

4. The cementitious composition according to any one of claims 1 to 3,
   wherein a mass ratio of water to binder component is any one ratio selected from a range from 0.4 to 0.8.

5. The cementitious composition according to any one of claims 1 to 4,
   wherein the mixture further comprises a water reducing agent.

6. The cementitious composition according to claim 5,
   wherein the water reducing agent is sodium hexametaphosphate solution.

7. The cementitious composition according to claim 5 or claim 6,
wherein a percentage of the water reducing agent relative to the binder component by mass is any one percentage value selected from 2% to 4%.

8. The cementitious composition according to any one of claims 1 to 7,
wherein the mixture further comprises a viscosity controlling agent.

9. The cementitious composition according to claim 8,
wherein the viscosity controlling agent is hydroxypropyl methylcellulose.

10. The cementitious composition according to claim 8 or claim 9,
wherein a percentage of the viscosity controlling agent relative to the binder component by mass is any one percentage value selected from a range from 0.05% to 0.5%.

11. The cementitious composition according to any one of claims 1 to 10,
wherein the one or more fibers are any one type of fibers selected from a group consisting of metallic fibers, polymeric fibers, and natural fibers.

12. The cementitious composition according to any one of claims 1 to 11,
wherein a percentage of the one or more fibers in the cementitious composition by volume is any one percentage value selected from a range from 0.5% to 10%.

13. The cementitious composition according to any one of claims 1 to 12,
wherein each of the one or more fibers comprises a coating of an oiling agent.

14. A cement-based structure comprising:
a matrix comprising one or more hydrated magnesium carbonates; and
one or more fibers embedded in the matrix.

15. A method of forming a cementitious composition, the method comprising:

forming a mixture comprising:

a binder component comprising reactive magnesium oxide cement; and water; and

dispersing one or more fibers in the mixture.

16. The method according to claim 15,

wherein the binder component further comprises any one or more binders selected from a group consisting of hydraulic cement, coal fly ash, silica fume, and ground granulated blast furnace slag.

17. The method according to claim 15 or claim 16,

wherein the mixture further comprises a water reducing agent.

18. The method according to any one of claims 15 to 17,

wherein the mixture further comprises a viscosity controlling agent.

19. The method according to any one of claims 15 to 18,

wherein each of the one or more fibers comprises a coating of an oiling agent.

20. A method of forming a cement-based structure, the method comprising:

forming a matrix comprising one or more hydrated magnesium carbonates;

wherein one or more fibers is embedded in the matrix.