CLAIMS

WHAT IS CLAIMED IS:

1. A method of cementing a subterranean formation comprising:

providing a cement composition comprising cementitious material, aqueous base fluid, nanoparticles, wherein the nanoparticles are particulate, synthetic clay, and a thixotropic modifier, wherein the solid materials comprises up to about 40 wt% of the total weight of the cement composition;

introducing the cement composition into a subterranean formation; and

allowing the cement composition to set in the subterranean formation.

2. The method of claim 1, wherein the solid materials are about 10 wt% to about 20 wt% of the total weight of the cement composition.

3. The method of claim 1, wherein the nanoparticles comprise at least one of nano-silica, nanocarbonate, nanoalumina, and any combination thereof.

4. The method of claim 1, wherein the nanoparticles are present in the amount of about 0.1 to about 5 gal/sack.

5. The method of claim 1, wherein the nanoparticles have a diameter of about 2 to about 100 nm.

6. The method of claim 1, wherein the synthetic clay is present in an amount of about 0.1% to about 3.0% by weight of water.

7. The method of claim 1, wherein substantially no natural clay is added to the cement composition.

8. The method of claim 1, wherein the aqueous base fluid comprises at least one of fresh water; brackish water; saltwater; and combinations thereof.

9. The method of claim 1, wherein the aqueous base fluid is present in the cement composition in an amount of from about 20% to about 80% by weight of the cement composition.

10. The method of claim 1, wherein the cementitious material comprises at least one of Portland cements; gypsum cements; high alumina content cements; slag cements; high magnesia content cements; shale cements; acid/base cements; fly ash cements; zeolite cement systems; kiln dust cement systems; microfine cements; metakaolin; pumice; and combinations thereof.

11. The method of claim 1, further comprising at least one of resins; latex; stabilizers; silica; pozzolans; microspheres; aqueous superabsorbers; viscosifying agents; suspending agents; dispersing agents; salts; accelerants; surfactants; retardants; defoamers; settling-prevention agents; weighting materials; fluid loss control agents; elastomers; vitrified shale; gas migration control additives; formation conditioning agents; and combinations thereof.

12. The method of claim 1, wherein the density of the cement composition before curing is less than about 12 pounds per gallon.

13. The method of claim 1, wherein the thixotropic modifier is selected from fumed silica, sodium silicate, silicic acid, and combinations thereof.

14. The method of claim 1, wherein the thixotropic modifier is present in the amount of about 0.1% to about 150%bwc.

15. A well cement composition comprising:

cementitious material;

aqueous base fluid;

nanoparticles, wherein the nanoparticles are particulate;

synthetic clay; and

a thixotropic modifier, wherein the solid materials comprise up to about 40 wt% of the total weight of the cement composition.

16. The cement composition of claim 15, wherein the solid materials are about 10 wt% to about 20 wt% of the total weight of the cement composition.

17. The cement composition of claim 15, wherein the nanoparticles comprise at least one of nano-silica, nanocarbonate, nanoalumina, and any combination thereof.

18. The cement composition of claim 15, wherein the nanoparticles are present in the amount of about 0.1 to about 5 gal/sack.

19. The cement composition of claim 15, wherein the nanoparticles have a diameter of about 2 to about 100 nm.

20. The cement composition of claim 15, wherein the synthetic clay is present in an amount of 0.1% to about 3.0% by weight of water.

21. The cement composition of claim 15, wherein substantially no natural clay is added to the cement composition.

22. The cement composition of claim 15, wherein the aqueous base fluid comprises at least one of fresh water; brackish water; saltwater; and combinations thereof.

23. The cement composition of claim 15, wherein the aqueous base fluid is present in the cement composition in an amount of from about 20% to about 80% by weight of cement.

24. The cement composition of claim 15, wherein the cementitious material comprises at least one of Portland cements; gypsum cements; high alumina content cements; slag cements; high magnesia content cements; shale cements; acid/base cements; fly ash cements; zeolite cement systems; kiln dust cement systems; microfine cements; metakaolin; pumice; and combinations thereof.

25. The cement composition of claim 15, further comprising at least one of resins; latex; stabilizers; silica; pozzolans; microspheres; aqueous superabsorbers;

viscosifying agents; suspending agents; dispersing agents; salts; accelerants; surfactants; retardants; defoamers; settling-prevention agents; weighting materials; fluid loss control agents; elastomers; vitrified shale; gas migration control additives; formation conditioning agents; and combinations thereof.

26. The cement composition of claim 15, wherein the density of the cement before curing is less than about 12 pounds per gallon.

27. The cement composition of claim 15, wherein the thixotropic modifier is selected from fumed silica, sodium silicate, silicic acid, and combinations thereof.

28. The cement composition of claim 15, wherein the thixotropic modifier is present in the amount of about 0.1% to about 150% bwc.

29. A wellbore cementing system comprising:

an apparatus configured to:

provide a cement composition comprising cementitious material, aqueous base fluid, nanoparticles, wherein the nanoparticles are particulate, synthetic clay, and a thixotropic modifier, wherein the solid materials comprise up to about 40 wt% of the total weight of the cement composition;

introduce the cement composition into a subterranean formation; and

allow the cement composition to set in the subterranean formation.