

WHAT IS CLAIMED IS:

1. A heat transfer mixture represented by the formula:
$$1 = V_{pg}/V_{nf} + V_w/V_{nf} + V_{pw}/V_{nf} + V_{sf}/V_{nf} + V_{bs}/V_{nf} + V_{ac}/V_{nf} + V_{ci}/V_{nf},$$
wherein V_{nf} is a volume of a nanofluid,
wherein V_{pg} is a volume of propylene glycol,
wherein V_w is a volume of water,
wherein V_{pw} is a volume of a nanopowder,
wherein V_{sf} is a volume of a surfactant,
wherein V_{bs} is a volume of a base additive,
wherein V_{ac} is a volume of an acid additive, and
wherein V_{ci} is a volume of a corrosive inhibitor.
2. The heat transfer mixture recited in claim 1, wherein $29.3\% < V_{pg}/V_{nf} < 48.8\%$.
3. The heat transfer mixture recited in claim 1, wherein $35.4\% < V_w/V_{nf} < 68.3\%$.
4. The heat transfer mixture recited in claim 1, wherein $1\% < V_{NP}/V_{nf} < 20\%$.
5. The heat transfer mixture recited in claim 1, wherein $0.12\% < V_{sf}/V_{nf} < 2.34\%$.
6. The heat transfer mixture recited in claim 1, wherein $1.3\% < V_{bs}/V_{nf} <$

6.8%.

7. The heat transfer mixture recited in claim 1, wherein $1.3 < V_{ac}/V_{nf} < 6.8$.

8. The heat transfer mixture recited in claim 1, wherein $0.02 < V_{ci}/V_{nf} < 0.1$.

9. The heat transfer mixture recited in claim 1, wherein:

$29.3\% < V_{pg}/V_{nf} < 48.8\%$;

$35.4\% < V_w/V_{nf} < 68.3\%$;

$1\% < V_{NP}/V_{nf} < 20\%$;

$0.12\% < V_{sf}/V_{nf} < 2.34\%$;

$1.3\% < V_{bs}/V_{nf} < 6.8\%$;

$1.3 < V_{ac}/V_{nf} < 6.8$; and

$0.02 < V_{ci}/V_{nf} < 0.1$.

10. The heat transfer mixture recited in claim 1, wherein:

$29.3\% < V_{pg}/V_{nf} < 48.8\%$;

$35.4\% < V_w/V_{nf} < 68.3\%$;

$1\% < V_{NP}/V_{nf} < 20\%$;

$0.12\% < V_{sf}/V_{nf} < 2.34\%$;

$0\% < V_{bs}/V_{nf} < 6.8\%$;

$0 < V_{ac}/V_{nf} < 6.8$; and

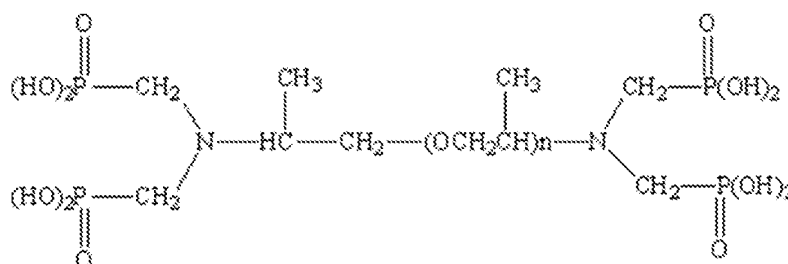
$0 < V_{ci}/V_{nf} < 0.1$.

11. The heat transfer mixture recited in claim 1, wherein the nanopowder is aluminum oxide.

12. The heat transfer mixture recited in claim 1, wherein the nanopowder is aluminum oxide in a range between 100 nanometers and 600 nanometers.

13. The heat transfer mixture recited in claim 1, wherein the surfactant is a sodium salt solution of polyamino-polyether-methylene-phosphonic acid.

14. The heat transfer mixture recited in claim 1, wherein the surfactant is represented by the formula:



15. The heat transfer mixture recited in claim 1, wherein the heat transfer mixture has a pH of about 8.5 - 12.0.

16. The heat transfer mixture recited in claim 15, wherein the heat transfer mixture has a pH of 10.0.

17. A heat transfer mixture comprising:
propylene glycol;

water;

a nanopowder comprising Al_2O_3 ;

a surfactant;

a base additive;

an acid additive; and

a corrosive inhibitor,

wherein the nanopowder has a particle size between about 100 nanometers and about 600 nanometers,

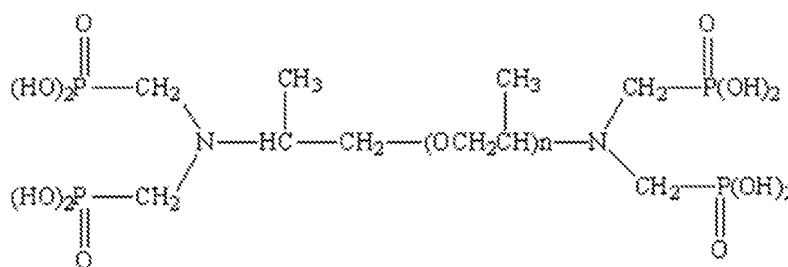
wherein the heat transfer mixture comprises between about 1% by volume and about 20% by volume of the nanopowder,

wherein the heat transfer mixture comprises between about 0.1% by volume and about 3% by volume of the surfactant, and

wherein the heat transfer mixture has a pH greater than 8.5.

18. The heat transfer mixture recited in claim 17, wherein the surfactant is a sodium salt solution of polyamino polyether methylene phosphonic acid.

19. The heat transfer mixture recited in claim 17, wherein the surfactant is represented by the formula:



20. A heat transfer mixture comprising:

between about 5% by volume and about 75% by volume of propylene glycol;
between about 30% by volume and about 70% by volume of water;
between about 1.0% by volume and about 20% by volume of a nanopowder comprising Al_2O_3 ;
between about 0.1% by volume and about 3% by volume of a surfactant;
between about 0% by volume and about 10% by volume of a base additive;
between about 0% by volume and about 10% by volume of an acid additive;
and
between about 0.001% by volume and about 1.0% by volume of a corrosive inhibitor,
wherein the nanopowder has a particle size between about 100 nanometers and about 600 nanometers, and
wherein the heat transfer mixture has a pH of about 10.0.