WHAT IS CLAIMED IS:

1. A heat transfer mixture represented by the formula:

$$1 = Vpg/Vnf + Vw/Vnf + Vpw/Vnf + Vsf/Vnf + Vbs/Vnf$$

wherein Vnf is a volume of a nanofluid,
wherein Vpg is a volume of propylene glycol,
wherein Vw is a volume of water,
wherein Vpw is a volume of a nanopowder,
wherein Vsf is a volume of a surfactant, and
wherein Vbs is a volume of a base additive.

2. The heat transfer mixture recited in claim 1, wherein
5% ⟨ Vpg/Vnf ⟨ 75%~~.~~,
5% ⟨ Vw/Vnf ⟨ 94%,
0.1% ⟨ VNP/Vnf ⟨ 20%,
0.01% ⟨ Vsf/Vnf ⟨ 3%, or
0.1% ⟨ Vbs/Vnf ⟨10%.

~~3. The heat transfer mixture recited in claim 1, wherein 5% ⟨ Vw/Vnf ⟨ 94%.~~

~~4. The heat transfer mixture recited in claim 1, wherein 0.1% ⟨ VNP/Vnf ⟨ 20%.~~

~~5. The heat transfer mixture recited in claim 1, wherein 0.01% ⟨ Vsf/Vnf ⟨ 3%.~~

~~6. The heat transfer mixture recited in claim 1, wherein 0.1% ⟨ Vbs/Vnf ⟨10%.~~

~~7~~3. The heat transfer mixture recited in claim 1, wherein:
5% ⟨ Vpg/Vnf ⟨ 75%;
5% ⟨ Vw/Vnf ⟨ 94%;
0.1% ⟨ VNP/Vnf ⟨20%;
0.01% ⟨ Vsf/Vnf ⟨ 3%; and
0.1% ⟨ Vbs/Vnf ⟨ 10%.

~~8~~4. A heat transfer mixture comprising:

propylene glycol;

water;

a nanopowder comprising Al_2O_3;

a surfactant; and

a base additive,

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,

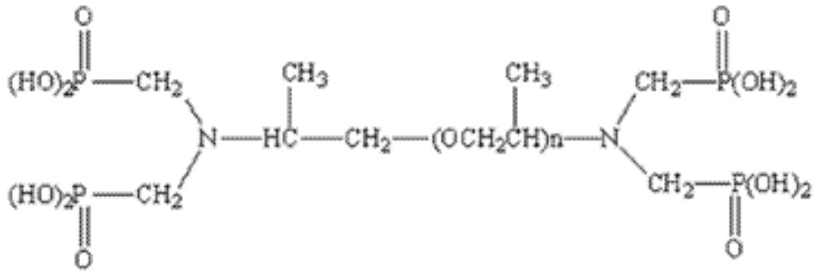
wherein the heat transfer mixture comprises between about .010% by volume and about 3% by volume of the surfactant, and

wherein the heat transfer mixture has a pH is between about 8.5. to about 12.

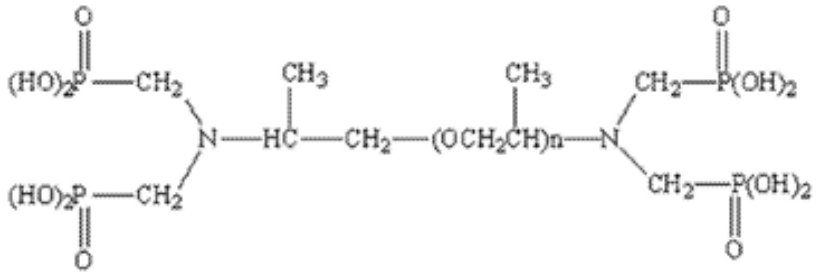
~~9~~5. The heat transfer mixture recited in claim ~~8~~4,

wherein the surfactant is a sodium salt solution of polyamino polyether methylene phosphonic acid~~.~~, or

wherein the surfactant is represented by the formula:



~~10. The heat transfer mixture recited in claim 8, wherein the surfactant is represented by the formula:~~



~~11~~6. A heat transfer mixture comprising:

between about 5% by volume and about 70% by volume of propylene glycol;

between about 5% by volume and about 94% by volume of water;

between about 1.0% by volume and about 20% by volume of a nanopowder comprising Al_2O_3;

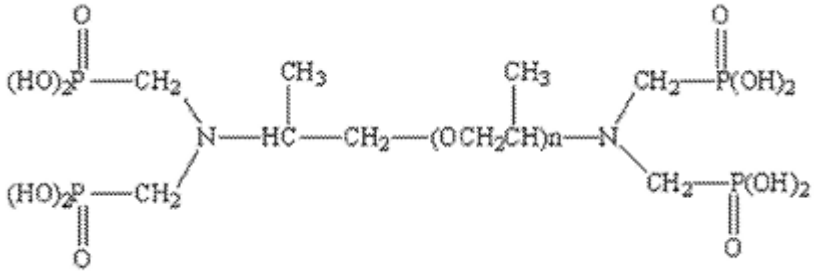
between about 0.01% by volume and about 3% by volume of a surfactant; and

between about 1.0% by volume and about 10% by volume of a base additive,

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.

~~12~~7. The heat transfer mixture recited in claim ~~11~~6, wherein the surfactant is represented by the formula:



~~13~~8. A heat transfer mixture represented by the formula:

1 = Veg/Vnf + Vw/Vnf + Vpw/Vnf + Vsf/Vnf + Vbs/Vnf + Vac/Vnf + Vci/Vnf,

wherein Vnf is a volume of a nanofluid,

wherein Veg is a volume of ethylene glycol,

wherein Vw is a volume of water,

wherein Vpw is a volume of a nanopowder,

wherein Vsf is a volume of a surfactant,

wherein Vbs is a volume of a base additive,

wherein Vac is a volume of an acid additive, and

wherein Vci is a volume of a corrosive inhibitor.

~~14~~9. The heat transfer mixture recited in claim ~~13~~8,

wherein $30.0\% < Veg/Vnf < 50.0\%$~~.~~,

wherein $50.0\% < Vw/Vnf < 70.0\%$,

wherein 1 % ⟨ VNP/Vnf ⟨3.0%,

wherein 0.12% ⟨ Vsf/Vnf ⟨ 0.40,

wherein 1.3% ⟨ Vbs/Vnf ⟨ 2.0%,

0.0 ⟨ Vac/Vnf ⟨ 2.0, or

wherein 0.012 ⟨ Vci/Vnf ⟨ 0.1.

~~15. The heat transfer mixture recited in claim 13, wherein 50.0% ⟨ Vw/Vnf ⟨ 70.0%.~~

~~16. The heat transfer mixture recited in claim 13, wherein 1 % ⟨ VNP/Vnf ⟨3.0%.~~

~~17. The heat transfer mixture recited in claim 13, wherein 0.12% ⟨ Vsf/Vnf ⟨ 0.40%.~~

~~18. The heat transfer mixture recited in claim 13, wherein 1.3% ⟨ Vbs/Vnf ⟨ 2.0%.~~

~~19. The heat transfer mixture recited in claim 13, wherein 0.0 ⟨ Vac/Vnf ⟨ 2.0.~~

~~20. The heat transfer mixture recited in claim 13, wherein 0.012 ⟨ Vci/Vnf ⟨ 0.1.~~

~~21~~10. The heat transfer mixture recited in claim ~~13~~8, wherein:

30%⟨ Veg/Vnf ⟨50.0%;

50.0%⟨ Vw/Vnf ⟨70.0%;

1%⟨ VNP/Vnf ⟨3.0%;

0.12%⟨ Vsf/Vnf ⟨0.40%;

1 3%⟨ Vbs/Vnf ⟨2.0%;

0.0⟨ Vac/Vnf ⟨2.08; and

0.02⟨ Vci/Vnf ⟨0.1.

~~22~~11. The heat transfer mixture recited in claim ~~13~~8, wherein:

35.0%⟨ Veg/Vnf ⟨45.0%;

55.0%⟨ Vw/Vnf ⟨65.0%;

1%⟨ VNP/Vnf ⟨2.0%;

0.12%⟨ Vsf/Vnf ⟨0.40%;

13%⟨ Vbs/Vnf ⟨6.8%;

0⟨ Vac/Vnf ⟨2.0; and

0.02⟨ Vci/Vnf ⟨0.1.

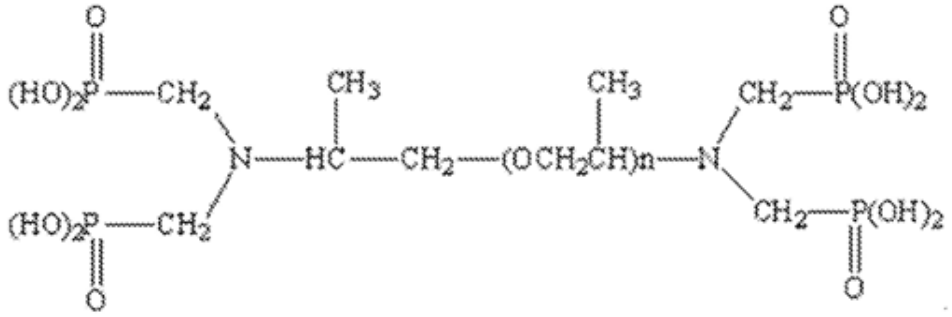
2312. The heat transfer mixture recited in claim 138,

wherein the nanopowder is aluminum oxide.

24. The heat transfer mixture recited in claim 13, wherein the nanopowder is aluminum oxide in a range between 100 nanometers and 600 nanometers.,

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

26. The heat transfer mixture recited in claim 13, wherein the surfactant is represented by the formula:



27. The Heat transfer mixture recited in claim 13, ,

wherein the heat transfer mixture has a pH of between about 8.5-12.0.

28. The heat transfer mixture recited in claim 13, or

wherein the heat transfer mixture has a pH of 10.0.

2913. A heat transfer mixture comprising:

ethylene 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 10% by volume and about 20% by volume of the nanopowder,

wherein the heat transfer mixture comprises between about 0.4% by volume and about 3% by volume of the surfactant, and

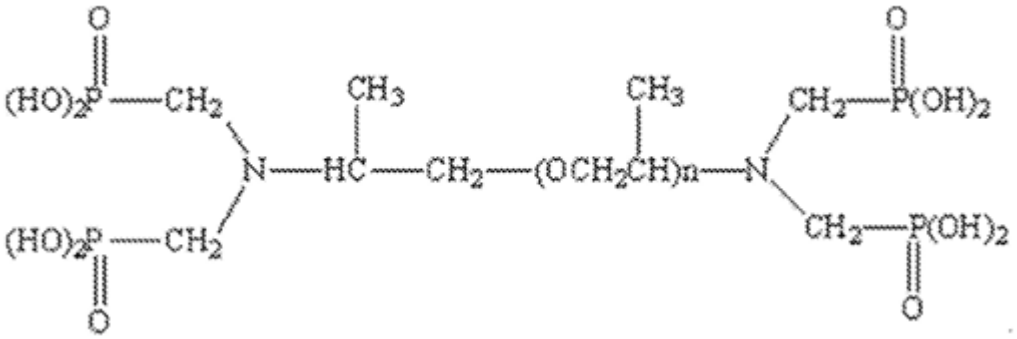
wherein the heat transfer mixture has a pH is between about 8.5 to about 12.0

~~30~~14. The heat transfer mixture recited in claim ~~29~~13,

wherein the surfactant is a sodium salt solution of polyamino-polyether-methylene-phosphonic acid~~.~~

~~31. The heat transfer mixture recited in claim 29,~~ , or

wherein the surfactant is represented by the formula:



~~32~~15. A heat transfer mixture comprising:

between about 5% by volume and about 70% by volume of ethylene glycol;

between about 5% by volume and about 94% by volume of water;

between about 1.0% by volume and about 20% by volume of a nanopowder comprising Al2O3;

between about 0.1% by volume and about 3% by volume of a surfactant;

between about 1.0% by volume and about 10% by volume of a base additive;

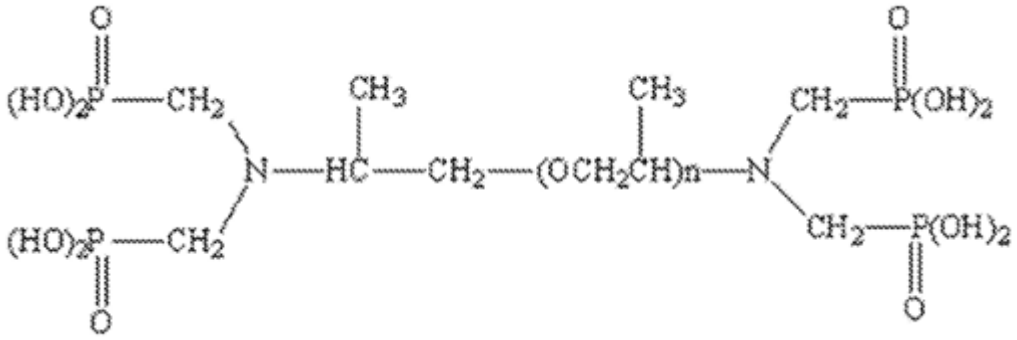
between about 0% by volume and about 6.8% by volume of an acid additive; and

between about 0.12% by volume and about 0.10% 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.

~~33~~16. The heat transfer mixture recited in claim ~~32~~15, wherein the surfactant is represented by the formula:



~~34~~17. A heat transfer mixture represented by the formula:

1 = Veg/Vnf + Vw/Vnf + Vpw/Vnf + Vsf/Vnf + Vac/Vnf

wherein Vnf is a volume of a nanofluid,

wherein Veg is a volume of ethylene glycol,

wherein Vw is a volume of water,

wherein Vpw is a volume of a nanopowder,

wherein Vsf is a volume of a surfactant, and

wherein Vac is a volume of an acid additive.

~~35~~18. The heat transfer mixture recited in claim ~~34~~17,

wherein 25% ⟨ Veg/Vnf ⟨ 50%~~.~~

~~36. The heat transfer mixture recited in claim 34~~,

wherein 30% ⟨ Vw/Vnf ⟨ 70%~~.~~

~~37. The heat transfer mixture recited in claim 34~~,

wherein 0.1% ⟨ VNP/Vnf ⟨ 20%~~.~~

~~38. The heat transfer mixture recited in claim 34~~,

wherein 0.01% ⟨ Vsf/Vnf ⟨ 3%~~.~~

~~39. The heat transfer mixture recited in claim 34~~, or

wherein 0% ⟨ Vac/Vnf ⟨ 10%.

~~40~~19. The heat transfer mixture recited in claim ~~34~~17, wherein:

25% ⟨ Veg/Vnf ⟨ 50%;

30% ⟨ Vw/Vnf ⟨ 70%;

0.1% ⟨ VNP/Vnf ⟨ 30%;

0.01% ⟨ Vsf/Vnf ⟨ 5%; and

0% ⟨ Vac/Vnf ⟨ 10%.

~~41~~20. A heat transfer mixture comprising:

ethylene glycol;

water;

a nanopowder comprising Al_2O_3;

a surfactant; and an acid additive,

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

wherein the heat transfer mixture comprises between about 10% by volume and about 20% by volume of the nanopowder,

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

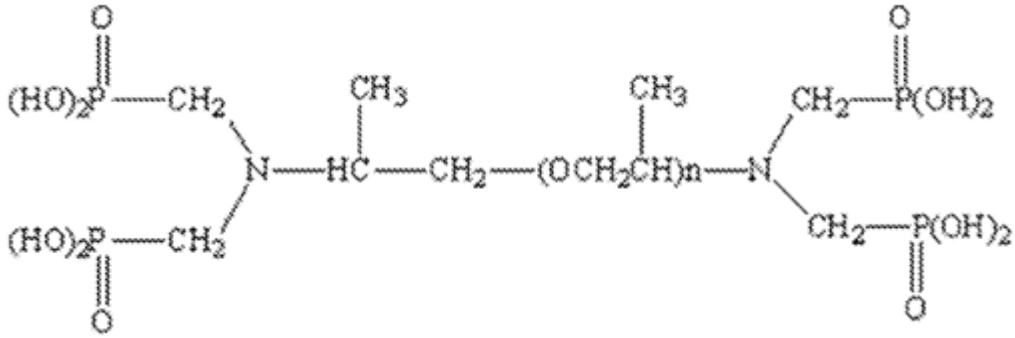
wherein the heat transfer mixture has a pH of about 8.5 to about 12.0.

~~42~~21. The heat transfer mixture recited in claim ~~41~~20,

wherein the surfactant is a sodium salt solution of polyamino polyether methylene phosphonic acid~~.~~, or

~~43. The heat transfer mixture recited in claim 41~~

~~,~~ wherein the surfactant is represented by the formula:



~~44~~22. A heat transfer mixture comprising:

between about 30% by volume and about 50% by volume of ethylene glycol;

between about 50% by volume and about 70% by volume of water;

between about 1.0% by volume and about 3.0% by volume of a nanopowder comprising Al_2O_3;

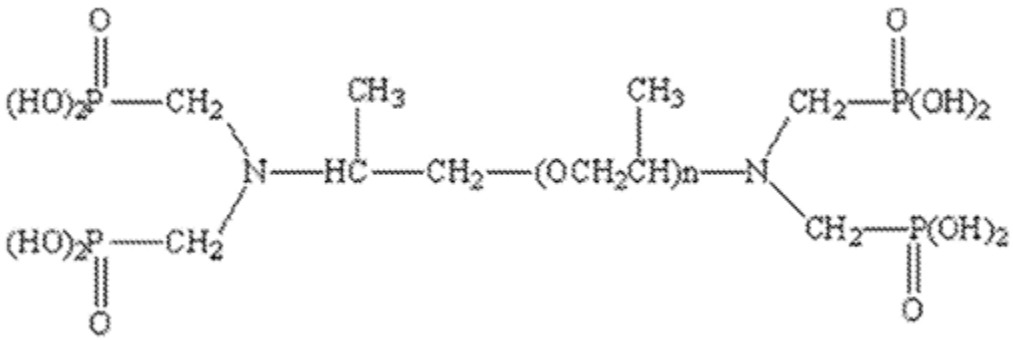
between about 0.1% by volume and about 0.4% by volume of a surfactant; and

between about 0% by volume and about 2.0% by volume of an acid additive,

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.

~~45~~23. The heat transfer mixture recited in claim ~~44~~22, wherein the surfactant is represented by the formula:



~~46~~24. A heat transfer mixture represented by the formula:

1 = Vw/Vnf + Vpw/Vnf + Vsf/Vnf + Vbs/Vnf + Vac/Vnf + Vci/Vnf,

wherein Vnf is a volume of a nanofluid,

wherein Vw is a volume of water,

wherein Vpw is a volume of a nanopowder,

wherein Vsf is a volume of a surfactant,

wherein Vbs is a volume of a base additive,

wherein Vac is a volume of an acid additive, and

wherein Vci is a volume of a corrosive inhibitor.

~~47~~25. The heat transfer mixture recited in claim ~~46~~24, wherein the surfactant is HEDP / PBTC / PCA - etidronic acid / phosphonobutane-tricarboxylic acid / phosphino-carboxylic acid.