CLAIMS

1. A composition comprising:

(a) from 6 to 12 weight % R-1132a

(b) from 7 to 20 weight % R-32

(c) from 55 to 87 weight % R-1234yf.

2. A composition according to claim 1 comprising from 7 to 12 weight % R-1132a, for example from 7 to 10 weight %.

3. A composition according to claim 1 or 2 comprising from 8 to 15 weight % R-32, preferably from 9 to 13 weight %.

4. A composition according to any of claims 1 to 3 comprising from 60 to 87 weight % R-1234yf, for example from 75 to 85 weight %, preferably from 78 to 84 weight %.

5. A composition according to any of claims 1 to 4, wherein the composition comprises from 6 to 10 weight % R-1132a, such as from 6 to 7 weight %.

6. A composition according to any of claims claim 1 to 5, wherein the composition comprises from 60 to 84 weight % R-1234yf, preferably from 75 to 84 weight %.

7. A composition according to any of the preceding claims, wherein the composition comprises about 8 weight % R-1132a, about 11 weight % R-32 and about 81 weight % R-1234yf.

8. A composition according to claim 1, wherein the composition comprises from 6 to 9 weight % R-1132a, such as from 6 to 8 weight %.

9. A composition according to claim 1, wherein the composition comprises from 15 to 19 weight % R-32.

10. A composition according to claim 1 wherein the composition comprises from 63 to 85 weight % R-1234yf, for example from 67 to 83 weight %, preferably from 69 to 82 weight %, even more preferably from 72 to 81 weight %.

11. A composition according to claims 1, ~~and~~ 8 and~~to~~ 10, wherein the composition comprises 6 weight % R-1132a, 20 weight % R-32 and 74 weight % R-1234yf.

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12. A composition according to any of the preceding claims, wherein the tolerances (preferably manufacturing tolerances) are ±0.5 weight % for R-1132a, ±1 weight % for R-32 and ±1.5 weight % for R-1234yf.

13. A composition according to any of the preceding claims consisting essentially of the stated components.

14. A composition according to any of the preceding claims, wherein the composition has:
(a) a higher lower flammable limit; (b) a higher ignition energy (c) a higher auto-ignition temperature; and/or (d) a lower burning velocity compared to R-1132a alone.

15. A composition according to any of the preceding claims, wherein the composition has a burning velocity of less than 10 cm/s as determined in accordance with ASHRAE Standard 34:2019, such as less than 9 cm/s, for example less than 8 cm/s.

16. A composition according to any of the preceding claims, wherein the composition is classified as weakly flammable ("class 2L") as determined in accordance with ASHRAE Standard 34:2019.

17. A composition according to any of the preceding claims, wherein the composition has a Global Warming Potential (GWP) of less than 400, such as less than 150, preferably less than 140.

18. A composition comprising a lubricant and a composition according to any of the preceding claims, preferably wherein the lubricant is selected from the group consisting of mineral oil, silicone oil, polyalkyl benzenes (PABs), polyol esters (POEs), polyalkylene glycols (PAGs), polyalkylene glycol esters (PAG esters), polyvinyl ethers (PVEs), poly (alpha-olefins) and combinations thereof, such as wherein the lubricant is selected from the group consisting of polyol esters (POEs), polyalkylene glycols (PAGs) and combinations thereof.

19. A composition according to any of the preceding claims, wherein the composition has a temperature glide in an evaporator or condenser of less than 12K, such as less than 10K, for example less than 5K.

20. A composition according to any of the preceding claims, wherein the composition can operate in a heat pump mode at a temperature of less than ~~□15°C~~ -15°C, such as less than ~~□20°C~~ -20°C.

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21. A composition according to any of the preceding claims having a heating capacity which is greater than or equal to that of R-1234yf.

22. A composition according to any of the preceding claims having a volumetric cooling capacity which is greater than or equal to that of R-1234yf.

23. A composition according to any of the preceding claims having a cycle efficiency (coefficient of performance (COP)) which is greater than or equal to that of R-1234yf

24. A composition according to any of the preceding claims, wherein the composition evaporates at a temperature of below ~~30°C~~ -30°C.

25. A composition according to any of the preceding claims, wherein the composition condenses at a temperature of above 40°C.

26. A composition according to any of the preceding claims, wherein the compressor discharge temperature of the composition is within 15K of the existing refrigerant fluid it is replacing, preferably 10K or 5K, optionally wherein the existing refrigerant fluid is R-1234yf.

27 Use of a composition according to any of the preceding claims as a working fluid in a heat pump system of a vehicle, optionally wherein the vehicle is an electric vehicle.

28. Use of a composition as defined in any of claims 1 to 26 as a working fluid in an air-conditioning system of a vehicle, such as an electric vehicle or a vehicle operating on an internal combustion engine (ICE).

29. Use of a composition as defined in any of claims 1 to 26 as a replacement for an existing heat transfer fluid in a refrigeration system or air-conditioning system, preferably wherein the existing fluid is R-407C.

30. A heat transfer device comprising a composition as defined in any of claims 1 to 26 preferably wherein the heat transfer device is a refrigeration device or an air-conditioning device, such as wherein the heat transfer device comprises a residential or commercial air conditioning system, an air-conditioning system for a train or bus, a heat pump or a commercial or industrial refrigeration system.

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31. A method for cooling an article which comprises condensing a composition of any of claims 1 to 26 and thereafter evaporating said composition in the vicinity of the article to be cooled.

32. A method for heating an article which comprises condensing a composition according to any of claims 1 to 26 in the vicinity of the article to be heated and thereafter evaporating said composition.

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