CLAIMS

1. A composition comprising:

(a) from 70 to 98 weight % carbon dioxide (CO_2, R-744);

(b) difluoromethane (R-32); and

(c) trifluoroiodomethane (CF_3I).

2. A composition according to claim 1 comprising from 70 to 95 weight % CO_2, for example from 70 to 92 weight %, preferably from 70 to 90 weight %, optionally from 75 to 87 weight %.

3. A composition according to claim 1 or 2 comprising from 1 to 30 weight % R-32, such as from 2 to 25 weight %, for example from 3 to 21 weight %, optionally from 3 to 15 weight %.

4. A composition according to any of claims 1 to 3 comprising from 1 or 2 to 20 weight % CF_3I, such as from 3 to 15 or 13 weight %.

5. A composition according to any of claims 1 to 4, wherein the composition additionally comprises 1,1-difluoroethylene (R-1132a).

6. A composition according to claim 5 comprising from 1 or 2 to 20 weight % R-1132a, such as from 4 to 17 weight %, for example from 7 to 16 weight %, optionally from 10 to 15 weight %.

7. A composition according to claim 5 or 6 comprising R-32 and R-1132a in a combined amount of less than 37 weight %, such as less than 35 weight %.

8. A composition according to any of the preceding claims comprising R-32 and CF_3I in a weight ratio of R-32 to CF_3I of less than 2:1, such as less than 1.8:1.

9. A composition according to any of the preceding claims, wherein the composition additionally comprises a further component selected from 1,1,1,2-tetrafluoroethane (R-134a), *trans*-1,3,3,3-tetrafluoropropene (R-1234ze(E)), 2,3,3,3-tetrafluoropropene (R-1234yf) 1,1,1,2,3,3,3-heptafluoropropane (R-227ea) and mixtures thereof, such as wherein the further component is R-134a and one or more of R-1234yf and R-1234ze(E).

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10. A composition according to claim 9, wherein the composition comprises from 1 15 weight % of the further component(s), such as from 3 to 12 weight %, for example from 4 or 5 to 10 weight %.

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

12. A composition according to any of the preceding claims wherein the composition is non-flammable as determined in accordance with ASHRAE Standard 34:2019.

13. A composition according to any of the preceding claims, wherein the composition has a Global Warming Potential (GWP) of less than 220 or 210, such as less than 200, for example less than 150, preferably less than 140.

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

15. A composition comprising a stabiliser and a composition according to any of the preceding clams, preferably wherein the stabiliser is selected from diene-based compounds, phosphates, phenol compounds and epoxides, and mixtures thereof.

16. A composition according to any of the preceding claims having a coefficient of performance (COP) which is greater than or equal to that of CO_2.

17. A composition according to any of the preceding claims having a temperature glide in an evaporator of less than 11K, such as less than 9K, for example less than 7K.

18. A composition according to any of the preceding claims having a volumetric refrigeration capacity which is within 25% of that of CO_2, such as within 20%, for example within 15%.

19. A composition according to any of the preceding claims wherein the composition has an operating pressure in a condenser or agas cooler which is lower than that of CO_2.

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20. Use of a composition according to any of the preceding claims as a working fluid in a heat transfer system, such as a refrigeration, heat pump or air-conditioning system.

21 The use of claim 20, wherein the refrigeration system comprises a commercial refrigeration system, such as a supermarket display refrigeration system, beverage cooler refrigeration system, warehouse refrigeration system or a cold-room refrigeration system.

22. The use of claim 20, wherein the refrigeration system comprises a transportation refrigeration system, such as a refrigeration system fitted to a refrigerating shipping container or a refrigeration system fitted to a vehicle.

23. The use of claim 20, wherein the heat pump system comprises a water heater heat pump system.

24. The use of claim 20, wherein the air-conditioning system comprises a transportation air-conditioning system, such as a bus, car, train or truck air-conditioning system.

25. The use of any of claims 20 to 24, wherein the heat transfer system operates as a transcritical heat transfer system for at least a part of the year.

26. Use of a composition according to any of claims 1 to 19 as a replacement for an existing working fluid in a heat transfer device, preferably wherein the existing working fluid is R-410A.

27. A heat transfer device comprising a composition as defined in any of claims 1 to 19.

28. A heat transfer device according to claim 26, wherein the heat transfer device is a transcritical heat transfer device, such as a transcritical refrigeration, heat pump or air-conditioning device.

29. A method of producing heating which comprises condensing a composition according to any of claims 1 to 19 in the vicinity of a body to be heated.

30. A method of producing cooling which comprises evaporating a composition according to any of the claims 1 to 19 in the vicinity of a body to be cooled.

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