CLAIMS

~~1. A composition comprising trifluoroiodomethane (CF_3I) and 1,1-difluoroethylene (R-1132a), preferably a binary composition of CF_3I and R-1132a.~~

~~2. The composition of claim 1 which comprises from 1 to 95 weight % of CF_3I and from 99 to 5 weight % of R-1132a, preferably from 1 to 50 weight % of CF_3I and from 99 to 50 weight %, of R-1132a, based on the total weight of the composition.~~

~~3. The composition of claim 2 which comprises from 1 to 40 weight % of CF_3I and from 99 to 60 weight % of R-1132a , preferably from 1 to 30 weight % of CF_3I and from 99 to 70 weight % of 1 R-1132a and particularly from 1 to 20 weight % of CF_3I and from 99 to 80 weight % of R-1132a, based on the total weight of the composition.~~

~~4. The composition of claim 1 or 2 which comprises from 99 to 70 weight % of CF_3I and from 1 to 30 weight % of R-1132a, preferably from 99 to 80 weight % of CF_3I and from 1 to 20 weight % of R-1132a, for example from 97 to 85 weight % of CF_3I and from 3 to 15 weight % of R-1132a, based on the total weight of the composition.~~

~~5. The composition of any one of claims 1 to 4 which is non-flammable or only weakly flammable as determined by the test method of ASHRAE Standard 34:2016.~~

~~6. A ternary or higher composition comprising trifluoroiodomethane (CF_3I), 1,1-difluoroethylene (R-1132a) and at least one additional compound selected from the group consisting of carbon dioxide (CO_2; R-744), tetrafluoromethane (R-14), trifluoromethane (R-23) and perfluoroethane (R-116).~~

~~7. The composition of claim 6 which comprises from 1 to 95 weight % (preferably from 1 to 50 weight %) of CF_3I and from 99 to 5 weight % (from 99 to 50 weight %) of R-1132a and the at least one additional compound selected from the group consisting of CO_2, R-14, R-23 and R-116 based on the total weight of the composition.~~

~~8. The composition of claim 7 which comprises from 1 to 40 weight % of CF_3I and from 99 to 60 weight % of R-1132a and the at least one additional compound selected from the group consisting of CO_2, R-14, R-23 and R-116, preferably from 1 to 30 weight % of CF_3I and from 99 to 70 weight % of R-1132a and the at least one additional compound and particularly from 1 to 20 weight % of CF_3I and from 99 to 80 weight % of R-1132aand the at least one additional compound based on the total weight of the composition.~~

~~9. The composition of claim 6 which comprises from about 1 to about 40 weight % R-1132a, from about 1 to about 50 weight % CF_3I and from about 1 to about 40 weight % CO_2 based on the total weight of the composition, optionally wherein the CO_2 is present in an amount of from about 1 to about 30 weight %, preferably from about 1 to about 20 weight %, such as from about 1 to about 10 weight %.~~

~~10. The composition of any one of claims 6 to 9, wherein the amount of the at least one additional compound selected from the group consisting of CO_2, R-14, R-23 and R-116 in the composition is selected so that (i) the composition is only weakly flammable and preferably non-flammable as determined by the test method of ASHRAE Standard 34:2016; or (ii) the overall composition is held at two phase equilibrium the vapour phase composition will remain non-flammable as determined by the test method of ASHRAE Standard 34:2016.~~

~~11~~1. A ternary or higher composition comprising from 1 to 70 weight % trifluoroiodomethane (CF_3I), from 1 to 40 weight % 1,1-difluoroethylene (R-1132a), and at least one additional compound of lower volatility than 1,1-difluoroethylene selected from the group consisting of 1,1,2-trifluoroethylene (R-1123), difluoromethane (R-32), propane (R-290), propylene (R-1270), fluoroethane (R-161), pentafluoroethane (R-125), 1,1,1,2-tetrafluoroethane (R-134a), 2,3,3,3-tetrafluopropene (R-1234yf), isobutane (R-600a), n-butane (R-600), trans-1,3,3,3-tetrafluopropene (R-1234ze(E)), 3,3,3-trifluoropropene (R-1243zf), 1,2,3,3,3-pentafluoropropene (R-1225ye), 1,1,1,2,3,3,3-heptafluoropropane (R-227ea), 1,1-difluoroethane (R-152a), cis-1,3,3,3-tetrafluopropene (R-1234ze(Z)), 1-chloro-3,3,3-trifluoropropene (R-1233zd(E/Z)) and 1,1,1,4,4,4-hexafluoro-2-butene (R-1336mzz(E/Z)).

~~12. The composition of claim 11 which comprises from 1 to 95 weight % (preferably from 1 to 50 weight %) of CF_3I and from 99 to 5 weight % (preferably from 99 to 50 weight %) of R-1132a and the at least one additional compound of lower volatility than R-1132a.~~

~~13. The composition of claim 11 which comprises from 1 to 40 weight % of CF_3I and from 99 to 60 weight % of R-1132a and the at least one additional compound of lower volatility than R-1132a, preferably from 1 to 30 weight % of CF_3I and from 99 to 70 weight % of R-1132a and the at least one additional compound of lower volatility than R-1132a and particularly from 1 to 20 weight % of CF_3I and from 99 to 80 weight % of 1 R-1132a and the at least one additional compound of lower volatility than R-1132a, based on the total weight of the composition.~~

~~14~~2. The composition of claim ~~11~~ 1 wherein the R-1132a is present in an amount of ~~from about 1 to about 40 weight %, preferably~~ from ~~about~~ 1 to ~~about~~ 30 weight %, ~~such as from about 1 to about 20 weight %, for example from about 1 to about 10 weight %,~~ based on the total weight of the composition.

3. The composition of claim 2, wherein the R-1132a is present in an amount of from 1 to 20 weight %, based on the total weight of the composition.

4. The composition of claim 3, wherein the R-1132a is present in an amount of from 1 to 10 weight %, based on the total weight of the composition.

~~15~~5. The composition of any of claims ~~11~~ 1 ~~or~~ to ~~14~~ 4 wherein the CF_3I is present in an amount of ~~from about 1 to about 70 weight %, preferably~~ from ~~about~~ 1 to ~~about~~ 60 weight %, ~~such as from about 1 to about 50 or 40 weight %, for example from about 1 to about 30 weight %,~~ based on the total weight of the composition.

6. The composition of claim 5, wherein the CF_3I is present in an amount of from 1 to 50 weight %, based on the total weight of composition.

7. The composition of claim 6, wherein the CF_3I is present in an amount of from 1 to 40 weight %, based on the total weight of composition.

8. The composition of claim 7, wherein the CF_3I is present in an amount of from 1 to 30 weight %, based on the total weight of composition.

~~16~~9. The composition of any of claims ~~11~~1, ~~14 or 15~~ to 8 wherein the composition comprises:

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I and from ~~about~~ 1 to ~~about~~ 30 weight % R-1123;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 70 weight % CF_3I and from ~~about~~ 1 to ~~about~~ 50 weight % R-32;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I and from ~~about~~ 1 to ~~about~~ 20 weight %, preferably from ~~about~~ 1 to ~~about~~ 10 weight %, such as from ~~about~~ 1 to ~~about~~ 5 weight % R-290;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I and from ~~about~~ 1 to ~~about~~ 20 weight % R-125;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I and from ~~about~~ 1 to ~~about~~ 20 weight %, preferably from ~~about~~ 1 to ~~about~~ 10 weight %, such as from ~~about~~ 1 to ~~about~~ 5 weight % R-1270;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I and from ~~about~~ 1 to ~~about~~ 40 weight % R-134a;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I and from ~~about~~ 1 to ~~about~~ 40 weight % R-1234yf;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I and from ~~about~~ 1 to ~~about~~ 40 weight % R-1234ze(E);

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I and from ~~about~~ 1 to ~~about~~ 20 weight % R-227ea; or

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I and from ~~about~~ 1 to ~~about~~ 40 weight % R-152a.

~~17~~10. The composition of any of claims ~~11~~ 1 to ~~16~~ 9 wherein the composition further comprises carbon dioxide (CO_2; R-744)~~, optionally wherein the CO_2 is present in an amount of from about 1 to about 40 weight %, preferably from about 1 to about 30 weight %, such as from about 1 to about 20 weight %, for example from about 1 to about 10 weight %, based on the total weight of the composition~~.

11. The composition of claim 10, wherein the CO_2 is present in an amount of from 1 to 40 weight %, based on the total weight of the composition.

12. The composition of claim 11, wherein the CO_2 is present in an amount of from 1 to 30 weight %, based on the total weight of the composition.

13. The composition of claim 12, wherein the CO_2 is present in an amount of from 1 to 20 weight %, based on the total weight of the composition.

14. The composition of claim 13, wherein the CO_2 is present in an amount of from 1 to 10 weight %, based on the total weight of the composition.

~~18~~15. The composition of any of claims ~~17~~ 10 to 14 wherein the composition comprises:

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, and from ~~about~~ 1 to ~~about~~ 40 weight % CO_2;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 40 weight % R-1123 and from ~~about~~ 1 to ~~about~~ 40 weight % CO_2;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 70 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 50 weight % R-32 and from ~~about~~ 1 to ~~about~~ 40 weight % CO_2;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 20 weight %, preferably from ~~about~~ 1 to ~~about~~ 10 weight %, such as from ~~about~~ 1 to ~~about~~ 5 weight % R-290 and from ~~about~~ 1 to ~~about~~ 40 weight % CO_2;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 20 weight % R-125 and from ~~about~~ 1 to ~~about~~ 40 weight % CO_2;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 20 weight %, preferably from ~~about~~ 1 to ~~about~~ 10 weight %, such as from ~~about~~ 1 to ~~about~~ 5 weight % R-1270 and from ~~about~~ 1 to ~~about~~ 40 weight % CO_2;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 40 weight % R-134a and from ~~about~~ 1 to ~~about~~ 40 weight % CO_2;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 50 weight % R-1234yf and from ~~about~~ 1 to ~~about~~ 40 weight % CO_2;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 20 weight % R-227ea and from ~~about~~ 1 to ~~about~~ 40 weight % CO_2;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 50 weight % R-152a and from ~~about~~ 1 to ~~about~~ 40 weight % CO_2;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 40 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 40 weight % R-32 and from ~~about~~ 1 to ~~about~~ 20 weight % CO_2 and from ~~about~~ 1 to ~~about~~ 40 weight % R-1234yf;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 40 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 40 weight % R-32 and from ~~about~~ 1 to ~~about~~ 20 weight % CO_2 and from ~~about~~ 1 to ~~about~~ 40 weight % R-1234ze(E); or

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 40 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 40 weight % R-32 and from ~~about~~ 1 to ~~about~~ 20 weight % CO_2 and from ~~about~~ 1 to ~~about~~ 40 weight % R-152a.

~~19~~16. The composition of any of claims 1 to 8 ~~11, 14 or 15~~ wherein the composition comprises:

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 70 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 30 weight % R-1123 and from ~~about~~ 1 to ~~about~~ 60 weight % R-32;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 30 weight % R-1123 and from ~~about~~ 1 to ~~about~~ 20 weight %, preferably from ~~about~~ 1 to ~~about~~ 10 weight %, such as from ~~about~~ 1 to ~~about~~ 5 weight % R-290;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 40 weight % R-1123 and from ~~about~~ 1 to ~~about~~ 20 weight % R-125;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 30 weight % R-1123 and from ~~about~~ 1 to ~~about~~ 20 weight %, preferably from ~~about~~ 1 to ~~about~~ 10 weight %, such as from ~~about~~ 1 to ~~about~~ 5 weight % R-1270;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 40 weight % R-1123 and from ~~about~~ 1 to ~~about~~ 40 weight % R-134a;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 40 weight % R-1123 and from ~~about~~ 1 to ~~about~~ 50 weight % R-1234yf;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 40 weight % R-1123 and from ~~about~~ 1 to ~~about~~ 20 weight % R-227ea;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 40 weight % R-1123 and from ~~about~~ 1 to ~~about~~ 40 weight % R-152a;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 50 weight % R-32 and from ~~about~~ 1 to ~~about~~ 20 weight %, preferably from ~~about~~ 1 to ~~about~~ 10 weight %, such as from ~~about~~ 1 to ~~about~~ 5 weight % R-290;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 70 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 50 weight % R-32 and from ~~about~~ 1 to ~~about~~ 20 weight % R-125;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 50 weight % R-32 and from ~~about~~ 1 to ~~about~~ 20 weight %, preferably from ~~about~~ 1 to ~~about~~ 10 weight %, such as from ~~about~~ 1 to ~~about~~ 5 weight % R-1270;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 50 weight % R-32 and from ~~about~~ 1 to ~~about~~ 40 weight % R-134a;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 50 weight % R-32 and from ~~about~~ 1 to ~~about~~ 40 weight % R-1234yf;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 50 weight % R-32 and from ~~about~~ 1 to ~~about~~ 20 weight % R-227ea;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 50 weight % R-32 and from ~~about~~ 1 to ~~about~~ 40 weight % R-152a;

from ~~about~~ 1 to ~~about~~ to 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 20 weight %, preferably from ~~about~~ 1 to ~~about~~ 10 weight %, such as from ~~about~~ 1 to ~~about~~ 5 weight % R-290 and from ~~about~~ 1 to ~~about~~ 20 weight % R-125;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 20 weight %, preferably from ~~about~~ 1 to ~~about~~ 10 weight %, such as from ~~about~~ 1 to ~~about~~ 5 weight % R-290 and from ~~about~~ 1 to ~~about~~ 20 weight %, preferably from ~~about~~ 1 to ~~about~~ 10 weight %, such as from ~~about~~ 1 to ~~about~~ 5 weight % R-1270;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 20 weight %, preferably from ~~about~~ 1 to ~~about~~ 10 weight %, such as from ~~about~~ 1 to ~~about~~ 5 weight % R-290 and from ~~about~~ 1 to ~~about~~ 40 weight % R-134a;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 20 weight %, preferably from ~~about~~ 1 to ~~about~~ 10 weight %, such as from ~~about~~ 1 to ~~about~~ 5 weight % R-290 and from ~~about~~ 1 to ~~about~~ 50 weight % R-1234yf;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 20 weight %, preferably from ~~about~~ 1 to ~~about~~ 10 weight %, such as from ~~about~~ 1 to ~~about~~ 5 weight % R-290 and from ~~about~~ 1 to ~~about~~ 20 weight % R-227ea;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 20 weight %, preferably from ~~about~~ 1 to ~~about~~ 10 weight %, such as from ~~about~~ 1 to ~~about~~ 5 weight % R-290 and from ~~about~~ 1 to ~~about~~ 50 weight % R-152a;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 20 weight % R-125 and from ~~about~~ 1 to ~~about~~ 20 weight %, preferably from ~~about~~ 1 to ~~about~~ 10 weight %, such as from ~~about~~ 1 to ~~about~~ 5 weight % R-1270;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 20 weight % R-125 and from ~~about~~ 1 to ~~about~~ 40 weight % R-134a;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 20 weight % R-125 and from ~~about~~ 1 to ~~about~~ 40 weight % R-1234yf;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 20 weight % R-125 and from ~~about~~ 1 to ~~about~~ 20 weight % R-227ea;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 20 weight % R-125 and from ~~about~~ 1 to ~~about~~ 50 weight % R-152a;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 20 weight %, preferably from ~~about~~ 1 to ~~about~~ 10 weight %, such as from ~~about~~ 1 to ~~about~~ 5 weight % R-1270 and from ~~about~~ 1 to ~~about~~ 40 weight % R-134a;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 20 weight %, preferably from ~~about~~ 1 to ~~about~~ 10 weight %, such as from ~~about~~ 1 to ~~about~~ 5 weight % R-1270 and from ~~about~~ 1 to ~~about~~ 50 weight % R-1234yf;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 20 weight %, preferably from ~~about~~ 1 to ~~about~~ 10 weight %, such as from ~~about~~ 1 to ~~about~~ 5 weight % R-1270 and from ~~about~~ 1 to ~~about~~ 50 weight % R-227ea;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 20 weight %, preferably from ~~about~~ 1 to ~~about~~ 10 weight %, such as from ~~about~~ 1 to ~~about~~ 5 weight % R-1270 and from ~~about~~ 1 to ~~about~~ 50 weight % R-152a;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 50 weight % R-134a and from ~~about~~ 1 to ~~about~~ 40 weight % R-1234yf;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 40 weight % R-134a and from ~~about~~ 1 to ~~about~~ 20 weight % R-227ea;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 40 weight % R-134a and from ~~about~~ 1 to ~~about~~ 50 weight % R-152a;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 50 weight % R-1234yf and from ~~about~~ 1 to ~~about~~ 20 weight % R-227ea;

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 50 weight % R-1234yf and from ~~about~~ 1 to ~~about~~ 50 weight % R-152a; or

from ~~about~~ 1 to ~~about~~ 40 weight % R-1132a, from ~~about~~ 1 to ~~about~~ 50 weight % CF_3I, from ~~about~~ 1 to ~~about~~ 20 weight % R-227ea and from ~~about~~ 1 to ~~about~~ 40 weight % R-152a;

~~20~~17. The composition according to any of claims 1 to 8 ~~11 or 14~~, wherein the composition comprises from 1 to 70 weight % CF_3I, from 1 to 40 weight % R-1132a and R-1234yf, ~~preferably from 15 to 98 weight % of CF_3I, from 1 to 15 weight % of R-1132a and from 1 to 80 weight % of R-1234yf, such as from 25 to 87 weight % of CF_3I, from 3 to 11 weight % of R-1132a and from 5 to 75 weight % of R-1234yf~~ based on the total weight of the composition.

~~21~~18. The composition according to any of claims 1 to 8 ~~claim 11 or 14~~ comprising from 1 to 70 weight % CF_3I, from 1 to 40 weight % R-1132a, R-32 and R-1234yf, ~~preferably from 15 to 97 weight % of CF_3I, from 1 to 15 weight % of R-1132a, from 1 to 20 weight % of R-32 and from 1 to 70 weight % of R-1234yf, such as from 28 to 82 weight % of CF_3I, from 3 to 10 weight % of R-1132a, from 5 to 12 weight % of R-32 and from 5 to 60 weight % of R-1234yf~~ based on the total weight of the composition.

~~22~~19. The composition of any one of the preceding claims further comprising a stabilizer, preferably wherein the stabiliser is selected from the group consisting of diene-based compounds, phosphates, phenol compounds and epoxides, and mixtures thereof.

~~23~~20. A composition of any one of the preceding claims consisting essentially of the stated components.

~~24~~21. A composition of any one of the preceding claims ~~4 to 23~~, wherein the refrigerant composition is less flammable than R-1132a alone, preferably wherein the refrigerant composition has:

a. a higher flammable limit’

b. a higher ignition energy; and/or

c. a lower flame velocity

compared to R-1132a alone.

~~25~~22. A composition of any one of ~~any of claims 4 to 23~~the preceding claims wherein the composition is non-flammable, preferably wherein the refrigerant composition is non-flammable at ambient temperature, or wherein the composition is non-flammable at 60 °C.

~~26~~23. The composition of any one of the preceding claims which has a Global Warming Potential (GWP) below 150.

~~27~~24. The composition of any one of the preceding claims wherein the refrigerant ~~ion~~ composition has a temperature glide in an evaporator or condenser of less than about 10K~~, preferably less than about 5K~~.

25. The composition of claim 24, wherein the refrigerant composition has a temperature glide in an evaporator or condenser of less than about 5K.

~~28~~26. The use of a composition as claimed in any one of the preceding claims as a refrigerant in a vapour compression heat transfer system.

~~29~~27. A vapour compression heat transfer system comprising a composition as claimed in any one of claims 1 to ~~24~~25.

~~30~~28. The vapour compression heat transfer system of claim ~~29~~ 27 which further comprises a lubricant~~, preferably a polyolester (POE) or polyalkylene glycol (PAG) lubricant~~.

29. The vapour compression heat transfer system of claim 28, wherein the lubricant is a polyolester (POE) or polyalkylene glycol (PAG) lubricant.

~~31~~30. A method of producing cooling which comprises evaporating a composition as claimed in any one of claims 1 to ~~27~~ 25 in the vicinity of a body to be cooled.

~~32~~31. A method of producing heating which comprises condensing a refrigerant composition as claimed in any one of claims 1 to ~~27~~ 25 in the vicinity of a body to be heated.

~~33~~32. A sprayable composition comprising material to be sprayed and a propellant comprising a composition as defined in any of claims 1 to ~~27~~25.

~~34~~33. A method for extracting a substance from biomass comprising contacting biomass with a solvent comprising a composition as defined in any of claims 1 to ~~27~~ 25 and separating the substance from the solvent.

~~35~~34. A method of cleaning an article comprising contacting the article with a solvent comprising a composition as defined in any of claims 1 to ~~27~~25.

~~36~~35. A method of extracting a material from an aqueous solution or from a particulate solid matrix comprising contacting the aqueous solution or the particulate solid matrix with a solvent comprising a composition as defined in any of claims 1 to ~~27~~ 25 and separating the material from the solvent.

~~37~~36. A mechanical power generation device containing a composition as defined in any of claims 1 to ~~27~~25.

~~38~~37. A mechanical power generating device according to claim ~~37~~ 36 which is adapted to use a Rankine Cycle or modification thereof to generate work from heat.

~~39~~38. A method of retrofitting a heat transfer device comprising the step of removing an existing heat transfer composition, and introducing a composition as defined in any one of claims 1 to ~~27~~25.

~~40~~39. A method of claim ~~39~~ 38 wherein the heat transfer device is a commercial or industrial refrigeration device, a heat pump, or a residential or commercial air conditioning system.

~~41~~40. A method for reducing the environmental impact arising from the operation of a product comprising an existing compound or composition, the method comprising replacing at least partially the existing compound or composition with a composition as defined in any one of claims 1 to ~~27~~25.

~~42~~41. A method of claim ~~41~~ 40 wherein the use of the composition of the invention results in a lower Total Equivalent Warming Impact, and/or a lower Life-Cycle Carbon Production than is attained by use of the existing compound or composition.

~~43~~42. A method of claim ~~41~~ 40 or ~~42~~ 41 carried out on a product from the fields of air-conditioning, refrigeration, heat transfer, aerosols or sprayable propellants, gaseous dielectrics, flame suppression, solvents, cleaners, topical anaesthetics, and expansion applications.

~~44~~43. A method according to claim ~~41~~ 40 or ~~42~~ 41 wherein the product is selected from a heat transfer device, a sprayable composition, a solvent or a mechanical power generation device, preferably a heat transfer device.

~~45~~44. A method according to claim ~~44~~ 43 wherein the product is a heat transfer device, preferably a residential or commercial air conditioning system, a heat pump or a commercial or industrial refrigeration system.

~~46~~45. A method according to any of claims ~~39~~ 38 to ~~45~~ 44 wherein the existing compound or composition is a heat transfer composition~~, preferably wherein the heat transfer composition is a refrigerant selected from R-410A, R-454B, R-452B and R-32~~.

46. A method according to claim 45, wherein the heat transfer composition is a refrigerant selected from R-410A, R-454B, R-452B and R-32