CLAIMS

What is claimed is:

1. A method for cooling and heating a passenger compartment of an electric or hybrid vehicle using a heat pump, the method comprising providing a composition comprising HFO-1252zc as refrigerant to the heat pump.

2. The method of claim 1, wherein the composition further comprises at least one additional compound selected from the group consisting of HCFC-22, HFC-23, HCC-30, HCFC-31, HCC-40, HFC-41, methane, HFC-125, HFC-143, HFC-143a, HFC-152a, HFC-245cb, HCFC-253dc, HFC-254fb, HCC-260fb, HCFC-261fc, HCFC-262fc, HFC-263fb, HFC-272fb, propane, HFO-374, n-butane, allene, 2-butene, cyclobutene, 2-methyl propene, HCFO-1122, HFO-1132, HFO-1132a, HFO-1141, ethylene, HCFO-1233xf, HFO-1234yf, HCFO-1242zf, HFO-1243zf, HCFO-1251, HCO-1260zf, HFO-1261zf, propylene, HFO-1345, HFO-1252ze, HFO-1252yf, HFO-1252zf, HFO-1252ye, and E/Z-t-BuO-CF=CH-CH_3.

3. The method of claim 1 or claim 2, wherein the composition further comprises at least one additional compound and wherein the total amount of additional compounds comprises greater than zero and less than 1 weight percent.

4. The method of any one of claims 1 to 3, wherein the additional compounds comprise HFO-1234yf, HFO-1243zf, HFC-263fb, HFO-1252ze, HFO-1252yf, HFO-1252zf, and HFO-1252ye.

5. The method of any one of claims 1 to 4, wherein the composition is determined to be class 3 for flammability as defined in ANSI/ASHRAE Standard 34.

6. The method of any one of claims 1 to 5, wherein the composition has a lower flammability limit (LFL) of less than 10 volume percent when measured in accordance with ASTM-E681.

7. The method of any one of claims 1 to 6, wherein the composition further comprises a lubricant.

8. The method of claim 7, wherein said lubricant is at least one selected from the group consisting of polyalkylene glycol, polyol ester, poly-α-olefin, and polyvinyl ether.

9. The method of claim 7 or claim 8, wherein the lubricant is a polyol ester lubricant and is obtained by reacting a carboxylic acid with a polyol comprising a neopentyl backbone selected from the group consisting of neopentyl glycol, trimethylolpropane, pentaerythritol, dipentaerythritol, and mixtures thereof.

10. The method of claim 9, wherein the carboxylic acid has 2 to 18 carbon atoms.

11. The method of any one of claims 7 to 10, wherein said lubricant has at least one property selected from the group consisting of volume resistivity of greater than 10^{10} Ω-m at 20ºC; surface tension of from about 0.02 N/m to 0.04 N/m at 20ºC; kinematic viscosity of from about 20 cSt to about 500 cSt at 40ºC; a breakdown voltage of at least 25 kV; and a hydroxy value of at most 0.1 mg KOH/g.

12. The method of any one of claims 1 to 11, wherein said composition further comprises from 0.1 to 200 ppm by weight of water; from about 10 ppm by volume to about 0.35 volume percent oxygen; and/or from about 100 ppm by volume to about 1.5 volume percent air.

13. The method of any one of claims 1 to 12, wherein said composition comprises a stabilizer.

14. The method of claim 13, wherein the stabilizer is selected from the group consisting of nitromethane, ascorbic acid, terephthalic acid, azoles, phenolic compounds, cyclic monoterpenes, terpenes, phosphites, phosphates, phosphonates, thiols, and lactones.

15. The method of claim 13 or claim 14, wherein the stabilizer is present in an amount from about 0.001 to 1.0 weight percent based on the weight of the refrigerant.

16. The method of any one of claims 1 to 15, wherein the composition comprises at least one tracer.

17. The method of claim 16, wherein said at least one tracer is present in an amount from about 1.0 ppm by weight to about 1000 ppm by weight.

18. The method of claim 16 or claim 17, wherein said at least one tracer is selected from the group consisting of hydrofluorocarbons, hydrofluoroolefins, hydrochlorocarbons, hydrochloroolefins, hydrochlorofluorocarbons, hydrochlorofluoroolefins, hydrochlorocarbons, hydrochloroolefins, chlorofluorocarbons, chlorofluoroolefins, hydrocarbons, perfluorocarbons, perfluoroolefins, and combinations thereof.

19. The method of any one of claims 1 to 18, wherein the composition comprises a UV dye.

20. The method of any one of claims 1 to 19, wherein the composition comprises a UV dye selected from the group consisting of naphthalimides, perylenes, coumarins, anthracenes, phenanthracenes xanthenes, thioxanthenes, naphthoxanthenes, fluoresceins, and derivatives or combinations thereof.