

WHAT IS CLAIMED IS:

1. A composition, comprising:
 - i) neopentane; and
 - ii) a compound selected from E-1,1,1,4,4,4-hexafluoro-2-butene and Z-1,1,1,4,4,4-hexafluoro-2-butene,
wherein the E-1,1,1,4,4,4-hexafluoro-2-butene or Z-1,1,1,4,4,4-hexafluoro-2-butene is present in the composition in an amount effective to form an azeotrope composition or an azeotrope-like composition with the neopentane.
2. The composition of claim 1, wherein the composition comprises neopentane and E-1,1,1,4,4,4-hexafluoro-2-butene, wherein the E-1,1,1,4,4,4-hexafluoro-2-butene is present in the composition in an amount effective to form an azeotrope composition or an azeotrope-like composition with the neopentane.
3. The composition of claim 2, wherein the composition comprises from about 40 to about 60 mol% neopentane and about 60 to about 40 mol% E-1,1,1,4,4,4-hexafluoro-2-butene.
4. The composition of claim 3, which has a boiling point of from about -40°C to about 120°C at a pressure of from about 2 psi to about 390 psi.
5. The composition of claim 4, which is an azeotrope composition.
6. The composition of claim 2, wherein the composition comprises from about 40 to about 50 mol% neopentane and about 60 to about 50 mol% E-1,1,1,4,4,4-hexafluoro-2-butene.
7. The composition of claim 6, which has a boiling point of from about 0.9°C to about 128°C at a pressure of from about 1 atm to about 30 atm.
8. The composition of claim 7, which is an azeotrope composition.

9. The composition of claim 2, wherein the composition comprises from about 98.4 to about 99.8 mol% neopentane and about 1.6 to about 0.2 mol% E-1,1,1,4,4,4-hexafluoro-2-butene.
10. The composition of claim 9, which has a boiling point of from about 8.3°C to about 9.3°C at a pressure of about 1 atm.
11. The composition of claim 10, which is an azeotrope-like composition.
12. The composition of claim 2, wherein the composition comprises from about 38.4 to about 62.6 mol% neopentane and about 65.2 to about 37.4 mol% E-1,1,1,4,4,4-hexafluoro-2-butene.
13. The composition of claim 12, which has a boiling point of from about 0.9°C to about 1.2°C at a pressure of about 1 atm.
14. The composition of claim 13, which is an azeotrope-like composition.
15. The composition of claim 2, wherein the composition comprises from about 0.2 to about 2.8 mol% neopentane and about 99.8 to about 97.2 mol% E-1,1,1,4,4,4-hexafluoro-2-butene.
16. The composition of claim 15, which has a boiling point of from about 6.3°C to about 7.4°C at a pressure of about 1 atm.
17. The composition of claim 16, which is an azeotrope-like composition.

18. The composition of claim 2, wherein the composition comprises:
- from about 99.8 to about 98.2 mol% neopentane and about 0.2 to about 1.8 mol% E-1,1,1,4,4,4-hexafluoro-2-butene; or
 - from about 71.6 to about 47.6 mol% neopentane and about 28.4 to about 52.4 mol% E-1,1,1,4,4,4-hexafluoro-2-butene; or
 - from about 1.2 to about 0.2 mol% neopentane and about 98.8 to about 99.8 mol% E-1,1,1,4,4,4-hexafluoro-2-butene; or
 - from about 99.8 to about 98.4 mol% neopentane and about 0.2 to about 1.6 mol% E-1,1,1,4,4,4-hexafluoro-2-butene; or
 - from about 66.6 to about 40.8 mol% neopentane and about 33.4 to about 59.2 mol% E-1,1,1,4,4,4-hexafluoro-2-butene; or
 - from about 1.8 to about 0.2 mol% neopentane and about 98.2 to about 99.8 mol% E-1,1,1,4,4,4-hexafluoro-2-butene; or
 - from about 62.8 to about 35.2 mol% neopentane and about 37.2 to about 64.8 mol% E-1,1,1,4,4,4-hexafluoro-2-butene; or
 - from about 2.6 to about 0.2 mol% neopentane and about 97.4 to about 99.8 mol% E-1,1,1,4,4,4-hexafluoro-2-butene; or
 - from about 59.8 to about 30.2 mol% neopentane and about 40.2 to about 69.8 mol% E-1,1,1,4,4,4-hexafluoro-2-butene; or
 - from about 3.4 to about 0.2 mol% neopentane and about 96.6 to about 99.8 mol% E-1,1,1,4,4,4-hexafluoro-2-butene; or
 - from about 58.4 to about 28.2 mol% neopentane and about 41.6 to about 71.8 mol% E-1,1,1,4,4,4-hexafluoro-2-butene; or
 - from about 3.8 to about 0.2 mol% neopentane and about 96.2 to about 99.8 mol% E-1,1,1,4,4,4-hexafluoro-2-butene; or
 - from about 57.2 to about 26.4 mol% neopentane and about 42.8 to about 73.6 mol% E-1,1,1,4,4,4-hexafluoro-2-butene; or
 - from about 4.4 to about 0.2 mol% neopentane and about 95.6 to about 99.8 mol% E-1,1,1,4,4,4-hexafluoro-2-butene; or
 - from about 55.4 to about 23.6 mol% neopentane and about 44.6 to about 76.4 mol% E-1,1,1,4,4,4-hexafluoro-2-butene; or

from about 5.2 to about 99.1 mol% neopentane and about 94.8 to about 0.9 mol% E-1,1,1,4,4,4-hexafluoro-2-butene; or

from about 99.8 to about 98.6 mol% neopentane and about 0.2 to about 1.4 mol% E-1,1,1,4,4,4-hexafluoro-2-butene; or

from about 53.8 to about 23.2 mol% neopentane and about 46.2 to about 76.8 mol% E-1,1,1,4,4,4-hexafluoro-2-butene; or

from about 5.4 to about 0.2 mol% neopentane and about 94.6 to about 99.8 mol% E-1,1,1,4,4,4-hexafluoro-2-butene; or

from about 56 to about 24.4 mol% neopentane and about 44.0 to about 75.6 mol% E-1,1,1,4,4,4-hexafluoro-2-butene; or

from about 4.6 to about 0.2 mol% neopentane and about 95.4 to about 99.8 mol% E-1,1,1,4,4,4-hexafluoro-2-butene; or

from about 57.2 to about 3.8 mol% neopentane and about 42.8 to about 96.2 mol% E-1,1,1,4,4,4-hexafluoro-2-butene; or

from about 2.6 to about 0.2 mol% neopentane and about 97.4 to about 99.8 mol% E-1,1,1,4,4,4-hexafluoro-2-butene.

19. The composition of claim 18, which has a boiling point of from about -20°C to about 120°C at a pressure of about 1 atm.

20. The composition of claim 19, which is an azeotrope-like composition.

21. The composition of claim 1, wherein the composition comprises neopentane and Z-1,1,1,4,4,4-hexafluoro-2-butene, wherein the Z-1,1,1,4,4,4-hexafluoro-2-butene is present in the composition in an amount effective to form an azeotrope composition or an azeotrope-like composition with the neopentane.

22. The composition of claim 21, wherein the composition comprises from about 60 to about 93 mol% neopentane and about 40 to about 7 mol% Z-1,1,1,4,4,4-hexafluoro-2-butene.

23. The composition of claim 22, which has a boiling point of from about -40°C to about 120°C at a pressure of from about 1.5 psi to about 310 psi.

24. The composition of claim 23, which is an azeotrope composition.
25. The composition of claim 21, wherein the composition comprises from about 56 to about 83 mol% neopentane and about 44 to about 17 mol% Z-1,1,1,4,4,4-hexafluoro-2-butene.
26. The composition of claim 25, which has a boiling point of from about 5°C to about 145°C at a pressure of from about 1 atm to about 30 atm.
27. The composition of claim 26, which is an azeotrope composition.
28. The composition of claim 21, wherein the composition comprises from about 99.6 to about 79.2 mol% neopentane and about 0.4 to about 20.8 mol% Z-1,1,1,4,4,4-hexafluoro-2-butene.
29. The composition of claim 28, which has a boiling point of from about 7.8°C to about 9.4°C at a pressure of about 1 atm.
30. The composition of claim 29, which is an azeotrope-like composition.
31. The composition of claim 21, wherein the composition comprises from about 3.2 to about 1.6 mol% neopentane and about 96.8 to about 98.4 mol% Z-1,1,1,4,4,4-hexafluoro-2-butene.
32. The composition of claim 31, which has a boiling point of from about 32.6°C to about 33.0°C at a pressure of about 1 atm.
33. The composition of claim 32, which is an azeotrope-like composition.
34. The composition of claim 21, wherein the composition comprises:
from about 99.8 to about 85.2 mol% neopentane and about 0.2 to about 14.8 mol% Z-1,1,1,4,4,4-hexafluoro-2-butene; or

from about 99.8 to about 80.8 mol% neopentane and about 0.2 to about 19.2 mol% Z-1,1,1,4,4,4-hexafluoro-2-butene; or

from about 99.8 to about 76.2 mol% neopentane and about 0.2 to about 23.8 mol% Z-1,1,1,4,4,4-hexafluoro-2-butene; or

from about 99.8 to about 61.8 mol% neopentane and about 0.2 to about 38.2 mol% Z-1,1,1,4,4,4-hexafluoro-2-butene; or

from about 0.4 to about 0.2 mol% neopentane and about 99.6 to about 99.8 mol% Z-1,1,1,4,4,4-hexafluoro-2-butene; or

from about 99.8 to about 69.8 mol% neopentane and about 0.2 to about 30.2 mol% Z-1,1,1,4,4,4-hexafluoro-2-butene; or

from about 99.8 to about 67.6 mol% neopentane and about 0.2 to about 32.4 mol% Z-1,1,1,4,4,4-hexafluoro-2-butene; or

from about 99.8 to about 95.0 mol% neopentane and about 0.2 to about 5 mol% Z-1,1,1,4,4,4-hexafluoro-2-butene; or

from about 86.4 to about 63.6 mol% neopentane and about 13.6 to about 36.4 mol% Z-1,1,1,4,4,4-hexafluoro-2-butene; or

from about 0.4 to about 0.2 mol% neopentane and about 99.6 to about 99.8 mol% Z-1,1,1,4,4,4-hexafluoro-2-butene; or

from about 99.8 to about 96.6 mol% neopentane and about 0.2 to about 3.4 mol% Z-1,1,1,4,4,4-hexafluoro-2-butene; or

from about 80.6 to about 59.6 mol% neopentane and about 19.4 to about 40.4 mol% Z-1,1,1,4,4,4-hexafluoro-2-butene; or

from about 99.8 to about 97.6 mol% neopentane and about 0.2 to about 2.4 mol% Z-1,1,1,4,4,4-hexafluoro-2-butene; or

from about 74.2 to about 56.0 mol% neopentane and about 25.8 to about 44.0 mol% Z-1,1,1,4,4,4-hexafluoro-2-butene; or

from about 0.2 to about 0.8 mol% neopentane and about 99.2 to about 99.8 mol% Z-1,1,1,4,4,4-hexafluoro-2-butene; or

from about 99.8 to about 98.2 mol% neopentane and about 0.2 to about 1.8 mol% Z-1,1,1,4,4,4-hexafluoro-2-butene; or

from about 76.6 to about 50.0 mol% neopentane and about 23.4 to about 50.0 mol% Z-1,1,1,4,4,4-hexafluoro-2-butene; or

from about 1.0 to about 0.2 mol% neopentane and about 99.0 to about 99.8 mol% Z-1,1,1,4,4,4-hexafluoro-2-butene.

35. The composition of claim 34, which has a boiling point of from about -20°C to about 120°C at a pressure of about 1 atm.

36. The composition of claim 35, which is an azeotrope-like composition.