HFC-245fa); wherein the HFC-245fa is present in an effective amount to form an azeotrope-like mixture with Z-FC-1336mzz.

This disclosure also provides a composition consisting essentially of (a) Z-FC-1336mzz and (b) dimethoxymethane ($CH_3OCH_2OCH_3$, methylal); wherein the dimethoxymethane is present in an effective amount to form an azeotrope-like mixture with Z-FC-1336mzz.

One aspect~~This disclosure also~~ provides a composition consisting essentially of (a) Z-FC-1336mzz and (b) cyclopentane (c-C_5H_{10}); wherein the cyclopentane is present in an effective amount to form an azeotropic or azeotrope-like mixture with Z-FC-1336mzz.

Another aspect relates to a process for preparing a thermoplastic or thermoset foam comprising using the azeotrope-like or azeotrope composition as disclosed above as a blowing agent.

Another aspect relates to a process for producing refrigeration comprising condensing the azeotrope-like or azeotrope composition as disclosed above and thereafter evaporating said composition in the vicinity of the body to be cooled.

Another aspect relates to a process comprising using the azeotrope-like or azeotrope composition as disclosed above as a solvent.

Another aspect relates to process for producing an aerosol product comprising using the azeotrope-like or azeotrope composition as disclosed above as a propellant.

Another aspect relates to a process comprising using the azeotrope-like or azeotrope composition as disclosed above as a heat transfer media.

Another aspect relates to a process for extinguishing or suppressing a fire comprising using the azeotrope-like or azeotrope composition as disclosed above as a fire extinguishing or suppression agent.

Another aspect relates to a process comprising using the azeotrope-like or azeotrope composition as disclosed above as dielectrics.

BRIEF SUMMARY OF THE DRAWINGS

FIG. 1 - FIG. 1 is a graphical representation of an azeotrope and azeotrope-like compositions consisting essentially of Z-FC-1336mzz and methyl formate at a temperature of about 50.1 °C.

FIG. 2 - FIG. 2 is a graphical representation of an azeotrope and azeotrope-like compositions consisting essentially of Z-FC-1336mzz and pentane at a temperature of about 19.9 °C.

FIG. 3 - FIG. 3 is a graphical representation of an azeotrope and azeotrope-like compositions consisting essentially of Z-FC-1336mzz and isopentane at a temperature of about 19.9 °C.

FIG. 4 - FIG. 4 is a graphical representation of azeotrope-like compositions consisting essentially of Z-FC-1336mzz and HFC-365mfc at a temperature of about 50.0 °C.

FIG. 5 - FIG. 5 is a graphical representation of an azeotrope and azeotrope-like compositions consisting essentially of Z-FC-1336mzz and trans-1,2-dichloroethylene at a temperature of about 50.1 °C.

CLAIMS

1. A composition consisting essentially of:

(a) Z-1,1,1,4,4,4-hexafluoro-2-butene; and

(b) cyclopentane; wherein the cyclopentane is present in an effective amount to form an azeotropic combination with the Z-1,1,1,4,4,4-hexafluoro-2-butene.

2. The azeotropic composition of claim 1 consisting essentially of from about 64.2 mole percent to about 74.4 mole percent Z-1,1,1,4,4,4-hexafluoro-2-butene and from about 35.8 mole percent to about 25.6 mole percent cyclopentane, which has boiling point temperature of from about -20 °C to about 150 °C at a pressure of from about 1.7 psia (12 kPa) to about 302 psia (2080 kPa).

3. A composition consisting essentially of:

(a) Z-1,1,1,4,4,4-hexafluoro-2-butene; and

(b) cyclopentane; wherein the cyclopentane is present in an effective amount to form an azeotrope-like combination with the Z-1,1,1,4,4,4-hexafluoro-2-butene.

4. The azeotrope-like composition of claim 3 consisting essentially of from 68 to 99 weight percent Z-1,1,1,4,4,4-hexafluoro-2-butene and from 32 to 1 weight percent cyclopentane, characterized by: at a temperature of from -20 °C to 150 °C, said composition having a difference in dew point pressure and bubble point pressure of less than or equal to 5 percent based upon the bubble point pressure.

5. A process for preparing a thermoplastic or thermoset foam comprising using an azeotropic or azeotrope-like composition as a blowing agent, wherein said azeotropic or azeotrope-like composition consists essentially of Z-1,1,1,4,4,4-hexafluoro-2-butene and cyclopentane.

6. A process for producing refrigeration comprising condensing an azeotropic or azeotrope-like composition and thereafter evaporating said azeotropic or azeotrope-like composition in the vicinity of the body to be

cooled, wherein said azeotropic or azeotrope-like composition consists essentially of Z-1,1,1,4,4,4-hexafluoro-2-butene and cyclopentane.

7. A process comprising using an azeotropic or azeotrope-like composition as a solvent, wherein said azeotropic or azeotrope-like composition consists essentially of Z-1,1,1,4,4,4-hexafluoro-2-butene and cyclopentane.

8. A process for producing an aerosol product comprising using an azeotropic or azeotrope-like composition as a propellant, wherein said azeotropic or azeotrope-like composition consists essentially of Z-1,1,1,4,4,4-hexafluoro-2-butene and cyclopentane.

9. A process comprising using an azeotropic or azeotrope-like composition as a heat transfer media, wherein said azeotropic or azeotrope-like composition consists essentially of Z-1,1,1,4,4,4-hexafluoro-2-butene and cyclopentane.

10. A process for extinguishing or suppressing a fire comprising using an azeotropic or azeotrope-like composition as a fire extinguishing or suppression agent, wherein said azeotropic or azeotrope-like composition consists essentially of Z-1,1,1,4,4,4-hexafluoro-2-butene and cyclopentane.

11. A process comprising using an azeotropic or azeotrope-like composition as dielectrics, wherein said azeotropic or azeotrope-like composition consists essentially of Z-1,1,1,4,4,4-hexafluoro-2-butene and cyclopentane.

CLAIMS

1. A composition consisting essentially of:

(a) Z-1,1,1,4,4,4-hexafluoro-2-butene; and

(b) cyclopentane;

wherein said cyclopentane is present in an effective amount to form an azeotrope-like combination with the Z-1,1,1,4,4,4-hexafluoro-2-butene.

2. A composition consisting essentially of:

(a) Z-1,1,1,4,4,4-hexafluoro-2-butene; and

(b) cyclopentane;

wherein said cyclopentane is present in an effective amount to form an azeotropic combination with the Z-1,1,1,4,4,4-hexafluoro-2-butene.

3. A process for preparing a thermoplastic or thermoset foam comprising using the azeotrope-like composition of claim 1 as a blowing agent.

4. A process for preparing a thermoplastic or thermoset foam comprising using the azeotropic composition of claim 2 as a blowing agent.

5. A process for producing refrigeration comprising condensing the azeotrope-like composition of claim 1 and thereafter evaporating said azeotrope-like composition in the vicinity of the body to be cooled.

6. A process for producing refrigeration comprising condensing the azeotropic composition of claim 2 and thereafter evaporating said azeotropic composition in the vicinity of the body to be cooled.

7. A process comprising using the azeotrope-like composition of claim 1 as a solvent.

8. A process comprising using the azeotropic composition of claim 2 as a solvent.

9. A process for producing an aerosol product comprising using the azeotrope-like composition of claim 1 as a propellant.

10. A process for producing an aerosol product comprising using the azeotropic composition of claim 2 as a propellant.

11. A process comprising using the azeotrope-like composition of claim 1 as a heat transfer media.

12. A process comprising using the azeotropic composition of claim 2 as a heat transfer media.

13. A process for extinguishing or suppressing a fire comprising using the azeotrope-like composition of claim 1 as a fire extinguishing or suppression agent.

14. A process for extinguishing or suppressing a fire comprising using the azeotropic composition of claim 2 as a fire extinguishing or suppression agent.

15. A process comprising using the azeotrope-like composition of claim 1 as dielectrics.

16. A process comprising using the azeotropic composition of claim 2 as dielectrics.

17. The azeotrope-like composition of claim 1 consisting essentially of from 68 to 99 weight percent Z-1,1,1,4,4,4-hexafluoro-2-butene and from 32 to 1 weight percent cyclopentane, characterized by: at a temperature of from −20° C. to 150° C., said composition having a difference in dew point pressure and bubble point pressure of less than or equal to 5 percent based upon the bubble point pressure.

18. The azeotropic composition of claim 2 consisting essentially of from about 64.2 mole percent to about 74.4 mole percent Z-1,1,1,4,4,4-hexafluoro-2-butene and from about 35.8 mole percent to about 25.6 mole percent cyclopentane, which has boiling point temperature of from about −20° C. to about 150° C. at a pressure of from about 1.7 psia to about 302 psia.