

UNITED STATES PATENT OFFICE

2,659,704

SELF-SPRAYING ARTIFICIAL SNOW
COMPOSITIONRobert J. Kerr, Oak Park, Ill., assignor to Protective Coatings Corporation, Park Ridge, Ill.,
a corporation of IllinoisNo Drawing. Application August 31, 1953,
Serial No. 377,681

30 Claims. (Cl. 260—23)

1

My invention relates to an improved decorative composition, and more particularly, to an improved self-spraying artificial snow formulation.

For some time "spray snow," or self-spraying artificial snow has been available commercially, particularly as a Christmas season item. In essence, the spray snow is a packaged product which contains a suitable flocking agent or material suspended, dispersed or dissolved in a pressurized normally gaseous propellant, and the snow is sprayed from this package, as desired, through a suitably restricted aperture to obtain a spraying effect from the release of the pressurized gaseous propellant. As the material is thus sprayed, the flocking agent takes the form of flocculent snow-like particles which fall upon and generally adhere to the article or object being sprayed. Certain synthetic resins have been employed as flocking agents, and the most commonly employed propellant has been a Freon gas propellant.

Freons are recognized in the art as a class of polyhalogenated lower alkanes used generally as refrigerants. Such alkanes have not more than two carbon atoms (i. e., methane and ethane) and are at least trihalogenated with the lower molecular weight halogens (i. e., fluorine and chlorine), there being at least one fluorine (F) atom and at least one chlorine (Cl) atom in the molecule; and these compounds have the formula:



wherein n is an integer from 1 to 2, X is Cl or F, and Y is Cl, F or H. Examples: trichloromono-fluoromethane, dichlorodifluoromethane, chlorotrifluoromethane, dichloromonofluoro methane, difluoromonochloromethane, trichlorotrifluoroethane, dichlorotetrafluoroethane, monochloropentafluoroethane, and chlorodifluoromethyl methane, which have boiling points ranging from about -30°C . to 50°C .

A "gas propellant" is, of course, a gas under the conditions of use; in order to perform its function, it is stored under pressure (as a liquid) and released through an orifice to obtain the propellant effect (as a gas). The Freon gas propellants are thus gases at room temperature.

It will, of course, be appreciated that the spray snow packaged formulation requires a rather

2

substantial quantity of the Freon gas propellant, in order to have an effective spraying or propelling action. On the other hand, the amount of the flocking agent used is a comparatively smaller amount, ranging from the minimum amount that may be used for practical purposes in order to obtain an appreciable quantity of snow from a given packaged unit to the maximum amount which may be used without obtaining a concentration so great that the flocking process during spraying is impeded or effectively destroyed. Heretofore, the most suitable commercially available spray snow formulations contained about 7% acrylic resins and about 93% Freon gas propellant (comprising a mixture of three Freons). As will be appreciated, both the acrylic resins and the Freon gases are relatively expensive. An attempt has been made to reduce the cost of the aforementioned formulation, by substituting phenolic resin for about one-half of the acrylic resin, but it has been found that this formulation has a tendency to undergo bubbling instead of flocking when sprayed at a close range. In fact, it has generally been necessary heretofore to carry out the spraying operation from a distance of at least 36 inches in order to effectively avoid bubbling. This, also, leaves much to be desired in connection with self-spraying snow formulations. The ingredients used in these commercially available snow sprays also have a very distinct odor which is noticeable during the spraying operation and which is undesirable for many purposes.

It is, therefore, an important object of the instant invention to provide an improved self-spraying artificial snow formulation.

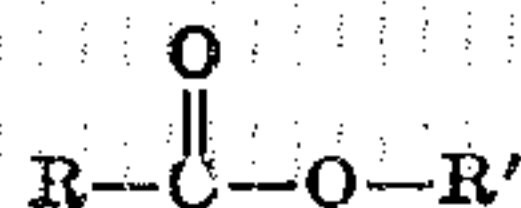
It is a further object of the instant invention to provide a spray snow which flocs without bubbling at very close spraying ranges, which has a substantially increased quantity of active or solid ingredients per packaged unit, and/or which permits the use of ingredients affording better odor control than that heretofore obtainable.

It is a further object of the instant invention to provide an improved self-spraying artificial snow-forming composition comprising a higher fatty acid as a bulking material, a synthetic resin polymer as a flocking agent, a suitable solvent therefor, and a volatile polyhalogenated lower

3

molecular weight alkane refrigerant as the gas propellant.

Still a further object of the instant invention is to provide an improved composition comprising 2-15% of a higher fatty acid, 1½-8½ of a synthetic resin polymer, 10-60% of a solvent therefor, and the balance consisting essentially of a polyhalogenated lower alkane refrigerant, said resin being a polymer of an ester having the formula:

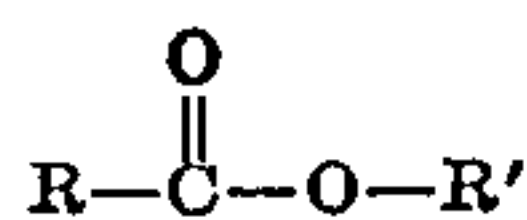


wherein one of the radicals R and R' is an alkenyl radical and the other is an alkyl radical, R has not more than 3 carbon atoms, R' has not more than 4 carbon atoms, an ester wherein R' is unsaturated has a total of 4 carbon atoms, and an ester wherein R is unsaturated has a total of 4-8 carbon atoms.

A more specific object of the instant invention is to provide an improved flocculent sprayed coating of artificial snow consisting essentially of 2-15 parts of stearic acid and 1½-8½ parts of polymethylmethacrylate resin or polyvinylacetate resin; and an improved composition adapted to be sprayed by gas propulsion to form such coating, which consists essentially of the ingredients of said coating intimately dispersed in 10-60 parts of a suitable solvent.

Other and further objects, advantages, and features of my invention will become apparent to those skilled in the art from the following detailed disclosure of preferred embodiments thereof.

My invention consists in an improved self-spraying artificial snow-forming composition comprising a higher fatty acid as a bulking material, a synthetic resin polymer as a flocking agent, a suitable solvent therefor, and a volatile polyhalogenated low molecular weight alkane refrigerant as the propellant, said resin being a polymer of an ester having the formula:



wherein one of the radicals R and R' is an alkenyl radical and the other is an alkyl radical, R has not more than 3 carbon atoms, R' has not more than 4 carbon atoms, an ester wherein R' is unsaturated has a total of 4 carbon atoms, and an ester wherein R is unsaturated has a total of 4-8 carbon atoms.

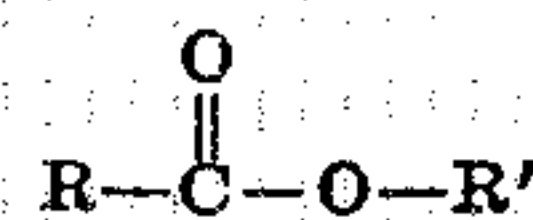
As a bulking agent or material for my composition I have found the higher fatty acids (i. e., C₁₂-C₁₈) to be uniquely superior. Such acids include lauric, myristic, palmitic, stearic, oleic, etc., and the most preferred of these is stearic, which gives definitely superior results. The bulking agent is used, as its function indicates, to replace or supplement a portion of the resin content and for this purpose, it may be used in amounts ranging from about 2% to about 15% of the composition. (As used herein, the term "%," "per cent" and "parts" mean percent and parts by weight unless otherwise specified.) Actually, there are a number of distinct advantages provided by the instant formulation and these include improved spraying performance (particularly by resistance to "bubbling" at close ranges), a "whiter" snow product, a "fluffier" snow product, and an improved odor during spraying (particularly by the "masking" effect of the stearic acid upon the somewhat acrid acrylic acid odor). Another particularly

4

important aspect or advantage is that the instant formulation permits the use of a higher "solids" content. This is a very great advantage in most cases, although there are special situations wherein it is more desirable to use low or minimum "solids" content. Whatever the solids content, the unique synergistic effect obtained by the use of the fatty acid and resin in combination embodies the various advantages just mentioned, and it permits the use of high solids when desired (wherein about 5-15% fatty acid is used).

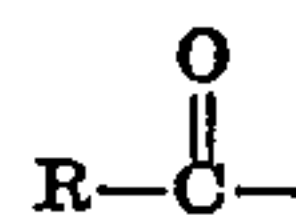
In high solids formulations, the preferred range for the fatty acid is about 8-13%, and the most preferred amount is about 11%. In low solids formulations, the preferred range is about 3 to 8-10%, and the most preferred amount is about 5%. The "overlapping" proportion of 8-10% between the two preferred proportions represents the most preferred proportion in compositions wherein neither extreme of the solids contents is desired, although it is still appreciably above the solids contents heretofore used.

As the resin component, or flocking agent, I have found certain synthetic resin polymers to be particularly suitable, whereas others are substantially or wholly inoperative. The resins of the invention are polymers of an ester having the formula:

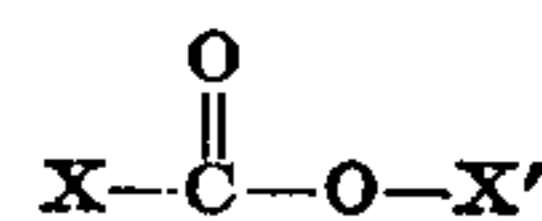


wherein one of the radicals R and R' is an alkenyl radical and the other is an alkyl radical, R has not more than 3 carbon atoms, R' has not more than 4 carbon atoms, an ester wherein R' is unsaturated has a total of 4 carbon atoms, and an ester wherein R is unsaturated has a total of 4-8 carbon atoms.

Referring to the above definition, it will be seen that the ester is vinylacetate, wherein R' is unsaturated and the total number of carbon atoms is consequently four. If R is unsaturated, then the radical



may be methacrylyl or acrylyl, and the radical —O—R' may be methoxy, ethoxy, propoxy or butoxy, R' being an alkyl radical having not more than 4 carbon atoms. Such esters include methylmethacrylate and methylacrylate, ethylmethacrylate and ethylacrylate, propylmethacrylate and so on up to butylmethacrylate. Methylacrylate has a total of four carbon atoms and butylmethacrylate has a total of eight carbon atoms. Of course, mixtures and copolymers may be used. The acrylic polymers just referred to may be defined as polymers of an ester having the following formula:



wherein X is an alkenyl radical having not more than 3 carbon atoms and not more than 2 carbon atoms in a chain, and X' is an alkyl radical having not more than 4 carbon atoms. The most preferred of the acrylic polymers is polymethylmethacrylate resin.

The flocking agent or resin is used, as its function indicates, in combination with the bulking agent to effectively cause suitable flocking of the combined ingredients so as to simulate the texture of snow. Again, high, low or medium solids content formulations may be employed. In general, the flocking agent is used in amounts

ranging from about 1½ to about 8½% of the composition, and in the high solids formulation, it is used in the range 2½-8½% and preferably about 5-7%. Using the most preferred resins, such as polymethylmethacrylate and polyvinylacetate, and the preferred amounts of the bulking agent for the high solids formulation, it has been found that about 6% resin gives superior results.

In the low solids formulation, the preferred amount of resin is about 2-5% and most preferably 3%. In a medium solids formulation, about 4-5% is most preferred.

The solvent is used in the instant sprayable composition so as to obtain an intimate mixture or dispersion of the solid ingredients, namely, the resin and the bulking agent, so that such ingredients may be effectively borne by the gas propellant on to the article to be covered with the resulting snow-like flocculent product. Preferably, the solvent is sufficiently active to effect complete solution of both the solid ingredients, and the solvent is, of course, used in an amount sufficient to accomplish the complete dissolving of such ingredients, so as to provide a single liquid phase which is to be gas-propelled to form the spray. In this single liquid phase, the propellant is, of course, dissolved and the solvent plus the propellant which is miscible therewith should be capable of dissolving entirely the solids content. Such a solvent may be chlorinated hydrocarbon, an ester, an aromatic hydrocarbon, a ketone or even water in some cases. The selection of the most suitable solvent is, in most instances, within the skill of the art, since the solvents for these resins (and fatty acids) are known. Most preferably a volatile solvent, such as acetone, may be used, if no fire hazard is involved, and methylene chloride and/or a non-propellant liquid Freon, such as Freon-11 (trichloromonofluoromethane) may be preferred otherwise. The amount of solvent used may range from about 10% to about 60% of the composition, and about 10-40% is the range for high solids formulations. The preferred ranges are about 25-30% in a high solids formulation, about 30-45% in a medium solids formulation, and about 40-50% in a low solids formulation.

The instant combination of a bulking agent and a flocking resin, intimately dispersed or dissolved in the solvent, is uniquely adapted to be sprayed by suitable gas propulsion to form a synthetic snow coating, which coating ultimately consists of only the fatty acid bulking agent and the flocking resin, since the solvent will be lost by evaporation. The final coating has distinctly superior fluffy, white snow-like texture, and may be obtained in the substantial absence of imperfections resulting from bubbling, even if spraying is carried out from a very close range.

The gas propellant employed is, of course, a Freon refrigerant of the type hereinbefore described. Most preferably, it is one of the particularly volatile or low boiling Freons, such as dichlorodifluoromethane (Freon-12) which has a boiling point of -28° C. It will also be noted that a very substantial portion of the spraying composition consists of the bulking material, the flocking agent and the solvent, so that a substantially smaller proportion of the gas propellant need be used in the instant composition. Also, the instant composition contains, if desired, at least about twice as much active material, which will ultimately result in snow-particle formation, as those heretofore used.

An example of a preferred high solids formulation for use in the instant invention is as follows:

11% bulking agent—stearic acid
6% flocking agent — polymethylmethacrylate resin
28% solvent—acetone
55% propellant—dichlorodifluoromethane

The above formulation was suitably packaged and snow spraying therewith, even a close range of less than 18 inches, resulted in excellent flocking with no bubbling. Substantially, the same results were obtained using polyvinylacetate resin in place of the polymethylmethacrylate resin in the above formulation.

Other formulations which are particularly useful in the practice of the invention include:

	Amount	Range
	Percent	Percent
Low Solids:		
(A) Stearic acid.....	5	3-10
Acrylic resin ¹	3	2-5
Freon-11.....	46	40-50
Freon-12.....	46	Rem.
(B) Stearic acid.....	5	3-10
Acrylic resin ¹	3	2-5
Methylene chloride.....	46	40-50
Freon-12.....	46	Rem.
Medium Solids:		
(C) Stearic acid.....	9	8-10
Acrylic resin ¹	4	4-5
Methylene chloride.....	31	25-35
Freon-11.....	6	0-10
Freon-12.....	50	Rem.
(D) Stearic acid.....	9	8-10
Acrylic resin ¹	4	4-5
Methylene chloride.....	37	30-45
Freon-12.....	50	Rem.
(E) Stearic acid.....	8	8-10
Polyvinylacetate resin.....	5	4-5
Methylene chloride.....	30	30-45
Freon-12.....	57	Rem.
High Solids:		
(F) Stearic acid.....	11	8-13
Acrylic resin ¹	6	5-7
Methylene chloride.....	28	25-30
Freon-12.....	55	Rem.

¹ Acrylic resin: "B-72 Acrylic" (Rohn and Haas) or "Lucite 46" (Du Pont)-polymethylmethacrylate.

Using each of the foregoing formulations, excellent results are obtained in the spraying operation and in the resulting snow product.

It will thus be seen that the instant invention permits the use of as much as two and one-half times more active ingredients than were used heretofore in snow sprays, and the instant invention permits the use of approximately one-half as much Freon than was used heretofore in commercial formulations. In addition, a very substantial amount of the active ingredients consists of a relatively inexpensive fatty acid, stearic acid, which is substantially less expensive than the acrylic resin. The instant bulking agent, unlike phenolic resins heretofore suggested, materially assists in the flocking operation by suitable cooperation with the flocking resin, and in no way impairs the flocking process or causes bubbling or other undesirable phenomenon. Also, the presence of a substantial amount of a solvent which may be selected on the basis of its characteristic odor, or lack thereof, is present in the instant formulation so as to reduce appreciably the odor ordinarily accompanying snow spraying operations.

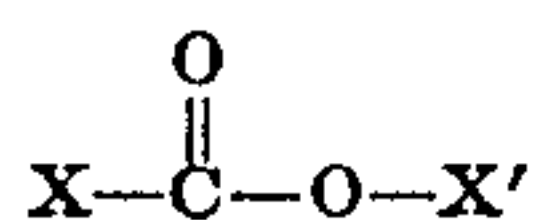
It will be understood that modifications and variations may be effected without departing from the scope of the novel concepts of the present invention.

This is a continuation-in-part of my application Serial No. 318,953, filed November 5, 1952, entitled "Self-Spraying Coating."

7

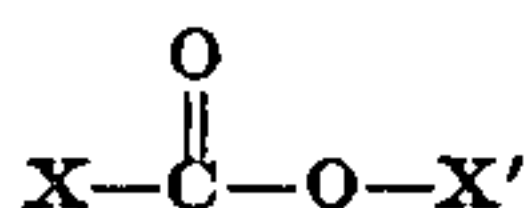
I claim as my invention:

1. A composition comprising 5-15% of a C₁₂-C₁₈ fatty acid, 2½-8½% of a synthetic resin polymer, 10-40% of a solvent for the acid and the resin, and the balance consisting essentially of a polyhalogenated lower alkane refrigerant propellant, said resin being a polymer of an ester selected from the group consisting of vinyl acetate and an ester having the formula:



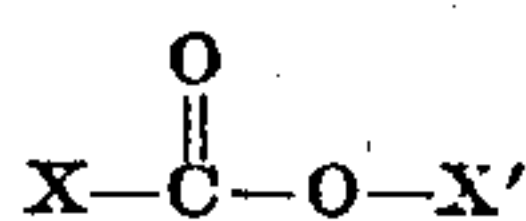
wherein X is a C₂-C₃ alkenyl radical having not more than 2 carbon atoms in a chain and X' is a C₁-C₄ alkyl radical.

2. A composition comprising 8-13% of a C₁₂-C₁₈ fatty acid, 5-7% of a synthetic resin polymer, 25-30% of a solvent for the acid and the resin, and the balance consisting essentially of a polyhalogenated lower alkane refrigerant propellant, said resin being a polymer of an ester selected from the group consisting of vinyl acetate and an ester having the formula:



wherein X is a C₂-C₃ alkenyl radical having not more than 2 carbon atoms in a chain and X' is a C₁-C₄ alkyl radical.

3. A composition comprising 11% of a C₁₂-C₁₈ fatty acid, 6% of a synthetic resin polymer, 25-30% of a solvent for the acid and the resin, and the balance consisting essentially of a polyhalogenated lower alkane refrigerant propellant, said resin being a polymer of an ester selected from the group consisting of vinyl acetate and an ester having the formula:

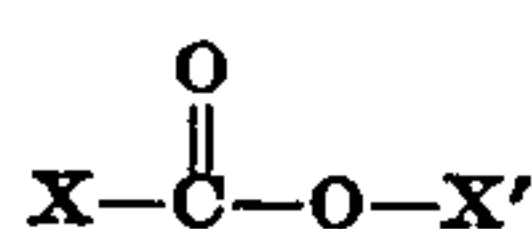


wherein X is a C₂-C₃ alkenyl radical having not more than 2 carbon atoms in a chain and X' is a C₁-C₄ alkyl radical.

4. A composition comprising 5-15% of a C₁₂-C₁₈ fatty acid, 2½-8½% of polyvinylacetate resin as a flocking agent, 10-40% of a solvent for the acid and the resin, and the balance consisting essentially of a polyhalogenated lower alkane refrigerant propellant.

5. A composition comprising 5-15% of a C₁₂-C₁₈ fatty acid, 2½-8½% of polymethylmethacrylate resin as a flocking agent, 10-40% of a solvent for the acid and the resin, and the balance consisting essentially of a polyhalogenated lower alkane refrigerant propellant.

6. A composition comprising 5-15% of stearic acid as a bulking agent, 2½-8½% of a synthetic resin polymer, 10-40% of a solvent for the acid and the resin, and the balance consisting essentially of a polyhalogenated lower alkane refrigerant propellant, said resin being a polymer of an ester selected from the group consisting of vinyl acetate and an ester having the formula:



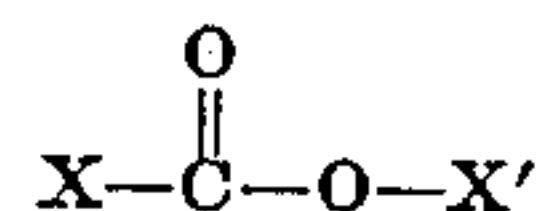
wherein X is a C₂-C₃ alkenyl radical having not more than 2 carbon atoms in a chain and X' is a C₁-C₄ alkyl radical.

7. A composition comprising 5-15% of stearic acid as a bulking agent, 2½-8½% of polymethylmethacrylate resin as a flocking agent, 10-40% of a solvent therefor, and the balance consisting essentially of the dichlorodifluoromethane propellant, the solvent being a solvent for the

8

acid and the resin, and forming a one-phase liquid system with the propellant in the composition.

8. A self-spraying artificial snow-forming composition comprising 8-13% of a C₁₂-C₁₈ fatty acid as a bulking agent, 5-7% of a synthetic resin polymer as a flocking agent, a suitable volatile solvent therefrom, and a volatile polyhalogenated low molecular weight alkane refrigerant as a propellant, said resin being a polymer of an ester selected from the group consisting of vinyl acetate and an ester having the formula:



wherein X is a C₂-C₃ alkenyl radical having not more than 2 carbon atoms in a chain and X' is a C₁-C₄ alkyl radical, the solvent being a solvent for the acid and the resin, and forming a one-phase liquid system with the propellant in the composition.

9. A composition as claimed in claim 8 wherein the bulking agent is stearic acid, the flocking agent is polymethylmethacrylate resin and the propellant is dichlorodifluoromethane.

10. A composition as claimed in claim 8 wherein the bulking agent is stearic acid, the flocking agent is polyvinylacetate resin and the propellant is dichlorodifluoromethane.

11. A composition as claimed in claim 8 wherein the bulking agent is stearic acid, the flocking agent is polymethylmethacrylate resin, the solvent is acetone, and the propellant is dichlorodifluoromethane.

12. A composition as claimed in claim 8 wherein the bulking agent is stearic acid, the flocking agent is polymethylmethacrylate resin, the solvent is methylene chloride, and the propellant is dichlorodifluoromethane.

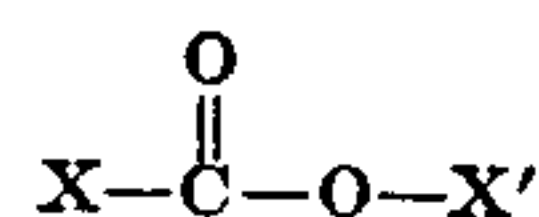
13. A self-spraying artificial snow-forming composition having the following formulation: 11% stearic acid, 6% polymethylmethacrylate resin, 28% acetone, and 55% dichlorodifluoromethane.

14. A self-spraying artificial snow-forming composition having the following formulation: 11% stearic acid, 6% polymethylmethacrylate resin, 28% methylene chloride, and 55% dichlorodifluoromethane.

15. A self-spraying artificial snow-forming composition having the following formulation: 5% stearic acid, 3% polymethylmethacrylate resin, 46% trichloromonofluoromethane, and 46% dichlorodifluoromethane.

16. A self-spraying artificial snow-forming composition having the following formulation: 9% stearic acid, 4% polymethylmethacrylate resin, 31% methylene chloride, 6% trichloromonofluoromethane, and 50% dichlorodifluoromethane.

17. A composition comprising 2-15% of a C₁₂-C₁₈ acid, 1½-8½% of a synthetic resin polymer, 10-60% of a solvent for the acid and the resin, and the balance consisting essentially of a polyhalogenated lower alkane refrigerant propellant, said resin being a polymer of an ester selected from the group consisting of vinyl acetate and an ester having the formula:

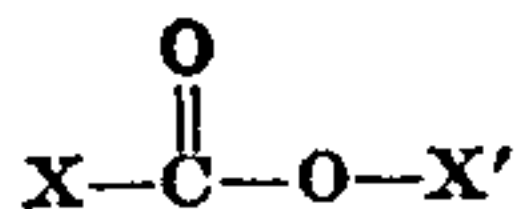


wherein X is a C₂-C₃ alkenyl radical having not more than 2 carbon atoms in a chain and X' is a C₁-C₄ alkyl radical.

18. A composition comprising 3-10% of a

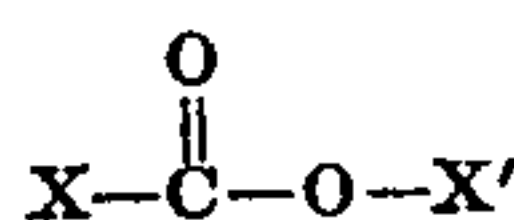
9

C₁₂-C₁₈ fatty acid, 2-5% of a synthetic resin polymer, 40-50% of a solvent for the acid and the resin, and the balance consisting essentially of a polyhalogenated lower alkane refrigerant propellant, said resin being a polymer of an ester selected from the group consisting of vinyl acetate and an ester having the formula:



wherein X is a C₂-C₃ alkenyl radical having not more than 2 carbon atoms in a chain and X' is a C₁-C₄ alkyl radical.

19. A composition comprising 5% of a C₁₂-C₁₈ fatty acid, 3% of a synthetic resin polymer, 40-50% of a solvent for the acid and the resin, and the balance consisting essentially of a polyhalogenated lower alkane refrigerant propellant, said resin being a polymer of an ester selected from the group consisting of vinyl acetate and an ester having the formula:

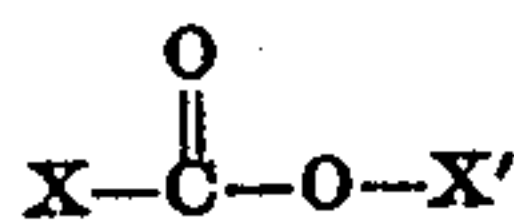


wherein X is a C₂-C₃ alkenyl radical having not more than 2 carbon atoms in a chain and X' is a C₁-C₄ alkyl radical.

20. A composition comprising 3-10% of a C₁₂-C₁₈ fatty acid, 2-5% of a polymethylmethacrylate resin as a flocking agent, 40-50% of a solvent for the acid and the resin, and the balance consisting essentially of a polyhalogenated lower alkane refrigerant propellant.

21. A composition comprising 8-10% of a C₁₂-C₁₈ fatty acid, 4-5% of polymethylmethacrylate resin as a flocking agent, 30-45% of a solvent for the acid and the resin, and the balance consisting essentially of a polyhalogenated lower alkane refrigerant propellant.

22. A composition comprising 2-15% of stearic acid as a bulking agent, 1½-8½% of a synthetic resin polymer, 10-60% of a solvent for the acid and the resin, and the balance consisting essentially of a polyhalogenated lower alkane refrigerant, said resin being a polymer of an ester selected from the group consisting of vinyl acetate and an ester having the formula:

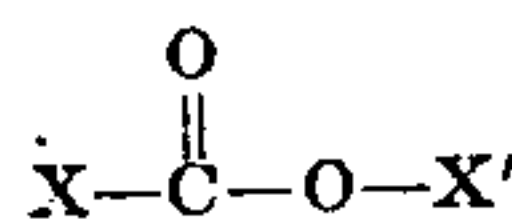


wherein X is a C₂-C₃ alkenyl radical having not more than 2 carbon atoms in a chain and X' is a C₁-C₄ alkyl radical.

23. A composition comprising 2-15% of stearic acid as a bulking agent, 1½-8½% of polymethylmethacrylate resin as a flocking agent, 10-60% of a solvent therefor, and the balance consisting essentially of dichlorodifluoromethane propellant, the solvent being a solvent for the acid and the resin, and forming a one-phase liquid system with the propellant in the composition.

10

24. A self-spraying artificial snow-forming composition comprising 3-10% of C₁₂-C₁₈ fatty acid as a bulking agent, 2-5% of synthetic resin polymer as a flocking agent, a suitable volatile solvent therefor, and a volatile polyhalogenated low molecular weight alkane refrigerant as a propellant, said resin being a polymer of an ester selected from the group consisting of vinyl acetate and an ester having the formula:



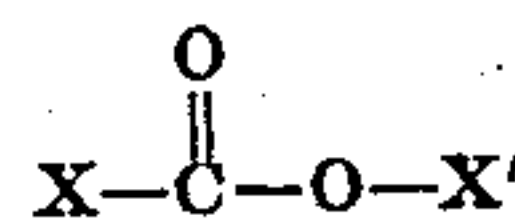
wherein X is a C₂-C₃ alkenyl radical having not more than 2 carbon atoms in a chain and X' is a C₁-C₄ alkyl radical, the solvent being a solvent for the acid and the resin, and forming a one-phase liquid system with the propellant in the composition.

25. A composition as claimed in claim 24 wherein the bulking agent is stearic acid, the flocking agent is polymethylmethacrylate resin and the propellant is dichlorodifluoromethane.

26. A composition as claimed in claim 24 wherein the bulking agent is stearic acid, the flocking agent is polyvinylacetate resin and the propellant is dichlorodifluoromethane.

27. A composition as claimed in claim 24 wherein the bulking agent is stearic acid, the flocking agent is polymethylmethacrylate resin, the solvent is trichloromonofluoromethane, and the propellant is dichlorodifluoromethane.

28. A self-spraying artificial snow-forming composition comprising 8-10% of a C₁₂-C₁₈ fatty acid as a bulking agent, 4-5% of a synthetic resin polymer as a flocking agent, a suitable volatile solvent therefor, and a volatile polyhalogenated low molecular weight alkane refrigerant as a propellant, said resin being a polymer of an ester selected from the group consisting of vinyl acetate and an ester having the formula:



wherein X is a C₂-C₃ alkenyl radical having not more than 2 carbon atoms in a chain and X' is a C₁-C₄ alkyl radical, the solvent being a solvent for the acid and the resin, and forming a one-phase liquid system with the propellant in the composition.

29. A composition as claimed in claim 28 wherein the bulking agent is stearic acid, the flocking agent is polymethylmethacrylate resin and the propellant is dichlorodifluoromethane.

30. A composition as claimed in claim 28 wherein the bulking agent is stearic acid, the flocking agent is polymethylmethacrylate resin, the solvent is methylene chloride, and the propellant is dichlorodifluoromethane.

ROBERT J. KERR.

No references cited.