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DEODORIZING AND CLEANING GARBAGE DISPOSALS

Sharon K. Christie, Long Island City, N.Y., assignor to Universal Oil Products Company, Des Plaines, Ill.
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11 Claims

ABSTRACT OF THE DISCLOSURE

Deodorizing and cleaning garbage disposal by supplying thereto a capsule comprising citrus oil, surfactant and water miscible solvent encapsulated in said capsule.

BACKGROUND OF THE INVENTION

It is well recognized that on occasions household garbage disposal units emit undesirable odors. While one remedy to remove such odors is to drop sections of citrus fruit into the disposal, a sufficient stock of such citrus fruit generally is not available in most cases. Accordingly, there is a need for a ready source of supply for such citrus material.

DESCRIPTION OF THE INVENTION

In addition to providing a ready source of the citrus material, the present invention provides the same in a convenient and easy to use manner, thus eliminating the prior necessity of cutting or peeling the fruit to section the same. Furthermore, the present invention provides a novel mixture which contains a surfactant to emulsify fatty build up and a water miscible solvent to dissolve grease deposits. Accordingly, the novel capsule of the present invention serves both to deodorize and to clean the garbage disposal unit.

In one embodiment the present invention relates to a method of deodorizing a garbage disposal, which comprises supplying thereto a capsule comprising citrus oil, surfactant and water miscible solvent encapsulated in said capsule.

In another embodiment the present invention relates to a novel capsule having the citrus oil, surfactant and water miscible solvent encapsulated therein.

As hereinbefore set forth one component of the capsule is citrus oil. Any suitable citrus oil may be used and may be generically described as a highly terpinated oil. Specifically, the citrus oil is an oil of lemon, orange, lime, grapefruit, etc. In another embodiment a mixture of the citrus oils may be used. In a preferred embodiment, the rind oils are used. It is understood that the specific citrus oil or mixture will be selected to suit the preference of the user.

Another component of the capsule is a surfactant. The surfactant serves to emulsify fatty build up and thus to facilitate the ready removal thereof. Any suitable surfactant may be used and may be of nonionic, anionic, cationic or amphoteric type. A suitable surfactant is of the ethoxylated alkylphenol type, including particularly octylphenoxy polyethoxy ethanol. Another particularly suitable surfactant is the mono or diglycerides. Other surfactants include sulfosuccinates, sulfoadipates, sulfopimelates, sulfosuberates, etc. The surfactant may be of natural or synthetic origin, with the only requirement being that it is liquid and serves to emulsify and thus facilitate the removal of fatty materials.

Illustrative surfactants include (1) sulfated castor oil, (2) sulfates of long chain alcohols prepared by the hydrogenation of fats which may contain from 8 to 20 carbon atoms and more particularly from 10 to 18 carbon atoms, (3) partly esterified polyglycerols and particularly these esterified with one molecule of fatty acid, (4) glycerol

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esters of fatty acids prepared by treating the acid with ethylene oxide, (5) triethanolamine salts of fatty acids, (6) ethoxylated hexylphenol, ethoxylated heptylphenol, ethoxylated octylphenol, ethoxylated nonylphenol, ethoxylated decylphenol, (7) mono or diglycerides of fats or fatty acids containing 8 to 18 carbon atoms, etc.

As hereinbefore set forth any suitable surfactant which serves to emulsify the fatty material in the disposal unit may be used. In one embodiment a preferred surfactant is octylphenoxy polyethoxy ethanol, which surfactant is available commercially under the tradename of "Triton X-100." This surfactant is stated to contain 10 moles of ethylene oxide per molecule and to have a viscosity of 250 centipoises at 77° F. (Brookfield) and a specific gravity of about 1.065 at 77° F. Another preferred surfactant is the mono and diglyceride of fat, which surfactant is available commercially under the tradename of "Arlacel 186" and is stated to have a viscosity of about 150 centipoises at 77° F. and a specific gravity of about 1.0 at 77° F.

Another component of the capsule is a water miscible solvent to dissolve the grease deposits and to facilitate removal thereof from the disposal unit. A particularly preferred solvent is ethylene glycol monobutyl ether, also known as butyl Cellosolve. Other Cellosolves includes methyl Cellosolve, ethyl Cellosolve, propyl Cellosolve, amyl Cellosolve, hexyl Cellosolve, etc. Another suitable solvent is dioxan. Still other solvents may be selected from (1) alcohols, including butanol, pentanol, etc., ethers including dimethyl ether, ethylmethyl ether, diethyl ether, propylmethyl ether, propylethyl ether, dipropyl ether, etc., (2) ketones including acetone, methylethyl ketone, diethyl ketone, propylmethyl ketone, dipropyl ketone, acetylacetone, etc., (3) esters including methyl acetate, methyl propionate, methyl butyrate, ethyl acetate, propyl acetate, etc., as well as mixtures of these.

In still another embodiment, the mixture may contain a cutting oil and particularly a deodorized kerosene fraction. Any high molecular weight, straight chain or branched aliphatic hydrocarbon may be used. In order to avoid possible flammability problems, the hydrocarbon fraction should have an initial boiling point of above about 400° F. Deodorized kerosene is particularly suitable for this purpose, although specialty oils, which have an initial boiling point of about 400° F. and adequately refined to eliminate odors may be used. A number of these cutting oils are available commercially and may be used for the purposes of the present invention.

The components of the mixture as used in any suitable proportions. In one embodiment the mixture may comprise from about 25% to about 90% and preferably from about 50% to about 85% by weight of citrus oil, from about 5% to about 30% and preferably from about 5% to about 20% by weight surfactant, and from about 5% to about 45% and preferably from about 10% to about 30% by weight of solvent. In another embodiment, when cutting oil is employed, the cutting oil may comprise from about 10% to about 60% by weight of the mixture with the other ingredients being in the same relative proportions to each other as hereinbefore set forth. Specific examples of suitable mixtures are set forth in the appended examples. It is understood that the mixture also may contain other ingredients as desired.

The capsule may be formed in any suitable manner, using gum, gelatin or other suitable encapsulating material. The capsule preferably is of the soft or elastic type, and may be prepared in any suitable machine which may be of the flat type, rotary type, reciprocating type, etc. The encapsulation of liquid mixtures is well known in the art and need not be described herein in detail. The capsule may be of any suitable shape, including round, ovoid, etc. The size of the capsule should be small enough

for convenient handling and preferably is within range from about $\frac{1}{4}$ " to about $\frac{3}{4}$ " in diameter. It is understood that the capsule may be of smaller or larger size but preferably will not be above about 1" in diameter, nor below about $\frac{1}{8}$ " in diameter.

The capsules are supplied to the disposal unit in any suitable manner. In a preferred method, all garbage in the disposal unit is first disposed of, then 2 to 4 capsules are dropped into the disposal unit and, with hot water running, the disposal unit is turned on for 10 to 60 and preferably from 15 to 30 seconds. This serves to remove objectionable odors and also to help clean the disposal unit.

The following examples are introduced to further illustrate the novelty and utility of the present invention but not with the intention of unduly limiting the same.

Example I

The citrus oil of this example comprises 70% by weight of orange oil and 10% by weight each of lemon oil, lime oil and grapefruit oil. The mixture for encapsulation comprises 75% by weight of the citrus oils, 10% by weight of butyl Cellosolve surfactant and 15% by weight of Arlacel which, as hereinbefore set forth, is the mono and diglyceride of fat. The above mixture is encapsulated in gum, using a rotary type encapsulating machine. The capsules are round in shape and of $\frac{5}{8}$ " diameter.

Example II

The citrus oil of this example is a mixture of 50% lemon oil and 50% lime oil. The liquid mixture for encapsulation comprises 80% by weight of the citrus oils, 5% by weight of sulfated castor oil surfactant and 15% by weight of the dioxan solvent.

Example III

The mixture of Example I is further mixed with a deodorized kerosine as cutting oil. The mixture is prepared by commingling 70% by weight of the mixture of Example I with 30% by weight of the kerosine fraction, and the resultant mixture is encapsulated in a reciprocating type encapsulating apparatus. The capsules are formed as ovoids of about $\frac{1}{2}$ " diameter and about 1" long.

Example IV

The mixture of Example II is further mixed with deodorized kerosine in proportions of 75% of the former and 25% by weight of the latter. The resultant mixture is encapsulated in gelatin to form round capsules of about $\frac{1}{2}$ " in diameter.

Example V

In use, garbage is disposed of from the disposal unit, after which 2 to 4 capsules prepared as described in any of Examples I through IV are dropped into the disposal unit. With hot water running, the disposal unit is turned on for about 25 seconds. As hereinbefore set forth, this

serves to remove objectionable odors and also to clean the disposal unit.

I claim as my invention:

1. A capsule adapted for use in deodorizing and cleaning garbage disposal units which comprises a capsule of gum or gelatin encapsulating material within which is encapsulated a mixture of from about 25% to about 90% by weight citrus oil, from about 5% to about 20% by weight of a liquid surfactant capable of emulsifying fatty materials and from about 5% to about 45% by weight of water miscible solvent selected from the group consisting of methyl Cellosolve, ethyl Cellosolve, propyl Cellosolve, butyl Cellosolve, amyl Cellosolve, hexyl Cellosolve, dioxan, dipropyl ketone, acetylacetone and propyl acetate.
2. The capsule of claim 1 in which said citrus oil is orange oil.
3. The capsule of claim 1 in which said citrus oil is lemon oil.
4. The capsule of claim 1 in which said citrus oil is lime oil.
5. The capsule of claim 1 in which said citrus oil is grapefruit oil.
6. The capsule of claim 1 in which said citrus oil comprises a mixture of citrus oils.
7. The capsule of claim 1 in which said surfactant is a glyceride of fat.
8. The capsule of claim 1 in which said surfactant is octylphenoxy polyethoxy ethanol.
9. The capsule of claim 1 in which said solvent is ethylene glycol monobutyl ether.
10. The capsule of claim 1 further characterized in that the encapsulated mixture further contains cutting oil, said cutting oil being present in an amount of from about 10% to about 60% by weight of said mixture of citrus oil, surfactant and solvent.
11. A method of deodorizing and cleaning a garbage disposal unit which comprises supplying thereto a capsule of claim 1.

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RICHARD D. LOVERING, Primary Examiner

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