(57) L’invention concerne un procédé de préparation d’un arôme particulaire sensiblement fluide qui consiste à mélanger un arôme oléosoluble à des graisses comestibles fondues présentant un point de fusion allant de 30 °C (85 °F) à 93 °C (200 °F), de manière à obtenir une solution de l’arôme oléosoluble dans les graisses fondues, à refroidir la solution de l’arôme oléosoluble dans les graisses fondues, à ajouter un agent super-réfrigérant avec agitation pendant le refroidissement de la solution de l’arôme oléosoluble dans les graisses fondues de manière à obtenir des particules solides présentant un diamètre moyen compris entre 0,1 et 10 cm et finalement à broyer ces particules avec un agent super-réfrigérant de manière à obtenir un arôme particulaire sensiblement fluide dont les particules présentent un diamètre moyen inférieur à 1 mm.

(57) A process for the preparation of a substantially free flowing particulate flavour which comprises mixing an oil soluble flavour with a melted edible fat having a melting point from 30 °C (85 °F) to 93 °C (200 °F), to form a solution of the oil soluble flavour in the melted fat, cooling the solution of the oil soluble flavour in the melted fat, adding a super-cooling agent with agitation during cooling to the solution of the oil soluble flavour in the melted fat to produce solid particles having an average diameter of from 0.1 to 10 cm and then grinding these particles with a super-cooling agent to produce the substantially free flowing particulate flavour whose particles have an average diameter of less than 1 mm.
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(54) Title: PARTICULATE FLAVOUR COMPOSITION

(57) Abstract

A process for the preparation of a substantially free flowing particulate flavour which comprises mixing an oil soluble flavour with a melted edible fat having a melting point from 30 °C (85 °F) to 93 °C (200 °F), to form a solution of the oil soluble flavour in the melted fat, cooling the solution of the oil soluble flavour in the melted fat, adding a super-cooling agent with agitation during cooling to the solution of the oil soluble flavour in the melted fat to produce solid particles having an average diameter of from 0.1 to 10 cm and then grinding these particles with a super-cooling agent to produce the substantially free flowing particulate flavour whose particles have an average diameter of less than 1 mm.
PARTICULATE FLAVOUR COMPOSITION

FIELD OF THE INVENTION

The present invention relates to a process for preparing a particulate flavour material and more especially to a particulate flavour material comprising a flavour encapsulated or entrapped by a fat.

BACKGROUND OF THE INVENTION

Particulate flavour materials comprising a flavour encapsulated or entrapped by a fat are often prepared commercially by spray-chilling a liquid mixture of flavour and fat to provide discrete particles. However, the spray-chill process requires an expensive spray drier and in this process, the feed mixture of melted fat and oil-soluble flavour at a temperature above the melting point is passed through the spray drier in the normal manner but without any heating, whereby the droplets from the atomizer solidify immediately they hit the cold air yielding the free-flowing powder. One of the difficult problems with the spray-chill process is that all the feed line has to be heated properly without any mistake because the product easily solidifies in the line and, if this happens, it is very difficult to unblock the line. I have developed a process without using a spray drier thus avoiding the above problem and, in addition, the product may have better flow characteristics and better appearance than a product prepared using the spray-chill method.

SUMMARY OF THE INVENTION

According to the present invention, there is provided a process for the preparation of a substantially free flowing particulate flavour which comprises mixing an oil soluble flavour with a melted edible fat having a melting point from 30°C (85°F) to 93°C (200°F) in a reaction vessel to form a solution of the oil soluble flavour in the melted fat, cooling the solution of the oil soluble flavour in the melted fat, adding a super-cooling agent with agitation during cooling to the solution of the oil soluble flavour in the melted fat to produce solid particles having an average diameter of from 0.1 to 10cm, and then grinding these particles with a super-cooling agent to produce the substantially free flowing particulate flavour whose particles have an average diameter of less than 1mm.
DETAILED DESCRIPTION OF THE INVENTION

In the process of the present invention, the fat is preferably melted before the oil soluble flavour is added.

The fat may be any edible fat and may be, for instance, a hydrogenated or partially hydrogenated vegetable oil, a wax or stearine. Preferably, the fat has a melting point of from 40°C (104°F) to 70°C (158°F) and more preferably from 55°C (130°F) to 65°C (155°F).

The melted fat may be heated to a temperature from 2°C to 50°C (5°F to 100°F) above its melting point but preferably the fat is heated to a temperature of from 5°C to 20°C (10°F to 40°F) above its melting point.

Any oil soluble flavour may be used in the process, for example, chicken flavour, cheese flavour, fish flavour, tomato flavour, vegetable flavour, meat flavour, popcorn flavour, or a dairy flavour such as butter flavour. The flavours may be partially or fully oil soluble.

The amount of oil soluble flavour mixed with the fat may be from 0.1 to 50%, preferably from 5 to 40%, and more preferably from 20 to 30% by weight based on the total weight of the mixture.

Cooling of the oil soluble flavour in the melted fat may start by means of cold water or cooling liquid circulating the reaction vessel.

The amount of super-cooling agent added to the solution of the oil soluble flavour in the melted fat may be from 1 to 500%, more usually from 25 to 75% and preferably from 40 to 60% by weight based on the weight of the solution.

The super-cooling agent may be particulate dry ice (solid carbon dioxide), liquid carbon dioxide or liquid nitrogen. The super-cooling agent should be added before the solution of the oil soluble flavour in the melted fat solidifies. The solution of the oil soluble flavour in the melted fat together with the super-cooling agent may be cooled to a temperature as low as 0°C (32°F) but more usually from about
10°C (50°F) to 30°C (86°F) depending on the fat used. The solid particles having an average diameter of from 0.1 to 10cm (mostly "rice" or "bean" sized) which are formed by addition of the super-cooling agent may be stored at freezing temperature until such time as the free-flowing particulate flavour is needed whereupon it may be ground, thus minimising flavour loss.

The present invention therefore also provides a process for preparing solid particles having an average diameter of from 0.1 to 10cm for production of a substantially free flowing particulate flavour which comprises mixing an oil soluble flavour with a melted edible fat having a melting point from 30°C (85°F) to 93°C (200°F) in a reaction vessel to form a solution of the oil soluble flavour in the melted fat, cooling the solution of the oil soluble flavour in the melted fat, adding a super-cooling agent with agitation during cooling to the solution of the oil soluble flavour in the melted fat to produce the solid particles having an average diameter of from 0.1 to 10cm.

The super-cooling agent added for grinding the solid particles is advantageously particulate dry ice (solid carbon dioxide), liquid carbon dioxide or liquid nitrogen. The amount of super-cooling agent added for grinding the solid particles may be from 1 to 500%, more usually from 25 to 75% and preferably from 40 to 60% by weight based on the weight of the solid particles.

The grinding may be carried out simply in a blender or grinder. A cryogenic grinder may also be used. Without the addition of the super-cooling agent, it is not possible to grind owing to the stickiness of the product but with the addition of the super-cooling agent, the temperature falls sufficiently to cause the product to become brittle and easy to grind. The particles may have an average diameter between 30microns and 1mm.

The free-flowing particulate flavour may be added to foodstuffs, e.g. frozen dishes, soups, salad dressings, in the desired proportions, e.g. from 0.01 to 10.0% by weight depending on the foodstuff.
EXAMPLES

The following Example further illustrates the present invention. Parts are given by weight.

Example 1

10 parts of stearine (Melting Point of 58-62°C (136-144°F) are charged in a heating kettle and heated to 76°C (170°F). 2.9 parts of POU-41 oil soluble chicken flavour are added and mixed well to form a solution of the flavour in the stearine. The mixture is then cooled by cold water circulating through the jacket of the heating kettle and during the cooling, 6.3 parts of dry ice powder is added over a period of 15 minutes with agitation. The dry ice solidifies the spot where it contacts the surface immediately, producing "rice" or "bean" size solid particles of flavour encapsulated or entrapped with the stearine having an average diameter of from 0.1 to 10 cm. The temperature fell to 40°C (104°F).

The solidified product is scooped out of the kettle and 2.8 parts of the solidified product together with 3 parts of dry ice powder is fed to a "Reeves" grinder with a 0.032 inch screen (0.8mm) – U.S. Standard Sieve No. 20. After grinding, 2.5 parts of free-flowing flavour is recovered. 0.3 parts of this flavour is added to Lean Cuisine, Frozen, Glazed Chicken Dish produced by Stouffer. The chicken dish is placed in a microwave oven and cooked whereupon there is a good chicken aroma release.

The remaining 10 parts of the ungrounded product is stored in a freezer until needed and then ground at any time thus minimising flavour loss.
CLAIMS:

1. A process for the preparation of a substantially free flowing particulate flavour which comprises mixing an oil soluble flavour with a melted edible fat having a melting point from 30°C (85°F) to 93°C (200°F) in a reaction vessel to form a solution of the oil soluble flavour in the melted fat, cooling the solution of the oil soluble flavour in the melted fat, adding a super-cooling agent with agitation during cooling to the solution of the oil soluble flavour in the melted fat to produce solid particles having an average diameter of from 0.1 to 10cm, and then grinding these particles with a super-cooling agent to produce the substantially free flowing particulate flavour whose particles have an average diameter of less than 1mm.

2. A process according to claim 1 wherein the fat is melted before the oil soluble flavour is added.

3. A process according to claim 1 wherein the fat is a hydrogenated or partially hydrogenated vegetable oil, a wax or stearine.

4. A process according to claim 1 wherein the fat is heated to a temperature of from 2°C to 50°C (5°F to 100°F) above its melting point.

5. A process according to claim 1 wherein the oil soluble flavour is chicken flavour, cheese flavour, fish flavour, tomato flavour, vegetable flavour, meat flavour, popcorn flavour, or a dairy flavour.

6. A process according to claim 1 wherein the amount of oil soluble flavour mixed with the fat is from 0.1 to 50% by weight based on the total weight of the mixture.

7. A process according to claim 1 wherein the super-cooling agent is particulate dry ice powder, liquid carbon dioxide or liquid nitrogen.
8. A process according to claim 1 wherein the amount of super-cooling agent added to the solution of the oil soluble flavour in the melted fat is from 1 to 500% by weight based on the weight of the solution.

9. A process for preparing solid particles having an average diameter of from 0.1 to 10cm for production of a substantially free flowing particulate flavour which comprises mixing an oil soluble flavour with a melted edible fat having a melting point from 30°C (85°F) to 93°C (200°F) in a reaction vessel to form a solution of the oil soluble flavour in the melted fat, cooling the solution of the oil soluble flavour in the melted fat, adding a super-cooling agent with agitation during cooling to the solution of the oil soluble flavour in the melted fat to produce the solid particles having an average diameter of from 0.1 to 10cm.

10. A process according to claim 1 wherein the amount of super-cooling agent added for grinding the solid particles is from 1 to 500% by weight based on the weight of the solid particles.

11. A substantially free flowing particulate flavour obtainable by a process as claimed in any of the preceding claims.