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(54) **A POUCHED PRODUCT FOR ORAL USE COMPRISING A LIQUID PERMEABLE COVER MATERIAL AND A FILLING MATERIAL**

BEUTELPRODUKT ZUR ORALEN VERWENDUNG MIT EINEM FLÜSSIGKEITSDURCHLÄSSIGEN DECKMATERIAL UND EINEM FÜLLMATERIAL

PRODUIT EN SACHET À USAGE ORAL COMPRENANT UN MATÉRIAU DE COUVERTURE PERMÉABLE AUX LIQUIDES ET UN MATÉRIAU DE REMPLISSAGE

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EP 4 018 848 B1

Description

TECHNICAL FIELD

[0001] The present disclosure relates to a pouched product for oral use comprising a liquid permeable cover material and a portion sized amount of a filling material comprising a particulate material, and one or more water soluble components in addition to the particulate material, the filling material being enclosed by the liquid permeable cover material, the particles of the particulate material having a particle density and a bulk density.

BACKGROUND

[0002] An oral pouched product as disclosed herein, is intended for use in the oral cavity, such as by buccal placement e.g., by placing the pouched product between the upper or lower gum and the lip or cheek. A pouched smokeless tobacco product may also be referred to as a portion-packed smokeless tobacco product for oral use. The pouched product is normally sized and configured to fit comfortably and discreetly in a user's mouth between the upper or lower gum and the lip or cheek.

[0003] Traditionally, oral pouched products are used in the oral cavity of a consumer to provide a user with the benefits of an active substance such as nicotine, caffeine, and/or different flavors. A common type of nicotine containing oral pouched products is oral smokeless tobacco products. Such products generally comprise water, salt, pH adjuster(s) and additional components such as flavors and humectants. Commonly, these products are called snuff.

[0004] Oral pouched nicotine containing products comprising no tobacco, or only a small amount of tobacco are now becoming increasingly popular among consumers due to inter alia their appealing appearance, freshness and taste. Moreover, this kind of product allows a user to enjoy nicotine without being exposed to tobacco. The tobacco free or almost tobacco free oral pouched products are usually flavored compositions comprising a filling material which may e.g., comprise microcrystalline cellulose or fiber material derived from plants other than tobacco.

[0005] The tobacco free oral pouched products are generally relatively dry products, with a pre-use moisture content below 35% by weight of the filling material and often below 20% by weight of the filling material. Oral pouched products having even lower moisture content, in the order of 4-10 % by weight of the filling material are also known in the art.

[0006] Further types of oral pouched products are those which only deliver a flavor into the oral cavity and those which are designed for delivering active substances other than nicotine.

[0007] Oral pouched products are typically used by a consumer by placing the pouch between the upper or lower gum and the lip and retaining it there for a limited period of time. The product is configured to fit comfortably and discreetly in the user's mouth. The pouch material holds the filling material in place allowing saliva to pass into the filling material and allowing flavors and active substances such as nicotine to diffuse from the filling material into the consumer's mouth.

[0008] WO 2017/153718 A1 relates to an oral tobacco product comprising a particulate material.

[0009] US 2010/218779 A1 relates to an oral pouch product comprising tobacco material and hydrocolloid particles.

[0010] WO 2010/104464 A1 relates to moisture-soluble alginate particles carrying nicotine.

[0011] WO 2014/096816 A1 relates to a product comprising tobacco and an insoluble foamed material.

[0012] WO 2008/056135 A2 relates to agglomerated tobacco.

[0013] An objective with the disclosure herein is to offer an oral pouched product containing a filling material having improved properties, such as mouthfeel, user satisfaction and rapid release of components, such as active agents and flavors.

SUMMARY

[0014] One or more of the above objects may be achieved with an oral pouched product according to claim 1. Variations of the disclosure are set out in the dependent claims and in the following description.

[0015] The pouched product for oral use as disclosed herein comprises a liquid permeable cover material and a portion sized amount of a filling material comprising a particulate material, and one or more water soluble components in addition to the particulate material. The filling material is enclosed by the liquid permeable cover material. The particles of the particulate material have a particle density and a bulk density, the particle density being at least 1.4 times greater than the bulk density of the particles of the particulate material. The filling material has a pre-use moisture content of from 1% by weight of the filling material to 35% by weight of the filling material.

[0016] The particle density may be from 1.4 to 5 times greater than the bulk density, such as from 1.5 to 4 times greater than the bulk density.

[0017] The difference in particle density and bulk density reflects the amount of void volume in the filling material which is created by the interstices between the particles. When the difference in particle density and bulk density is low, the amount of void volume in the filling material is low. For instance, when there is no or substantially no difference in particle density and bulk density, there is no or substantially no void volume. In contrast, when the difference in particle density and bulk density is high, the amount of void volume will be high. A large void volume allows a correspondingly large amount of saliva to be contained within the bulk of the filling material. The interstices between the particles form a macroscale channel network within the filling material in which

saliva can flow into and out of the filling material. The water soluble components in the filling material can readily dissolve in the saliva and can be rapidly transported out of the filling material in the macro-scale channels formed by the interstices between the particles, resulting in a rapid release of water soluble components into the oral cavity of a user. Mechanical working of the pouch during use may further aid in promoting saliva transport in the filling material and rapid release of water soluble components by changing the configuration of the channel network, thereby creating a "pumping action" within the mass of the filling material.

[0018] The filling material in the oral pouched products as disclosed herein may have a pre-use moisture content as determined by the method disclosed herein of from 1% by weight of the filling material to 30% by weight of the filling material, such as from 1% by weight of the filling material to 25% by weight of the filling material, such as from 1% by weight of the filling material to 15% by weight of the filling material, such as from 1 % by weight of the filling material to 7% by weight of the filling material, such as from 5% by weight of the filling material to 30% by weight of the filling material, such as from 5% by weight of the filling material to 25% by weight of the filling material, such as from 5% by weight of the filling material to 15% by weight of the filling material, such as from 10% by weight of the filling material to 20% by weight of the filling material, such as from 10% by weight of the filling material to 15% by weight of the filling material.

[0019] It may be preferred that the moisture content of the filling material in the oral pouched products as disclosed herein is less than 20% by weight.

[0020] A filling material in an oral pouched product as disclosed herein and having a relatively low pre-use moisture content as set out above, is perceived by users to be fresh and agreeable to handle when taking it out of a user container and tucking it in, e.g. between the upper or lower lip and the gum of the user. A relatively low pre-use moisture content also allows the particles of the particulate material constituting the bulk volume of the filling material to move more freely in relation to each other, which makes the oral pouched product easier to shape and to be made to conform to the shape of the space where the oral pouched product is placed in the oral cavity of the user.

[0021] The particulate material in the filling material consists of water insoluble particles. The water insoluble particles are particles of microcrystalline cellulose, water insoluble starch, silica, or a mixture thereof.

[0022] The particles of the particulate material may be relatively dense, non-porous particles having a particle density in the range of from 1.0 g/cm^3 to 1.7 g/cm^3, such as from 1.0 g/cm^3 to 1.5 g/cm^3, such as from 1.1 g/cm^3 to 1.4 g/cm^3.

[0023] Using dense non-porous particles may enhance rapid release of water soluble components from the filling material as essentially no or only a minor amount of water soluble components will be present in pores within the particles of the filling material.

[0024] The particles of the particulate material may constitute 75% by dry weight to 99% by dry weight of the filling material, such as 85% by dry weight to 98% by dry weight of the filling material or 95% by dry weight to 98% by dry weight of the filling material.

[0025] The bulk volume of the particulate material in the filling material defines the bulk volume of the filling material, with any additional component of the filling material of the oral pouched product contributing only to a negligible or very small extent to the volume of the filling material. By *"a very small extent"* as used herein, is implied a contribution to the bulk volume of the filling material by components other than the particles of the particulate material of less than 5%, such as of less than 3%, of less than 2%, preferably of less than 1%.

[0026] If the particles of the particulate material are water insoluble particles, the oral pouched products of the present disclosure may have a bulk volume after use which is in the same order as the bulk volume before use of the oral pouched product. This means that the bulk volume of the oral pouched product remains largely unchanged during use of the oral pouched product, which is a property of the oral pouched product that has been found to be appreciated by many users. An oral pouched product which does not lose volume during use may be perceived as retaining the mouthfeel of a new fresh product and to be more malleable and satisfactory to keep in the mouth for a longer time of use.

[0027] The particles of the particulate material in the filling material are preferably relatively large particles and may have an average particle size within the range of from 0.3 mm to 3.0 mm, such as from 0.4 mm to 3.0 mm, such as from 0.3 mm to 2.5 mm, such as from 0.4 mm to 2.5 mm such as from 0.5 mm to 2.5 mm, such as from 0.6 mm to 2.5 mm, such as from 0.7 mm to 2 mm, such as from 0.8 mm to 1.5 mm, such as from 0.85 mm to 1.2 mm.

[0028] The particles of the particulate material in the filling material may be of generally the same size, with a narrow particle size distribution profile.

[0029] The particles of the particulate material in the filling material may have a sphericity within the range of from 0.7 to 1.0, such as from 0.8 to 1.0 and a diameter of from 0.3 mm to 3 mm, such as from 0.4 mm to 3 mm such as from 0.7 mm to 3 mm.

[0030] Sphericity and particle size may be determined with the aid of a QicPic image analysis instrument from 2012, Sympatec GmbH, ID No. 290-D, with Rodos/L dispersion line ID NO 214D and Vibri/L sample feeding ID NO 273, or equivalent equipment. A well dispersed particle flow is led through the image plane of the instrument. The particles are separated from each other by a transportation fluid and overlapping particles are avoided. A high number of particles per image frame may be captured.

[0031] The particulate material in the filling material as disclosed herein may contain less than 0.5% of particles

which are small enough to pass through a sieve having a mesh size of 250 μm.

[0032] A mesh size of 250 μm corresponds to a particle size in the order of a small to medium-sized grain of sand. Such particles are extremely unpleasant if they escape out through the cover material into the oral cavity of a user as they give rise to a gritty and dry mouthfeel which may linger for a long time after the product has been placed in the oral cavity, especially if the particles are non-soluble particles.

[0033] Small particles and fines in a filling material may also cause problems with dusting during manufacturing of oral pouched products, as they may impair seal formation and may cause clogging of machine parts. It is also desirable to minimize the amount of dust in the manufacturing process from a health and hygiene perspective.

[0034] The filling material of the oral pouched product as disclosed herein comprises nicotine.

[0035] The large void volume between the particles of the particulate material contributes to provide the oral pouched product with a high release rate for nicotine and other active ingredients, flavours, sweeteners etc., which are present in the oral pouched product.

[0036] The nicotine may be derived from a nicotine source being a nicotine base and/or being selected from the group consisting of nicotine hydrochloride, nicotine dihydrochloride, nicotine monotartrate, nicotine bitartrate, nicotine bitartrate dihydrate, nicotine sulphate, nicotine zinc chloride monohydrate and nicotine salicylate, nicotine benzoate, nicotine polacrilex and any combination thereof.

[0037] The filling material of the oral pouched product as disclosed herein may comprise tobacco material in an amount within the range of from 0.05 wt% to 10 wt%, such as from 0.2 wt% to 1 wt%, based on the total weight of the filling material. In such case the tobacco material may be a nicotine source. The tobacco material may be the only nicotine source or may be a nicotine source in addition to one or more of the nicotine sources disclosed herein.

[0038] The filling material of the oral pouched product as disclosed herein may comprise an additive selected from the group consisting of a flavouring agent, a sweetener, a humectant, and any mixture thereof.

[0039] The additive may comprise or consists of a flavouring agent, such as a flavour oil, such as a hydrophobic flavour oil, such as a synthetic flavour, such as a nature-identical flavour.

[0040] The filling material of the oral pouched product as disclosed herein may be free from tobacco material. A tobacco free filling material may contain material derived from other plant sources such as coffee, tea, herbs, etc., and/or any suitable flavouring agent, sweetener, etc., as known in the art.

[0041] In the pouched product disclosed herein, at least one of the one or more water soluble components may be present on a surface of at least some of the particles of the particulate material in the filling material, such as on 20% to 100 % of the particles, or 50% to 100% of the particles, or 80% to100% of the particles.

[0042] In the pouched product disclosed herein, at least one of the one or more water soluble components may be present in interstices between the particles of the particulate material in the filling material.

[0043] If all or at least a major part of the one or more water soluble components are present on the surfaces and/or in the interstices between the particles of the particulate material in the filling material as opposed to being trapped in pores within the particles of the particulate material, almost complete release of active substances from the filling material may ideally be achieved.

[0044] At least one of the one or more water soluble components may be present both on a surface of at least some of the particles of the particulate material in the filling material and in interstices between the particles in the filling material.

[0045] It may be preferred that no or substantially no water soluble component of the filling material such as nicotine, flavouring agents, sweeteners, etc., is present in an internal pore structure in the particles of the particulate material of the filling material.

[0046] The filling material of the oral pouched product as disclosed herein may comprise more than one type of particles. A first type of particles may be water insoluble particles and a second type of particles may be water insoluble particles or fully or partially water soluble particles.

[0047] The liquid permeable cover material of the oral pouched product may be a nonwoven material.

DEFINITIONS

[0048] The terms *"oral"* and *"oral use"* refer to a use of a product in contact with mucous membranes in the oral cavity of a human being, such as buccal placement of the product in the oral cavity. The products for oral use as disclosed herein are intended to be placed in their entirety in the oral cavity and are not intended to be swallowed.

[0049] As used herein the terms *"pouched product for oral use"* or *"oral pouched product"* refer to a portion of a smokeless composition containing saliva extractables and being packed in a saliva-permeable pouch material.

[0050] A *"particle"* as used herein is a three-dimensional piece of material having a maximum dimension of less than 5 mm and an aspect ratio of from 0.3 to 1. The *"aspect ratio",* A_R, as used herein, is calculated as the width, w, of the particle divided by the length l, of the particle where the length is determined as the largest dimension of the particle and the width is determined as the largest dimension orthogonal to the length: $A_R = l / w$. A particle having an aspect ratio of 1 may e.g., be a perfect sphere or cube. The particles which are useful as the particulate material in the filling material of the oral pouched products disclosed herein may have a regular

shape such as a spherical shape, a cubic shape, a cylindrical shape, etc., or may have an irregular shape with regular or near-regular shapes being generally preferred. The particles may have generally smooth outer surfaces or may have small aberrations in the outer surfaces.

[0051] A *"water insoluble particle"* as referred to herein is a particle which does not dissolve when subjected to saliva in the oral cavity of a user and which retains or substantially retains its shape when incorporated in a pouched product for oral use. The water insolubility also means that the particle size of the water insoluble particles as referred to herein does not diminish or at least does not diminish by more than 1% during use of an oral pouched product incorporating the water insoluble particles. The shape and the size of the water insoluble particles may remain substantially unaffected during use. However, a certain amount of swelling of the water insoluble particles may be permitted or even desired. The swelling should preferably be less than 30 % of the pre-use bulk volume of the water insoluble particles and more preferably less than 20 % of the pre-use bulk volume of the water insoluble particles.

[0052] As used herein, the term *"moisture content"* refers to the percent by weight, wt%, of oven volatile substances, such as water and other oven volatiles (e.g. propylene glycol) which is present in a component material, a composition or a product and is determined according to the Loss On Drying (LOD) method disclosed herein.

[0053] The *"dry weight"* of a material, a composition, or a product is calculated by detracting the amount of moisture from the total weight of the material, composition or product, the moisture content being determined by the Loss On Drying (LOD) method as disclosed herein.

[0054] As used herein, the term *"water content"* refers to the percent by weight, wt%, of water in a component material, a composition, or a product. The water content may be determined by using a standardized method for water analysis, such as Karl Fischer titration or gas chromatography, GC.

[0055] The term *"additional component"* refers to any component except water, which is present in addition to the particles of the particulate material in the filling material as disclosed herein, such as salts (e.g. sodium chloride, potassium chloride, magnesium chloride, calcium chloride and any combinations thereof), pH adjusters (e.g. sodium hydroxide, potassium hydroxide, potassium carbonate, sodium carbonate or sodium bicarbonate), flavouring agents, sweeteners, colorants, humectants (e.g. propylene glycol or glycerol), antioxidants, preservatives (e.g. potassium sorbate), binders, tobacco and non-tobacco plant material. The water-soluble component or water-soluble components which are part of the filling material in the oral pouched products as disclosed herein constitute one or more additional components.

[0056] The terms *"flavour" or "flavouring agent"* are used herein for substances used to influence the aroma and/or taste of the oral pouched product. The flavours may be any food-grade natural or synthetic flavour as known in the art and may include without limitation, essential oils, single flavour compounds, compounded flavourings, and extracts.

[0057] By *"tobacco"* or *"tobacco material"* is meant any part, e.g., leaves, stems, stalks, and flowers, of any member of the genus Nicotiana.

[0058] By a *"cover material"* as used herein is implied any suitable saliva permeable packaging material as known in the art. The cover material may also be referred to as *"pouch material"* and may be a nonwoven material, a material made by conventional textile production methods such as weaving or knitting or may be an apertured plastic film or netting. A nonwoven material suitable for use as cover material may be a nonwoven material comprising staple fibres, such as staple fibres of regenerated cellulose e.g., viscose rayon staple fibres and a binder, such as a polyacrylate binder. Alternatively, the nonwoven material may comprise fibres which are formed into a nonwoven web by spunbonding, hydroentangling, meltblowing, etc. The fibres used in such processes are generally thermoplastic fibres which are thermally bonded to form a coherent nonwoven web. The covering material may optionally comprise additional components such as flavouring agents and/or colorants.

[0059] Pouched products for oral use are normally sized and configured to fit comfortably and discreetly in a user's mouth between the upper or lower gum and the lip. In general, pouched products for oral use have a generally rectangular shape. Some typical shapes (length x width) of commercially available pouched products for oral use are, for instance, 35 mm x 20 mm, 34/35 mm x 14 mm, 33/34 mm x 18 mm, 27/28 mm x 14 mm, 34 mm x 10 mm and 38 x 14 mm. Typical pouched products for oral use may have a maximum length within the range of from 25 mm to 40 mm along the longitudinal direction of the product and a maximum width within the range of from 5 mm to 20 mm along the transverse direction of the product. The pre-use thickness of the pouched product is normally within the range of from 2 mm to 8 mm. The total weight of commercially available pouched products for oral use is typically within the range from about 0.3 g to about 3.5 g, such as from about 0.5 g to 1.7 g, per pouched product. The volume of a portion of filling material in a pouch may be in the range of from 0.5 cm^3 to 1.5 cm^3, depending on the size of the pouch.

[0060] A *"user container"* typically contains in the range of 10-30 pouched products, such as in the range of 20-25 pouched products. The pouched products may be placed randomly in the user container or in a pattern, for instance as described in WO 2012/069505 A1. The user container as disclosed herein is a consumer package having a shape and a size adapted for conveniently carrying the consumer package in a pocket or in a handbag and may be used for packaging any known type of pouched product for oral use. The user container may include a disposal compartment for storage of used oral pouched products. The disposal compartment is separated from the compartment in the container where the fresh oral

pouched products are stored up until use.

BRIEF DESCRIPTION OF THE DRAWINGS

[0061] The present invention will be further explained hereinafter by means of non-limiting examples and with reference to the appended drawings wherein:

Figure 1	shows a pouched product for oral use;
Figure 2	shows a cross-section along the line II-II through the pouched product of Fig. 1;
Figure 3	shows generally spherical particles suitable for use in the oral pouched products as disclosed herein; and
Figures 4a-4d	show some alternative particle shapes.

DETAILED DESCRIPTION

[0062] It is to be understood that the drawings are schematic and that individual components are not necessarily drawn to scale.

[0063] The pouched product 1 for oral use which is shown in Figs. 1 and 2 comprises a liquid permeable cover material 2 and a portion sized amount of a filling material 3 comprising a particulate material constituted by a plurality of particles 4 enclosed by the liquid permeable cover material 2. The cover material 2 may be any suitable type of cover material as disclosed herein and is formed into a generally rectangular pouch into which the filling material 3 has been inserted. The particulate material is preferably, but not necessarily constituted by water insoluble particles.

[0064] A common way of making a pouched product having a generally rectangular pillow-like shape, such as the pouched product 1 shown in Figs. 1 and 2, is either to provide the cover material as a seamless and endless tube or to form a flat web of cover material into an endless tube which is provided with a continuous seal in the longitudinal direction of the endless tube. The endless tube is subsequently intermittently sealed in the transverse direction of the endless tube while filling the endless tube with filling material into pockets which are created between the transverse seals. Individual pouched products are severed from the filled and sealed tube of cover material and are usually packed in user containers. Sealing of the cover material may be made with any suitable method or combination of methods, such as by means of adhesive, heat sealing, ultrasonic welding, needling, etc. Heat sealing and ultrasonic welding require the cover material to contain at least a functional amount of thermoplastic material, such as thermoplastic fibres or thermoplastic binders.

[0065] The longitudinal seal created during manufacturing appears as a longitudinal seal 6 extending along the length l of the pouched product 1 shown in Figs. 1 and 2. No such seal will be present if the cover material is provided in the form of an endless seam-less tube. The transverse seals form end seals 7 which define the width w of the pouched product 1. The pouched product 1 has a first main surface 8 and a second main surface 9 and a thickness t being defined as the greatest perpendicular distance between the first main surface 8 and the second main surface 9.

[0066] The particles 4 of the particulate material may constitute a very high proportion of the total dry weight of the filling material 3, such as 75% by dry weight to 99% by dry weight of the filling material, as set out herein.

[0067] The filling material 3 further comprises one or more water soluble components 11, such as flavours, sweeteners, active ingredients such as nicotine, etc. as disclosed herein.

[0068] A part of a filling material 3 for an oral pouched product as disclosed herein is shown in Fig. 3, the filling material 3 comprising a plurality of generally spherical, preferably water insoluble particles 4.

[0069] The particles 4 of the filling material may have a relatively large average particle size within the range of from 0.3 mm to 3.0 mm. By using large water insoluble particles for the particles 4 of the particulate material in the filling material 3, a major part of the water soluble components 11, i.e. components which are soluble in water and saliva, may to a large extent be present in the filling material 3 on surfaces of the particles 4 which are facing interstices 12 between the particles 4. In this manner, any water soluble components 12 may be substantially "concealed" within the mass of the filling material 3 where they do not add or do not substantially add to the volume of the filling material 3.

[0070] Fig. 3 shows only a very small number of particles 4. In a full portion of filling material 3 for an oral pouched product 1, the number of particles 4 in the particulate material is considerably higher, such as in the order of 150 particles or more which means that a large majority of the particle surfaces will be facing into the filling material 3.

[0071] As disclosed herein, the particles 4 of the particulate material may be dense, non-porous particles having a particle density in the range of from 1.0 g/cm^3 to 1.5 g/cm^3, such as from 1.1 g/cm^3 to 1.4 g/cm^3. In such dense non-porous particles, no, or substantially no water soluble components 11 are present within the particles 4 themselves.

[0072] Figs. 4a, 4b, 4c and 4d illustrate some alternative shapes for the particles 4 of the filling materials 3 as disclosed herein.

[0073] The particles 4 which are shown in Fig. 4a have a substantially cubic shape, the particles 4 which are shown in Fig. 4b are grain-shaped, the particles 4 which are shown in Fig. 4c have a substantially cylindrical shape and the particles 4 which are shown in Fig. 4d have an irregular shape. The particles 4 in Fig. 4a, has an aspect ratio w/l which is approximately 1, while the particles 4 shown in Figs. 4b-4d have a smaller aspect ratio.

Method for determining moisture content, Loss On Drying, LOP

[0074] The moisture content as referred to herein may be determined by using a method based on literature references Federal Register/ vol.74, no. 4/712-719/Wednesday, January 7, 2009/Notices "Total moisture determination" and AOAC (Association of Official Analytical Chemics), Official Methods of Analysis 966.02: "Moisture in Tobacco" (1990), Fifth Edition, K. Helrich (ed). In this method, the moisture content is determined gravimetrically by taking 2.5±0.25 g sample and weighing the sample at ambient conditions, herein defined as being at a temperature of 22°C and a relative humidity of 60%, before evaporation of moisture and after completion of dehydration. Mettler Toledo's Moisture Analyzer HB43, a balance with halogen heating technology, is used (instead of an oven and a balance as in the mentioned literature references) in the experiments described herein. The sample is heated to 105°C (instead of 99.5±0.5°C as in the mentioned literature references). The measurement is stopped when the weight change is less than 1 mg during a 90 seconds time frame. The moisture content as weight percent of the sample is then calculated automatically by the Moisture Analyzer HB43.

Claims

1. A pouched product (1) for oral use comprising a liquid permeable cover material (2) and a portion sized amount of a filling material (3) comprising nicotine, the filling material (3) comprising a particulate material consisting of water insoluble particles (4) of microcrystalline cellulose, water insoluble starch, silica or a mixture thereof, and one or more water soluble components in addition to the particulate material, the filling material (3) being enclosed by the liquid permeable cover material (2), the particles (4) of the particulate material having a particle density and a bulk density, **characterized in that** the particles (4) of the particulate material have a particle density in the range of from 0.9 g/cm^3 to 2.0 g/cm^3, the particle density being at least 1.4 times greater than the bulk density of the particles (4) of the particulate material, and the filling material (3) has a pre-use moisture content of from 1% by weight of the filling material (3) to 35% by weight of the filling material (3), wherein nicotine is present on a surface of at least some of the particles (4) of the particulate material.

2. A pouched product (1) according to claim 1, wherein the particle density is 1.4 to 5 times greater than the bulk density, such as 1.5 to 4 times greater than the bulk density.

3. A pouched product (1) according to any one of the preceding claims, wherein the particles (4) of the particulate material constitute 75% by dry weight to 99% by dry weight of the filling material (3).

4. A pouched product (1) according to any one of the preceding claims, wherein the particles (4) of the particulate material have an average particle size within the range of from 0.3 mm to 3.0 mm, such as within the range of from 0.7 mm to 3.0 mm.

5. A pouched product (1) according to any one of the preceding claims, wherein the particulate material contains less than 0.5% of particles which are small enough to pass through a sieve having a mesh size of 250 μm.

6. A pouched product (1) according to any one of the preceding claims, wherein nicotine is derived from a nicotine source being a nicotine base and/or being selected from the group consisting of nicotine hydrochloride, nicotine dihydrochloride, nicotine monotartrate, nicotine bitartrate, nicotine bitartrate dihydrate, nicotine sulphate, nicotine zinc chloride monohydrate and nicotine salicylate, nicotine benzoate, nicotine polacrilex and any combination thereof.

7. A pouched product (1) according to any one of the preceding claims, wherein the filling material (3) comprises an additive selected from the group consisting of a flavouring agent, a sweetener, a humectant, and any mixture thereof.

8. A pouched product (1) according to claim 7, wherein the additive comprises or consists of a flavouring agent, such as a flavour oil, such as a hydrophobic flavour oil, such as a synthetic flavour, such as a nature-identical flavour.

9. A pouched product (1) according to any one of the preceding claims, wherein the filling material (3) is free from tobacco material.

10. A pouched product (1) according to any one of the preceding claims, wherein at least one of the one or more water soluble components (11) is present on a surface of at least some of the particles (4) of the particulate material, such as on 20% to 100% of the particles (4) of the particulate material, or 50% to 100% of the particles (4) of the particulate material, or 80% to 100% of the particles (4) of the particulate material.

11. A pouched product (1) according to any one of the preceding claims, wherein at least one of the one or more water soluble components (11) is present in interstices (12) between the particles (4) of the particulate material.

12. A pouched product (1) according to any one of the

preceding claims, wherein the liquid permeable cover material (2) is a nonwoven material.

Patentansprüche

1. Beutelprodukt (1) zur oralen Verwendung, umfassend ein flüssigkeitsdurchlässiges Deckmaterial (2) und eine portionierte Menge eines Füllmaterials (3), umfassend Nikotin, wobei das Füllmaterial (3) ein Partikelmaterial bestehend aus wasserunlöslichen Partikeln (4) aus mikrokristalliner Zellulose, wasserunlöslicher Stärke, Kieselsäure oder einer Mischung davon und einen oder mehrere wasserlösliche Bestandteile zusätzlich zu dem Partikelmaterial umfasst, wobei das Füllmaterial (3) von dem flüssigkeitsdurchlässigen Deckmaterial (2) umschlossen ist, wobei die Partikel (4) des Partikelmaterials eine Partikeldichte und eine Schüttdichte aufweisen, **dadurch gekennzeichnet, dass** die Partikel (4) des Partikelmaterials eine Partikeldichte im Bereich von 0,9 g/cm^3 bis 2,0 g/cm^3 aufweisen, wobei die Partikeldichte mindestens 1,4-mal größer ist als die Schüttdichte der Partikel (4) des Partikelmaterials, und das Füllmaterial (3) einen Feuchtigkeitsgehalt vor Verwendung von 1 Gewichtsprozent des Füllmaterials (3) bis 35 Gewichtsprozent des Füllmaterials (3) aufweist, wobei Nikotin auf einer Oberfläche von mindestens einigen der Partikel (4) des Partikelmaterials vorhanden ist.

2. Beutelprodukt (1) nach Anspruch 1, wobei die Partikeldichte 1,4- bis 5-mal größer ist als die Schüttdichte, wie beispielsweise 1,5- bis 4-mal größer als die Schüttdichte.

3. Beutelprodukt (1) nach einem der vorstehenden Ansprüche, wobei die Partikel (4) des Partikelmaterials 75 % des Trockengewichts bis 99 % des Trockengewichts des Füllmaterials (3) darstellen.

4. Beutelprodukt (1) nach einem der vorstehenden Ansprüche, die Partikel (4) des Partikelmaterials eine durchschnittliche Partikelgröße im Bereich von 0,3 mm bis 3,0 mm aufweisen, wie beispielsweise im Bereich von 0,7 mm bis 3,0 mm.

5. Beutelprodukt (1) nach einem der vorstehenden Ansprüche, wobei das Partikelmaterial weniger als 0,5 % Partikel enthält, die klein genug sind, um durch ein Sieb, das eine Maschenweite von 250 μm aufweist, hindurchzugehen.

6. Beutelprodukt (1) nach einem der vorstehenden Ansprüche, wobei Nikotin von einer Nikotinquelle stammt, die eine Nikotinbase ist und/oder ausgewählt ist aus der Gruppe bestehend aus Nikotinhydrochlorid, Nikotindihydrochlorid, Nikotinmonotartrat, Nikotinbitartrat, Nikotinbitartratdihydrat, Nikotinsulfat, Nikotinzinkchloridmonohydrat und Nikotinsalicylat, Nikotinbenzoat, Nikotinpolacrilex und einer beliebigen Kombination davon.

7. Beutelprodukt (1) nach einem der vorstehenden Ansprüche, wobei das Füllmaterial (3) einen Zusatzstoff umfasst, der ausgewählt ist aus der Gruppe bestehend aus einem Aromastoff, einem Süßstoff, einem Feuchthaltemittel und einer beliebigen Mischung davon.

8. Beutelprodukt (1) nach Anspruch 7, wobei der Zusatzstoff einen Aromastoff, wie beispielsweise ein Aromaöl, wie beispielsweise ein hydrophobes Aromaöl, wie beispielsweise ein synthetisches Aroma, wie beispielsweise ein naturidentisches Aroma, umfasst oder daraus besteht.

9. Beutelprodukt (1) nach einem der vorstehenden Ansprüche, wobei das Füllmaterial (3) frei von Tabakmaterial ist.

10. Beutelprodukt (1) nach einem der vorstehenden Ansprüche, wobei mindestens einer des einen oder der mehreren wasserlöslichen Bestandteile (11) auf einer Oberfläche von mindestens einigen der Partikel (4) des Partikelmaterials vorhanden ist, wie beispielsweise auf 20 % bis 100 % der Partikel (4) des Partikelmaterials oder 50 % bis 100 % der Partikel (4) des Partikelmaterials oder 80 % bis 100 % der Partikel (4) des Partikelmaterials.

11. Beutelprodukt (1) nach einem der vorstehenden Ansprüche, wobei mindestens einer des einen oder der mehreren wasserlöslichen Bestandteile (11) in Zwischenräumen (12) zwischen den Partikeln (4) des Partikelmaterials vorhanden ist.

12. Beutelprodukt (1) nach einem der vorstehenden Ansprüche, wobei das flüssigkeitsdurchlässige Deckmaterial (2) ein Vliesmaterial ist.

Revendications

1. Produit en sachet (1) à usage oral comprenant un matériau de couverture perméable aux liquides (2) et une quantité dimensionnée en portions d'un matériau de remplissage (3) comprenant de la nicotine, le matériau de remplissage (3) comprenant un matériau particulaire consistant en particules insolubles dans l'eau (4) de cellulose micro-cristalline, d'amidon insoluble dans l'eau, de silice ou d'un mélange de ceux-ci, et un ou plusieurs composants solubles dans l'eau en plus du matériau particulaire, le matériau de remplissage (3) étant entouré par le matériau de couverture perméable aux liquides (2), les parti-

cules (4) du matériau particulaire présentant une densité particulaire et une densité apparente, **caractérisé en ce que** les particules (4) du matériau particulaire présentent une densité particulaire dans la plage de 0,9 g/cm^3 à 2,0 g/cm^3, la densité particulaire étant au moins 1,4 fois supérieure à la densité apparente des particules (4) du matériau particulaire, et **en ce que** le matériau de remplissage (3) présente une teneur en humidité avant utilisation allant de 1 % en poids du matériau de remplissage (3) à 35 % en poids du matériau de remplissage (3), dans lequel la nicotine est présente sur une surface d'au moins certaines des particules (4) du matériau particulaire.

2. Produit en sachet (1) selon la revendication 1, dans lequel la densité particulaire est 1,4 à 5 fois supérieure à la densité apparente, telle que 1,5 à 4 fois supérieure à la densité apparente.

3. Produit en sachet (1) selon l'une quelconque des revendications précédentes, dans lequel les particules (4) du matériau particulaire constituent 75 % en poids sec à 99 % en poids sec du matériau de remplissage (3).

4. Produit en sachet (1) selon l'une quelconque des revendications précédentes, dans lequel les particules (4) du matériau particulaire présentent une taille moyenne de particule à l'intérieur de la plage de 0,3 mm à 3,0 mm, telle qu'à l'intérieur de la plage de 0,7 mm à 3,0 mm.

5. Produit en sachet (1) selon l'une quelconque des revendications précédentes, dans lequel le matériau particulaire contient moins de 0,5 % de particules qui sont suffisamment petites pour passer à travers un tamis présentant une taille de maille de 250 μm.

6. Produit en sachet (1) selon l'une quelconque des revendications précédentes, dans lequel la nicotine est dérivée d'une source de nicotine qui est une base de nicotine et/ou qui est sélectionnée parmi le groupe consistant en chlorhydrate de nicotine, dihydrochlorure de nicotine, monotartrate de nicotine, bitartrate de nicotine, bitartrate de nicotine dihydraté, sulfate de nicotine, chlorure de zinc de nicotine monohydraté et salicylate de nicotine, benzoate de nicotine, polacrilex de nicotine ainsi que toute combinaison de ces substances.

7. Produit en sachet (1) selon l'une quelconque des revendications précédentes, dans lequel le matériau de remplissage (3) comprend un additif sélectionné parmi le groupe consistant en un agent aromatisant, un édulcorant, un humectant ainsi que tout mélange de ceux-ci.

8. Produit en sachet (1) selon la revendication 7, dans lequel l'additif comprend ou consiste en un agent aromatisant, tel qu'une huile aromatisante, telle qu'une huile aromatisante hydrophobe, telle qu'un arôme synthétique, tel qu'un arôme identique à celui de la nature.

9. Produit en sachet (1) selon l'une quelconque des revendications précédentes, dans lequel le matériau de remplissage (3) est exempt de matériau de tabac.

10. Produit en sachet (1) selon l'une quelconque des revendications précédentes, dans lequel au moins un des un ou plusieurs composants solubles dans l'eau (11) est présent sur une surface d'au moins certaines des particules (4) du matériau particulaire, par exemple sur 20 % à 100 % des particules (4) du matériau particulaire, ou sur 50 % à 100 % des particules (4) du matériau particulaire, ou sur 80 % à 100 % des particules (4) du matériau particulaire.

11. Produit en sachet (1) selon l'une quelconque des revendications précédentes, dans lequel au moins un des un ou plusieurs composants solubles dans l'eau (11) est présent dans des interstices (12) entre les particules (4) du matériau particulaire.

12. Produit en sachet (1) selon l'une quelconque des revendications précédentes, dans lequel le matériau de couverture perméable aux liquides (2) est un matériau non tissé.

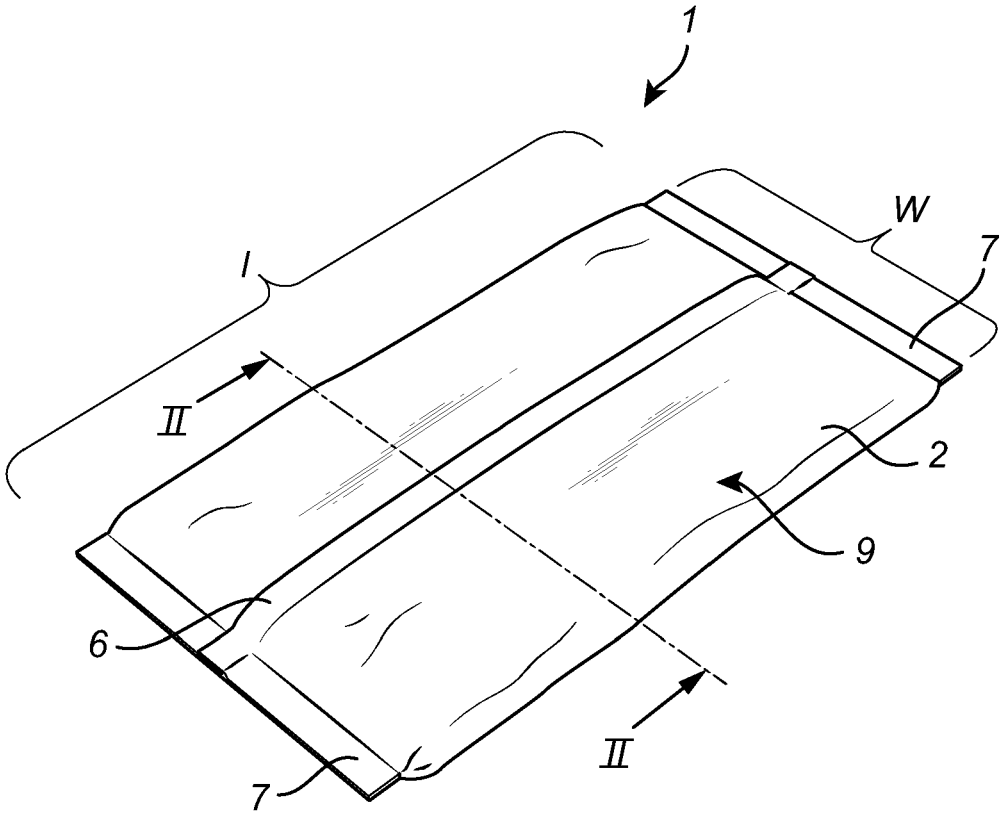

Fig. 1

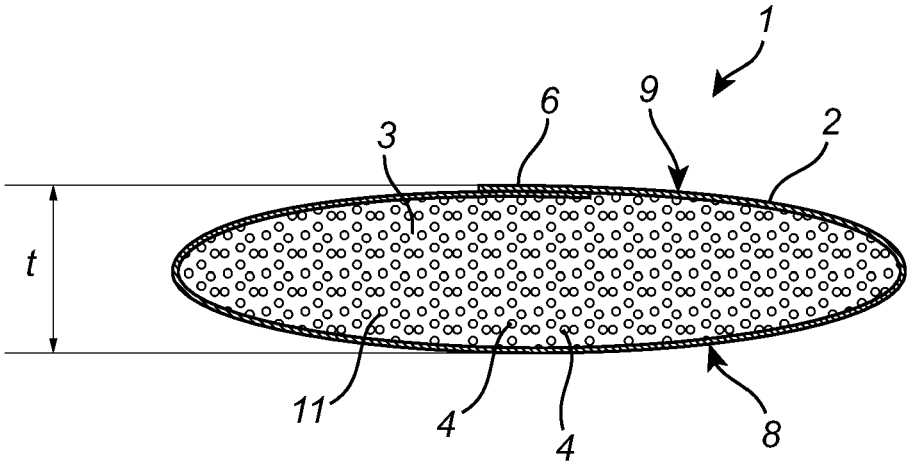

Fig. 2

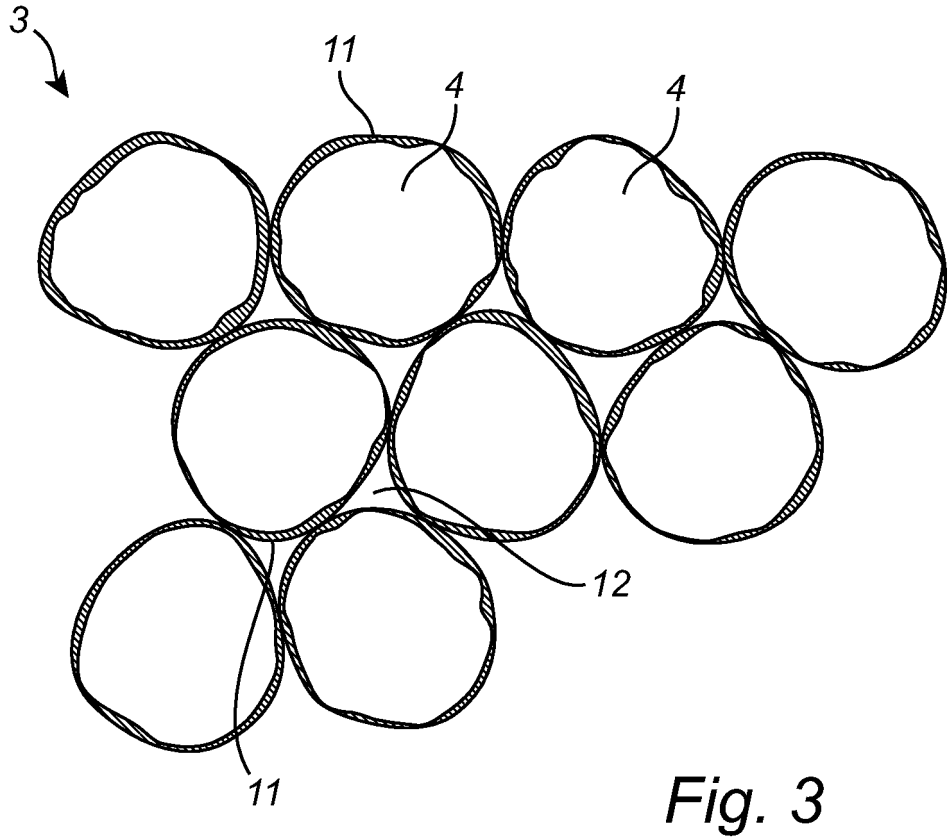

Fig. 3

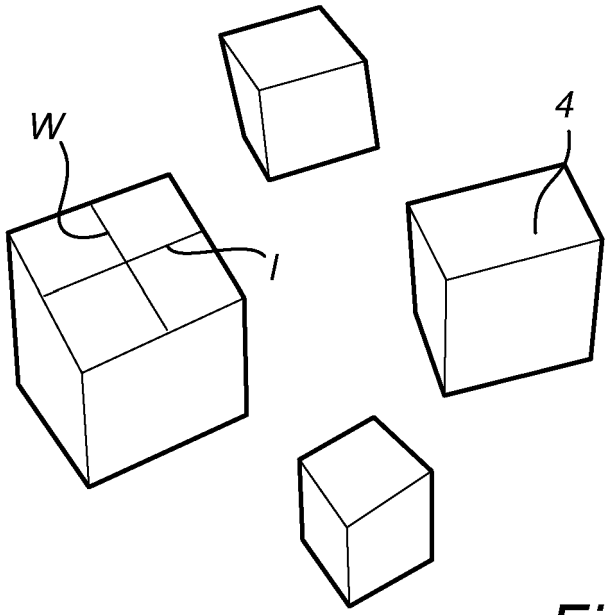

Fig. 4a

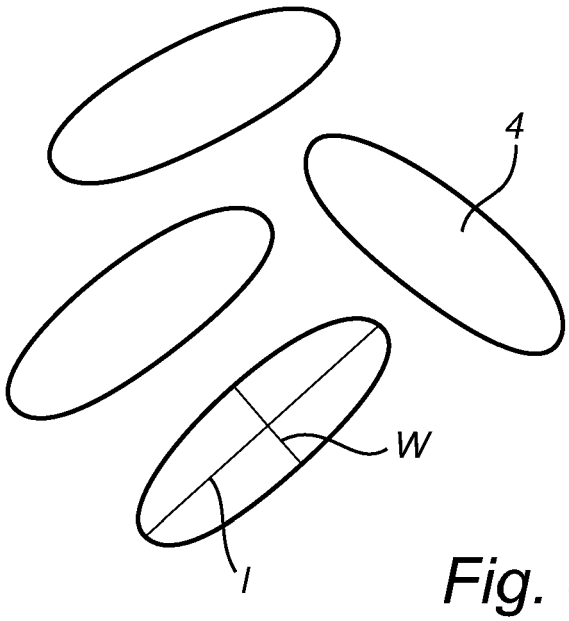

Fig. 4b

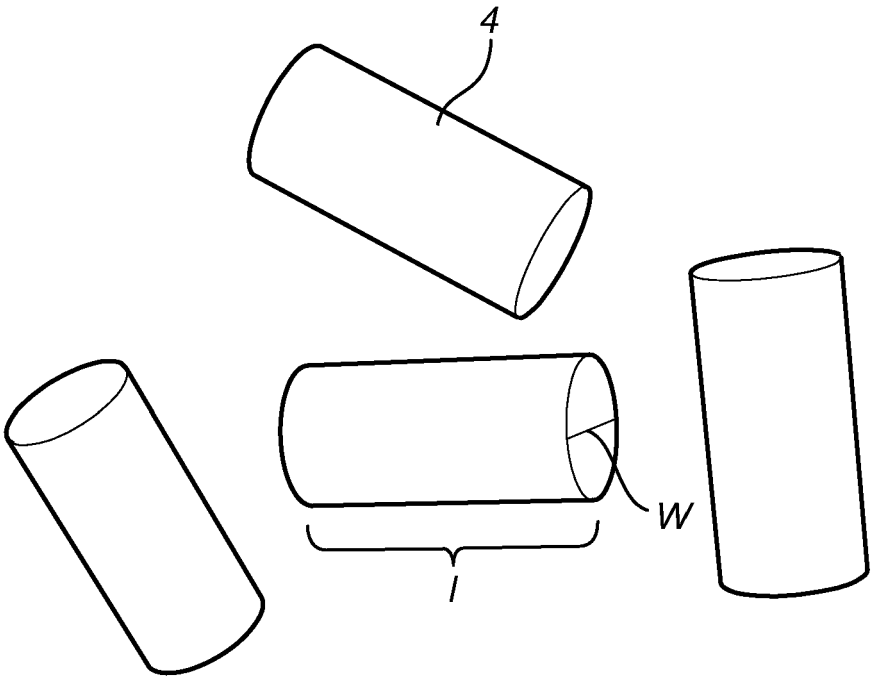

Fig. 4c

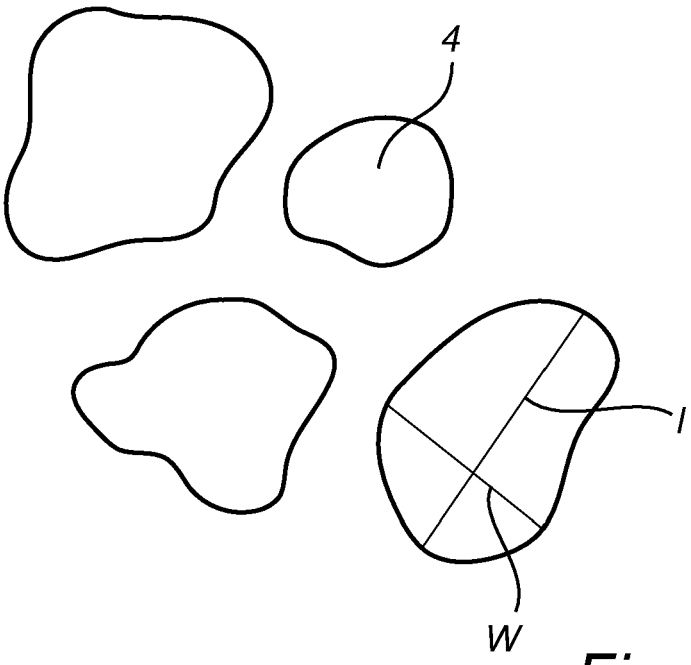

Fig. 4d

REFERENCES CITED IN THE DESCRIPTION

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