



(11) **EP 3 841 894 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
30.10.2024 Bulletin 2024/44

(21) Application number: **20810853.0**

(22) Date of filing: **27.08.2020**

(51) International Patent Classification (IPC):
D21H 17/24 (2006.01) D21H 17/00 (2006.01)

(52) Cooperative Patent Classification (CPC):
D21H 21/14; A24C 5/565; A24D 1/02; A24D 3/04; D21H 17/06; D21H 17/24; D21H 17/72; D21H 27/00

(86) International application number:
PCT/KR2020/011439

(87) International publication number:
WO 2021/085827 (06.05.2021 Gazette 2021/18)

(54) **TIPPING PAPER TO WHICH TECHNOLOGY FOR REDUCING CIGARETTE ODOR ON FINGERS IS APPLIED, SMOKING ARTICLE COMPRISING SAME, AND METHOD FOR MANUFACTURING TIPPING PAPER**

MUNDSTÜCKPAPIER MIT APPLIZIERTER TECHNOLOGIE ZUR REDUZIERUNG VON TABAKGERUCH AUF FINGERN UND RAUCHARTIKEL DAMIT SOWIE VERFAHREN ZUR HERSTELLUNG DES MUNDSTÜCKPAPIERS

PAPIER DE MANCHETTE SUR LEQUEL EST APPLIQUÉE UNE TECHNOLOGIE POUR RÉDUIRE L'ODEUR DE CIGARETTE SUR LES DOIGTS, ARTICLE À FUMER COMPRENANT UN TEL PAPIER DE MANCHETTE, ET PROCÉDÉ DE FABRICATION DE PAPIER DE MANCHETTE

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(30) Priority: **30.10.2019 KR 20190136080**

(43) Date of publication of application:
30.06.2021 Bulletin 2021/26

(73) Proprietor: **KT&G Corporation**
Daedeok-gu
Daejeon 34337 (KR)

(72) Inventors:
• **SEO, Man Seok**
Daejeon 34128 (KR)
• **KIM, Soo Ho**
Daejeon 34128 (KR)

• **KIM, Jong Yeol**
Daejeon 34128 (KR)
• **LEE, Jae Gon**
Daejeon 34128 (KR)

(74) Representative: **Ter Meer Steinmeister & Partner**
Patentanwälte mbB
Nymphenburger Straße 4
80335 München (DE)

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Description

[Technical Field]

[0001] The present invention relates to a tipping paper for smoking articles, and more particularly, to a tipping paper to which a technology capable of reducing a tobacco smell that may cling to fingers of a smoker is applied and a smoking article including the same and a method of producing the tipping paper.

[Background Art]

[0002] Various attempts have been made using a fragrance material to mask a tobacco smell caused by smoking. However, since a tipping paper for smoking articles that comes in direct contact with fingers of a smoker while the smoker smokes requires printing and drying processes in the production process, there is a need to develop a tipping paper for smoking articles, which is capable of masking a tobacco smell on fingers while solving a discoloration issue, a drying process issue, and a curl occurrence issue of the tipping paper, and a smoking article including the same.

[0003] US 2010/108081 A1 presents a filtered cigarette that includes a smokable rod and a filter element. The smokable rod is secured to the filter element using tipping material. The tipping material includes at least one flavorant providing a sensory characteristic. The cigarette may include more than one layer of tipping material. An outer layer of tipping material can overlie at least a portion of an underlying inner layer of tipping material, and during use by the smoker, the outer layer can be removed from the cigarette. Thus, it is possible for a cigarette manufacturer to provide a cigarette that can be used as such by the smoker, or that can be adapted by the smoker to provide a different sensory experience (e.g., the visual, organoleptic, trigeminal, aromatic, and tactile characteristics of the cigarette can be altered by removal of the outer tipping material, and or by provision of a tipping material layer that is treated with a flavorant and/or provides a desirable diffusivity). The use of the outer layer of tipping material can be used to improve the physical integrity of the cigarette.

[0004] CN 109 173 948 A discloses a slow release microcapsule material capable of releasing fragrance, and a preparation method and applications thereof. The slow release microcapsule material comprises, by weight, 10 parts of a perfume, 10 to 60 parts of a microcapsule wall material, and 10 to 50 parts of an emulsifier. When the slow release microcapsule material is used in cigarettes, slow release effect is achieved, the fragrance components in cigarettes can be released slowly, and effect lasts long. The amount and the placing place of the slow release microcapsule material can be adjusted based on the size, zones, and fragrance of cigarette packages; under external force effect or changed external environment, release of fragrance can be accelerated, for example, if the cigarettes are rubbed by fingers, fragrance release of cigarette paper prepared from the slow release microcapsule material is achieved; in smoking process, fragrance release can be accelerated by rubbing of cigarette paper with fingers, or fragrance release of cigarette filters prepared from the slow release microcapsule material capable of releasing fragrance can be accelerated.

[0005] WO 2007/36814 A2 discloses cigarettes which contain a filtering system and flavorants encapsulated with polyvinyl acetate, wherein deactivation of a sorbent by the flavorant is reduced through the encapsulation of the flavorant within the polyvinyl acetate. A preferred flavorant is menthol. The encapsulated flavorants are prepared by mixing at least one flavorant with polyvinyl acetate and a solvent, such as ethanol, and forming the encapsulated flavorants. Methods of making cigarettes and smoking the articles are also provided.

[0006] CN 107 365 628 A relates to an aroma sustained-release agent for cigarettes and a preparation method and application thereof, belonging to the technical field of tobacco. The aroma sustained-release agent for cigarettes comprises an inclusion agent and an included compound, wherein the inclusion agent comprises hydroxypropyl-beta-cyclodextrin and a base fluid in a weight ratio of 1: 1 to 1: 10, the base fluid is water and water-soluble essence and flavor, and the weight percentage of the water-soluble essence and flavor is 0.25% to 50%; and the included compound comprises an alcohol-soluble essence and flavor for cigarettes and an alcohol solvent in a weight ratio of 100: 0 to 30: 70. The aroma sustained-release agent for cigarettes realizes coexistence of alcohol-soluble and water-soluble essence and flavor in a same system, and aroma substances can be uniformly and stably released when cigarettes are smoked.

[0007] WO 92/18020 A1 presents a method for preparing a sheet material for the manufacture of smokable products such as cigars, cigarettes or the like, wherein flavouring substances or compositions are added to the pulp during material manufacture for release only when the smokable product is lit, said substances being incorporated by molecular encapsulation or complexing in cyclodextrins, and wherein steps are taken to ensure that all of said flavouring substances are incorporated in the cyclodextrins. A sheet material produced by the above mentioned method is also provided for wrapping a smokable product or for use as a leaf of reconstituted tobacco manufactured according to a known paper-making technique.

[Disclosure]

[Technical Problem]

[0008] The present invention is directed to providing a tipping paper capable of reducing a tobacco smell on fingers and a smoking article including the same.

[0009] Objectives of the present invention are not limited to the above-mentioned objective, and other unmentioned objectives should be clearly understood by those of ordinary skill in the art to which the present invention pertains from the description below.

[Technical Solution]

[0010] One or more of the above objects are achieved by the subject-matter of the independent claim(s).

[0011] Some embodiments of the present invention provide a tipping paper for smoking articles that surrounds at least a partial region of a smoking material portion and a smoking article filter portion so that the smoking material portion and the smoking article filter portion are combined, the tipping paper including a fragrance carrier which consists of a fragrance material and a carrier material which includes the fragrance material, wherein the fragrance material included in the carrier material is expressed outside the tipping paper in response to moisture, saliva, or friction, and the carrier material is a material soluble in ethanol.

[0012] The carrier material is 2-hydroxypropyl- β -cyclodextrin, and the fragrance material may include at least one or more materials of vanillin and ethyl vanillin.

[0013] A weight ratio of the vanillin with respect to the total weight of the fragrance material may be in a range of 15% to 25%, and a weight ratio of the ethyl vanillin with respect to the total weight of the fragrance material may be in a range of 5% to 15%.

[0014] The fragrance carrier is included in the tipping paper through a fragrance carrier printing process that uses a fragrance carrier ink including the ethanol, the fragrance material, and the carrier material.

[0015] A weight ratio of the fragrance material with respect to the total weight of the fragrance carrier ink is greater than 0% and lower than 1.5%, and a weight ratio of the carrier material with respect to the total weight of the fragrance carrier ink is greater than 0% and lower than or equal to 15%.

[0016] In some embodiments, the fragrance carrier ink may further include a binder, and a weight ratio of the binder with respect to the total weight of the fragrance carrier ink may be greater than 0% and lower than or equal to 15%. The binder may be a polymer material that is soluble in ethanol and has a molecular weight in a range of 3,000 to 20,000 and a glass transition temperature in a range of 60 °C to 90 °C.

[0017] In some embodiments, the fragrance carrier ink may further include microcapsules, and a weight ratio of the microcapsules with respect to the total weight of the fragrance carrier ink may be greater than 0% and lower than or equal to 25%.

[0018] A weight ratio of the binder with respect to the total weight of the fragrance carrier ink may be in a range of 5% to 10%, and a weight ratio of the microcapsules with respect to the total weight of the fragrance carrier ink may be in a range of 5% to 20%. The microcapsules may each have a diameter in a range of 1.5 μ m to 5.0 μ m, the microcapsules may each include polyvinyl alcohol, a fragrance, and a cross-linking agent, and a content ratio of the polyvinyl alcohol and the fragrance included in each microcapsule may be in a range of 1:3 to 1:7.

[0019] The fragrance carrier printing process may be performed after an overprint varnish (OPV) process is applied to the tipping paper.

[0020] The present invention also provides a smoking article including a smoking material portion which is wrapped by a smoking material wrapper, a filter portion whose upstream end is combined with the smoking material portion and which is wrapped by a filter wrapper, and a tipping paper according to the invention which surrounds at least a partial region of the smoking material portion and the filter portion so that the smoking material portion and the filter portion are combined.

[0021] The present invention also provides a method of producing a tipping paper for smoking articles according to claim 11.

[0022] In some embodiments, the method may further include, before the printing step, adding microcapsules to the fragrance carrier ink and stirring a solution obtained thereby, wherein a core of each microcapsule may be an ethanol-based fragrance, a shell of each microcapsule may be polyvinyl alcohol, and the microcapsules may be produced by stirring the ethanol-based fragrance and the polyvinyl alcohol at room temperature, adding a cross-linking agent to a solution in which the ethanol-based fragrance and the polyvinyl alcohol are stirred and stirring a solution obtained thereby at a temperature which is higher than or equal to 60 °C and lower than or equal to 100 °C, and cooling the solution in which the ethanol-based fragrance, the polyvinyl alcohol, and the cross-linking agent are stirred.

[Advantageous Effects]

[0023] According to embodiments of the present invention, since a fragrance material is included in a fragrance carrier material and then a process of printing a fragrance carrier on a tipping paper is applied, it is possible to effectively reduce a smell on fingers caused by smoking and solve a tipping paper curl issue and a tipping paper surface contamination problem which occur due to application of the printing process.

solution in which the carrier material, the fragrance material, and the binder are added to ethanol is used as a fragrance carrier ink and printed on the tipping paper.

[0024] In some embodiments, the method may further include, before the printing step, adding microcapsules to the fragrance carrier ink and stirring a solution obtained thereby, wherein a core of each microcapsule may be an ethanol-based fragrance, a shell of each microcapsule may be polyvinyl alcohol, and the microcapsules may be produced by stirring the ethanol-based fragrance and the polyvinyl alcohol at room temperature, adding a cross-linking agent to a solution in which the ethanol-based fragrance and the polyvinyl alcohol are stirred and stirring a solution obtained thereby at a temperature which is higher than or equal to 60 °C and lower than or equal to 100 °C, and cooling the solution in which the ethanol-based fragrance, the polyvinyl alcohol, and the cross-linking agent are stirred.

[Advantageous Effects]

[0025] According to embodiments of the present invention, since a fragrance material is included in a fragrance carrier material and then a process of printing a fragrance carrier on a tipping paper is applied, it is possible to effectively reduce a smell on fingers caused by smoking and solve a tipping paper curl issue and a tipping paper surface contamination problem which occur due to application of the printing process.

[0026] In addition, since the fragrance material is included in a carrier and printed, it is possible to reduce the amount of fragrance expressed during simple storage of smoking articles and increase the amount of fragrance expressed during smoking.

[0027] Further, since ethanol is used as a solvent for ink used in a fragrance carrier printing process, and the extent to which an ink is dried and the extent to which a curl occurs in the tipping paper are secured at an equivalent level compared to a case in which the fragrance carrier printing process is not applied, it is possible to also secure the workability of printing the fragrance carrier.

[Description of Drawings]

[0028] FIG. 1 is a view illustrating a schematic configuration of a smoking article to which a tipping paper according to some embodiments of the present invention is applied.

[0029] In addition, since the fragrance material is included in a carrier and printed, it is possible to reduce the amount of fragrance expressed during simple storage of smoking articles and increase the amount of fragrance expressed during smoking.

[0030] Further, since ethanol is used as a solvent for ink used in a fragrance carrier printing process, and the extent to which an ink is dried and the extent to which a curl occurs in the tipping paper are secured at an equivalent level compared to a case in which the fragrance carrier printing process is not applied, it is possible to also secure the workability of printing the fragrance carrier.

[Description of Drawings]

[0031]

FIG. 1 is a view illustrating a schematic configuration of a smoking article to which a tipping paper according to some embodiments of the present invention is applied.

FIG. 2 shows results of smoking sensory evaluation relating to smoking articles two weeks after production thereof according to Example 1, Comparative Example 1, and Comparative Example 4.

FIG. 3 shows results of smoking sensory evaluation relating to smoking articles two months after production thereof according to Example 1, Comparative Example 1, and Comparative Example 4.

FIG. 4 shows results of smoking sensory evaluation relating to smoking articles two weeks after production thereof according to Examples 10 to 12 and Comparative Example 1.

[Modes of the Invention]

[0032] Hereinafter, exemplary embodiments of the present invention will be described in detail with reference to the

accompanying drawings. Advantages and features of the present invention and a method of achieving the same should become clear with embodiments described in detail below with reference to the accompanying drawings. However, the present invention is not limited to embodiments disclosed below and may be implemented in various other forms. The embodiments make the disclosure of the present invention complete and are provided to completely inform one of ordinary skill in the art to which the present invention pertains of the scope of the invention. The present invention is defined only by the scope of the claims. Like reference numerals refer to like elements throughout.

[0033] Unless otherwise defined, all terms including technical or scientific terms used herein have the same meaning as commonly understood by those of ordinary skill in the art to which the present invention pertains. Terms defined in commonly used dictionaries should not be construed in an idealized or overly formal sense unless expressly so defined herein.

[0034] Also, in the specification, a singular expression includes a plural expression unless the context clearly indicates otherwise. The terms "comprises" and/or "comprising" used herein do not preclude the presence of or the possibility of adding one or more elements, steps, operations, and/or devices other than those mentioned.

[0035] Terms including ordinals such as "first" or "second" used herein may be used to describe various elements, but the elements are not limited by the terms. The terms are only used for the purpose of distinguishing one element from another element.

[0036] Throughout the specification, "smoking article" may refer to anything capable of generating an aerosol, such as tobacco (cigarette) and cigar. The smoking article may include an aerosol-generating material or an aerosol-forming substrate. Also, the smoking article may include a solid material based on tobacco raw materials, such as reconstituted tobacco leaves, shredded tobacco, and reconstituted tobacco. A smoking material may include a volatile compound.

[0037] Also, throughout the specification, "upstream" or "upstream direction" refers to a direction moving away from an oral region of a user smoking a smoking article 100, and "downstream" or "downstream direction" refers to a direction approaching the oral region of the user smoking the smoking article 100. For example, in the smoking article 100 illustrated in FIG. 1, a smoking material portion 120 is disposed upstream or in an upstream direction from a filter portion 110.

[0038] Further, in the specification, a case in which the smoking article 100 is a combustion-type cigarette is described as an example. However, the present invention is not limited thereto, and the smoking article 100 may also be a heating-type cigarette or the like that is used together with an aerosol generation device (not illustrated) such as an electronic cigarette device.

[0039] FIG. 1 is a view illustrating a schematic configuration of a smoking article to which a tipping paper according to some embodiments of the present invention is applied.

[0040] Referring to FIG. 1, the smoking article 100 may include the filter portion 110 wrapped by a filter wrapper 110a, the smoking material portion 120 wrapped by a smoking material wrapper 120a, and a tipping paper 130 configured to combine the filter portion 110 and the smoking material portion 120.

[0041] The filter portion 110 may be disposed downstream from the smoking material portion 120 and may be a region through which an aerosol material generated in the smoking material portion 120 passes right before being inhaled by the user.

[0042] The filter portion 110 may be formed of various materials. For example, the filter portion 110 may be a cellulose acetate filter.

[0043] In some embodiments, the filter portion 110 may be a cellulose acetate filter not scented with a fragrance material, but the present invention is not limited thereto. The filter portion 110 may also be a transfer jet nozzle system (TINS) filter scented with a fragrance material.

[0044] In some embodiments, the filter portion 110 may be a tubular structure including a hollow formed therein. The filter portion 110 may also be manufactured by inserting structures such as films or tubes formed of the same or different materials therinto (for example, into the hollow).

[0045] Meanwhile, a hardness of the filter portion 110 may be adjusted by controlling the content of plasticizer during manufacture of the filter portion 110. Triacetin may be applied as a plasticizer and included at a weight ratio in a range of 5 to 15% with respect to the total weight of the filter portion 110, but the type and content of the plasticizer are not limited thereto and may be properly controlled as necessary.

[0046] The filter portion 110 of the present embodiment is illustrated as a mono filter formed of a single filter, but the present invention is not limited thereto. For example, the filter portion 110 may, of course, be provided as a dual filter which includes two acetate filters, a triple filter, or the like in order to increase filter efficiency.

[0047] Further, although not illustrated, a capsule (not illustrated) may be included inside the filter portion 110. The capsule may have a structure in which a liquid including a fragrance and filled therein is wrapped by a film. For example, the capsule may have a spherical or cylindrical shape. A diameter of the capsule may be in a range of about 2.6 mm to 3.5 mm but is not limited thereto. The diameter of the capsule may vary according to the standard of the smoking article 100.

[0048] Materials forming the film of the capsule may be a natural material, starch, and/or a gellant. For example, a film made of a natural material may be composed of agar, pectin, sodium alginate, glycerin, and the like. Gellan gum or gelatin may be used as the gellant. Also, a gelation auxiliary agent may be further used as a material forming the film

of the capsule. Here, as the gelation auxiliary agent, for example, calcium chloride may be used. Also, a plasticizer may be further used as a material forming the film of the capsule. Here, as the plasticizer, glycerin and/or sorbitol may be used. Also, a coloring agent may be further used as a material forming the film of the capsule.

[0049] In some embodiments, as a solvent for the fragrance included in the liquid filled in the capsule, for example, a medium chain fatty acid triglyceride (MCTG) may be used. The liquid may also contain other additives such as coloring, an emulsifier, and a thickener.

[0050] A fragrance such as menthol and an essential oil of plants may be included in the liquid filled in the capsule, but the present invention is not limited thereto.

[0051] The filter portion 110 may be wrapped by the filter wrapper 110a. In some embodiments, the filter wrapper 110a may be produced using grease-resistant wrapping paper. In order to prevent a liquid filled in the capsule included in the filter portion 110, which is released to the outside of the capsule due to the smoker crushing the capsule, from passing through the filter wrapper 110a, the filter wrapper 110a may be produced using grease-resistant wrapping paper. In some embodiments, an aluminum foil may be further included at an inner surface of the filter wrapper 110a.

[0052] The filter portion 110 is disposed downstream of the smoking material portion 120 and serves as a filter through which an aerosol material generated in the smoking material portion 120 passes right before being inhaled by the user.

[0053] The smoking material portion 120 may contain an aerosol-generating material. For example, the smoking material portion 120 may include tobacco strands. The smoking material portion 120 may have the form of a longitudinally extending rod which may have various lengths, circumferences, and diameters.

[0054] In some embodiments, the aerosol-generating material may include at least one of glycerin, propylene glycol, ethylene glycol, dipropylene glycol, diethylene glycol, triethylene glycol, tetraethylene glycol, and oleyl alcohol.

[0055] In some embodiments, the smoking material portion 120 may also contain other additives such as a flavoring agent, a wetting agent, and/or an acetate compound. For example, the flavoring agent may include licorice, saccharose, fructose syrup, isosweet, cocoa, lavender, cinnamon, cardamom, celery, fenugreek, cascarrilla, white sandalwood, bergamot, geranium, honey essence, rose oil, vanilla, lemon oil, orange oil, mint oil, cinnamon, caraway, cognac, jasmine, chamomile, menthol, cinnamon, ylang-ylang, sage, spearmint, ginger, cilantro, coffee, or the like. Also, the wetting agent may include glycerin, propylene glycol, or the like.

[0056] In some embodiments, the smoking material portion 120 may include a reconstituted tobacco material which is formed in the shape of pieces of rods or the like by grinding tobacco raw materials, mixing a solvent and various additives with the ground tobacco raw materials to make a tobacco slurry, drying the tobacco slurry to form a tobacco sheet, and then processing the tobacco sheet. For example, the smoking material portion 120 may include a plurality of tobacco material strands, and each strand may have a length in a range of about 10 mm to 14 mm (for example, 12 mm), a width in a range of about 0.8 mm to 1.2 mm (for example, 1 mm), and a thickness in a range of about 0.08 mm to 0.12 mm (for example, 0.1 mm), but the present invention is not limited thereto.

[0057] Since the smoking material portion 120 includes a plurality of strand materials formed by processing a wide tobacco sheet, a density of tobacco materials filled in the smoking material portion 120 may increase. Accordingly, the amount of aerosol generated may be increased, and smoking characteristics of the smoking material portion 120 may be improved.

[0058] The smoking material portion 120 may be wrapped by the smoking material wrapper 120a.

[0059] In some embodiments, the smoking material wrapper 120a may include a filler. Accordingly, an opacity of the smoking material wrapper 120a may be increased, porosity may be imparted to the smoking material wrapper 120a, smoothness and ash integrity of the cigarette paper may be improved, and whiteness of the cigarette paper may be increased. Materials such as calcium carbonate, titanium dioxide, and magnesium oxide may be used as the filler, but the present invention is not limited thereto.

[0060] Also, although not illustrated, the smoking material wrapper 120a may have a double wrapping paper structure. Specifically, the smoking material wrapper 120a may include an inner wrapper (not illustrated) that comes in contact with the smoking material portion 120 and surrounds the smoking material portion 120 and an outer wrapper that comes in contact with the inner wrapper and surrounds an outer portion of the inner wrapper.

[0061] The filter portion 110 wrapped by the filter wrapper 110a and the smoking material portion 120 wrapped by the smoking material wrapper 120a may be wrapped together by the tipping paper 130. That is, the tipping paper 130 may wrap around at least a portion (for example, a partial downstream region) of the smoking material wrapper 120a and an outer boundary of the filter wrapper 110a. In other words, at least a portion of the smoking material portion 120 and the filter portion 110 may be further wrapped by the tipping paper 130 and physically combined.

[0062] In some embodiments, the tipping paper 130 may be produced using nonporous wrapping paper that is not treated to be grease-resistant, but the present invention is not limited thereto.

[0063] The tipping paper 130 may be coated with a sweetener such as sucralose and citric acid. Also, a predetermined material may be added into the tipping paper 130. Silicone may be an example of the predetermined material, but the predetermined material is not limited thereto. For example, silicone has characteristics such as being heat-resistant, i.e., not changing much according to temperature, being oxidation-resistant, i.e., not being oxidized, being resistant to

various chemicals, being water-repellent, and being electrically insulated. However, any material other than silicone may be applied or coated on the tipping paper 130 as long as the material has the above-described characteristics.

[0064] The tipping paper 130 may prevent a phenomenon in which the filter portion 110 is combusted. For example, in a case in which the smoking material portion 120 is combusted up to a portion thereof adjacent to the filter portion 110, there is a possibility that the filter portion 110 may also be combusted. Even in this case, since the tipping paper 130 includes an incombustible material, the phenomenon in which the filter portion 110 is combusted may be prevented.

[0065] Meanwhile, during manufacture of the smoking material wrapper 120a, various attempts have been made as described above, such as including a filler in the smoking material wrapper 120a using various compositions and methods, forming the double wrapping paper structure in the smoking material wrapper 120a, or applying a water-soluble fragrance carrier that includes a fragrance to the smoking material wrapper 120a, in order to reduce a tobacco smell caused by smoke generated during smoking. However, apart from the sidestream smoke reduction effect or the like of the various attempts, since a portion coming in direct contact with fingers of a smoker while the smoker smokes is the tipping paper 130 instead of the smoking material wrapper 120a, a technology for reducing a tobacco smell on fingers that may be directly applied to the tipping paper 130, instead of the smoking material wrapper 120a, is required to effectively reduce the tobacco smell on the fingers.

[0066] Thus, the tipping paper 130 of the present invention includes a fragrance carrier which consists of a fragrance material for masking a tobacco smell and a carrier material for including the fragrance material. The fragrance carrier is included in the tipping paper through a process of printing the fragrance carrier on the tipping paper by using a fragrance carrier ink including ethanol, the fragrance material, and the carrier material.

[0067] The fragrance carrier ink may be produced by sequentially adding the carrier material, the fragrance material, and a binder to the ethanol and stirring solutions obtained thereby. Specifically, the fragrance carrier ink may be produced by: i) adding the carrier material to ethanol and stirring a solution obtained thereby for about 30 minutes to 60 minutes; ii) adding the fragrance material to the solution in which the carrier material is added to ethanol and stirring a solution obtained thereby for about 15 minutes to 45 minutes; and iii) adding the binder to the solution in which the carrier material and the fragrance material are added to ethanol and stirring a solution obtained thereby for about 15 minutes to 45 minutes.

[0068] In a case in which the fragrance carrier ink includes microcapsules which will be described below, the method of producing the fragrance carrier ink may further include, after the step iii), iv) adding microcapsules to the solution in which the carrier material, the fragrance material, and the binder are added to ethanol and stirring a solution obtained thereby for about 15 minutes to 45 minutes.

[0069] The fragrance carrier printing process may be performed by mixing the fragrance carrier with an ink used in an overprint varnish (OPV) process that is performed on the tipping paper. However, preferably, in order to maximize the amount of carried fragrance that is delivered to the tipping paper, the fragrance carrier printing process may be performed as a printing process separate from the OPV process after the OPV process.

[0070] In some embodiments, the fragrance carrier ink may further include a binder and/or microcapsules. The binder and microcapsules will be described in detail below.

[0071] The carrier material in the present invention is a material that is soluble in ethanol but not soluble in water, isopropyl alcohol, and the like. The carrier material is 2-hydroxypropyl- β -cyclodextrin.

[0072] This is because, in reality, a method of applying a water-soluble fragrance carrier material (for example, β -cyclodextrin), which includes a fragrance material, to the above-described smoking material wrapper 120a cannot be applied as is to the tipping paper 130 that requires printing and drying processes. Specifically, when applying the water-soluble fragrance carrier method to the tipping paper 130, water should be used as a solvent for ink. In this case, the surface energy of the ink may be increased to about 70 mN/m to 75 mN/m and thus difficulty may occur in the drying process after the ink is printed on the tipping paper 130, and problems such as contamination of the tipping paper and a phenomenon in which the ink peels off due to weakening of a binding force between the printed ink and the tipping paper may occur. Further, in a case in which a drying temperature or drying time is increased to dry the ink of which the surface energy is increased, a curl of the tipping paper is increased. Unlike the above, in a case in which a fragrance material is printed on the tipping paper without applying the carrier method, due to a characteristic of the tipping paper being disposed at an outermost portion of the smoking article, the fragrance material may be lost to the outside of the smoking article during a period in which the smoking article is stored, or the tipping paper may be discolored according to storage conditions such as light exposure and humidity level.

[0073] On the contrary, in a case in which a polymer material, such as 2-hydroxypropyl- β -cyclodextrin, that is soluble in ethanol and includes a hydrophobic fragrance material, is applied as the carrier material that is applied to the tipping paper as in the present invention, ethanol may be used as a solvent for ink, and thus ink having a surface energy of about 20 mN/m to 50 mN/m may be used. Accordingly, it is possible to apply the printing and drying processes of the tipping paper, and not only the workability of producing smoking articles, but also the stability of storing the smoking articles may be secured because there is no discoloration issue.

[0074] Meanwhile, the fragrance material included in the carrier material may be expressed outside the tipping paper 130 (that is, outside the smoking article 100) in response to moisture, saliva, or friction, and the expressed fragrance

material may be spread to the fingers of the smoker gripping the tipping paper portion and serve to mask the tobacco smell on the fingers.

[0075] Further, since the fragrance material remains included in the carrier material and is not expressed before moisture or saliva is spread from the smoker to the tipping paper or friction is transmitted to the tipping paper (for example, by the smoker gripping or rubbing the tipping paper), a problem in that a scent is lost over the storage period or a problem in that a fragrance is unnecessarily expressed while the smoker is just keeping the smoking article may be solved.

[0076] The fragrance material included in the carrier material may include at least one or more materials of vanillin and ethyl vanillin.

[0077] Meanwhile, as will be described below with reference to Table 7 and Table 8, a sum of weight ratios of the vanillin and ethyl vanillin in consideration of the tipping paper discoloration issue may be greater than 0% and lower than or equal to 50% with respect to the total weight of the fragrance material. Preferably, the weight ratio of vanillin with respect to the total weight of the fragrance material may be greater than 0% and lower than or equal to 30%, and the weight ratio of ethyl vanillin with respect to the total weight of the fragrance material may be greater than 0% and lower than or equal to 20%. More preferably, the weight ratio of the vanillin with respect to the total weight of the fragrance material may be in a range of about 15% to 25%, and the weight ratio of the ethyl vanillin with respect to the total weight of the fragrance material may be in a range of about 5% to 15%.

[0078] The fragrance material may include various components other than the vanillin and ethyl vanillin. Table 1 shows components of the fragrance material which were confirmed to maximize the effect of reducing the tobacco smell on fingers.

[Table 1]

Classification	COMPONENT RATIO (RANKING)
ROSEMARY OIL	1
VANILLIN	2
FERMENTED ETHYL ALCOHOL	3
LAVANDIN OIL	4
ETHYL VANILLIN	5
EUCALYPTOL	6
LIME OIL	7
ANISE OIL	8
DAVANA OIL	9
PEPPERMINT OIL	10
ETHYL MALTOL	11
SPEARMINT OIL	12
ANGELICA ROOT OIL	13
CLARY SAGE OIL	14
2,3,5-TRIMETHYL PYRAZINE	15
GAMMA-HEPTALACTONE	16
HELIOTROPINE	17
BETA-DAMASCENONE	18
BETA-DAMASCONE	19
BENZALDEHYDE	20
RASPBERRY KETONE	21
GAMMA-OCTALACTONE	22
BETA-DAMASCONE	23
ACETANISOLE	24

(continued)

Classification	COMPONENT RATIO (RANKING)
P-ANISYL ALDEHYDE	25
P-METHYL ACETOPHENONE	26
ISOVALERALDEHYDE	27

[0079] In some embodiments, the fragrance material may have a component ratio in the order of rosemary oil>vanillin>fermented ethyl alcohol>lavandin oil>ethyl vanillin>eucalyptol. A content ratio of the vanillin and eucalyptol contained in the fragrance material may be in a range of about 2.5:1 to 3.5:1 (preferably, about 3:1), and a content ratio of the ethyl vanillin and lavandin oil contained in the fragrance material may be in a range of about 0.5:1 to 1.5:1 (preferably, about 1:1), but the present invention is not limited thereto.

[0080] Meanwhile, in a case in which the fragrance carrier ink contains more fragrance material than necessary, a problem may occur in that a fragrance is spread to other tipping paper, to which the fragrance should not be applied, in addition to being spread to the tipping paper of the present invention during a cigarette mass production process, and a problem may occur in that the tipping paper of the present invention is discolored while being stored after being produced.

[0081] To address such problems, according to the invention, the weight ratio of the fragrance material with respect to the total weight of the fragrance carrier ink is greater than 0% and lower than about 1.5%, and the weight ratio of the carrier material with respect to the total weight of the fragrance carrier ink may be greater than 0% and lower than or equal to about 15%. Preferably, the weight ratio of the fragrance material with respect to the total weight of the fragrance carrier ink may be in a range of about 0.4% to 1.3%, and the weight ratio of the carrier material with respect to the total weight of the fragrance carrier ink may be in a range of about 5% to 10%.

[0082] The binder that may be included in the fragrance carrier ink may be an acrylic and starch-based polymer that is soluble in ethanol. Since the binder that may be included in the fragrance carrier ink is included therein, the residual amount of the fragrance material, which is included in the fragrance carrier, in the tipping paper may be increased. That is, the fragrance material or fragrance carrier that may be lost over the storage period of the smoking article after the smoking article is produced may be better preserved in the tipping paper by the binder.

[0083] Meanwhile, for the binder to also secure the workability of printing while serving to preserve the fragrance material, an appropriate viscosity is required for the binder. To this end, the binder may be a polymer material that has a molecular weight in a range of about 1,000 to 30,000 and a glass transition temperature in a range of about 50 °C to 100 °C. Preferably, the binder may be a polymer material that has a molecular weight in a range of about 3,000 to 20,000 and a glass transition temperature in a range of about 60 °C to 90 °C. This is because, when the viscosity of the binder is too low, the ink may flow down, and when the viscosity of the binder is too high, the ink may become stiff, which may degrade the workability and performance of the binder itself.

[0084] Also, as will be described below with reference to Table 4, a fragrance retaining property tends to increase with an increase in an amount of applied binder, but in a case in which too much binder is applied, the curl of the tipping paper may be increased, and there may be difficulty in producing the smoking article.

[0085] To address such difficulty, a weight ratio of the binder with respect to the total weight of the fragrance carrier ink may be greater than 0% and lower than or equal to about 15%. Preferably, the weight ratio of the binder with respect to the total weight of the fragrance carrier ink may be in a range of about 5% to 10%.

[0086] The microcapsules that may be included in the fragrance carrier ink may each include polyvinyl alcohol, a fragrance, and a cross-linking agent. Specifically, a core of each microcapsule may be an ethanol-based fragrance, a shell of each microcapsule may be polyvinyl alcohol, and sodium sulfate (Na_2SO_4) may be used as the cross-linking agent. The fragrance may be an ethanol-based fragrance. The microcapsules may each have a diameter in a range of about 1.5 μm to 5.0 μm .

[0087] In some embodiments, the fragrance may also have the same composition as the fragrance material included in the fragrance carrier material.

[0088] In some embodiments, a content ratio of the polyvinyl alcohol and the fragrance in each microcapsule may be in a range of about 1:3 to 1:7. Preferably, the content ratio of the polyvinyl alcohol and the fragrance in each microcapsule may be about 1:5. For example, each microcapsule may be produced by stirring about 5% polyvinyl alcohol, about 25% fragrance, and about 1.5% cross-linking agent.

[0089] In some embodiments, a weight ratio of the microcapsules with respect to the total weight of the fragrance carrier ink may be greater than 0% and lower than or equal to about 25%, and preferably, may be in a range of about 5% to 20%. In this way, it is possible to address a problem in that a fragrance is excessively expressed before smoking due to breakage of the microcapsules and/or a problem in that the surface of the tipping paper is contaminated by the shells of the microcapsules and roughens, which may occur when the fragrance carrier ink contains an excessive amount

of microcapsules.

[0090] In some embodiments, the weight ratio of the binder with respect to the total weight of the fragrance carrier ink may be in a range of about 5% to 10%, and the weight ratio of the microcapsules with respect to the total weight of the fragrance carrier ink may be in a range of about 5% to 20%. Preferably, the weight ratios of the binder and the microcapsules with respect to the total weight of the fragrance carrier ink may each be about 5%.

[0091] The microcapsules may be produced by: i) stirring an ethanol-based fragrance and polyvinyl alcohol at room temperature for about 15 minutes to 45 minutes; ii) adding a cross-linking agent, at a level of about 30% with respect to the polyvinyl alcohol, to a solution in which the ethanol-based fragrance and the polyvinyl alcohol are stirred and stirring a solution obtained thereby at a temperature which is higher than or equal to about 60 °C and lower than or equal to about 100 °C for about 5 hours to 10 hours; and iii) cooling the solution in which the ethanol-based fragrance, the polyvinyl alcohol, and the cross-linking agent are stirred, at room temperature for about 30 minutes to 2 hours.

[0092] Hereinafter, the configurations of the present invention and the advantageous effects according thereto will be described in more detail using examples and comparative examples. However, the examples are merely for describing the present invention in more detail, and the scope of the present invention is not limited by the examples.

Comparative Example 1

[0093] An OPV printing process was performed on a tipping paper material produced for testing of examples, which had undergone and completed a process of printing a first design and a process of printing a second design different from the first design, and then a drying process was performed at a drying speed of about 150 m/min.

Comparative Example 2

[0094] A printing process using an ink including a water-soluble fragrance carrier including a fragrance material was performed on the tipping paper material of

[0095] Comparative Example 1, which had undergone and completed the OPV printing process and the drying process, and then a drying process was performed at a drying speed of about 150 m/min. In the water-soluble fragrance carrier printing process, a fragrance carrier ink, for which water was used as a solvent and which contained about 1.25% fragrance material(s) of Table 1 above, about 9% β -cyclodextrin, and about 5% water-soluble binder, was used.

Comparative Example 3

[0096] A drying process was performed at a drying speed of about 10 m/min on the tipping paper material of Comparative Example 2, which had undergone and completed the printing process using the ink including the water-soluble fragrance carrier.

Example 1

[0097] The fragrance carrier printing process of the present invention was performed on the tipping paper material of Comparative Example 1, which had undergone and completed the OPV printing process and the drying process, and then a drying process was performed at a drying speed of about 150 m/min. In the fragrance carrier printing process, a fragrance carrier ink, for which ethanol was used as a solvent and which contained about 1.25% fragrance material(s) of Table 1 above, about 9% 2-hydroxypropyl- β -cyclodextrin, and about 5% binder, was used.

Experimental Example 1: Evaluation of drying and curl characteristics of tipping paper after ink is printed on tipping paper

[0098] In order to confirm drying and curl characteristics of the tipping paper produced according to the examples of the present invention after an ink is printed on the tipping paper, the surface energy of ink applied to printing, the extent to which the fragrance carrier is dissolved, the extent to which the ink is dried, and a curl of the tipping paper were analyzed for each of the example and comparative examples, and results thereof are shown in Table 2 below.

[Table 2]

Classification	Details	Drying speed (m/min)	Surface energy of ink (mN/m)	Dissolution of fragrance carrier	Drying of ink	Curl of tipping paper (mm)
Example 1	OPV +fragrance carrier (1.25%) +binder(5.0%)	150	29.2	Good	Good	1.0
Comparative Example 1	OPV only	150	21.2	Not added	Good	0.7
Comparative Example 2	OPV+water-soluble fragrance carrier(1.25%) +water-soluble binder(5.0%)	150	72.4	Good	Not completely dried	-
Comparative Example 3	OPV+ water-soluble fragrance carrier(1.25%) + water-soluble binder (5.0%)	10	72.4	Good	Good	12.0

[0099] As shown in Table 2, the extent to which the fragrance carrier is dissolved was good in all of Example 1 and Comparative Examples 2 and 3. However, in the tipping paper of Comparative Example 2 on which the water-soluble fragrance carrier was printed, it was confirmed that the ink was not completely dried after the printing and drying processes. This is judged to be due to the surface energy of the ink having a high value of 72.4 mN/m, which is due to using water as the solvent for the ink when printing the water-soluble fragrance carrier. In Comparative Example 3 in which the drying speed was lowered to 10 m/min to completely dry the ink for which water was used as the solvent, the extent to which the ink is dried was good, but a curl of the tipping paper occurred at a high numerical value of about 12 mm. Thus, the tipping paper of Comparative Example 3 was found to be not applicable to a cigarette mass production process.

[0100] On the other hand, regarding the tipping paper of Example 1, in which ethanol was used as the solvent for the ink and to which the fragrance carrier and binder were applied, the extent to which the ink is dried was good and a curl of the tipping paper did not show a statistically significant difference from the numerical value thereof according to Comparative Example 1 in which the fragrance carrier printing process was not applied. Thus, it was confirmed that there was no problem at all in applying the tipping paper of Example 1 to a cigarette mass production process.

Example 2

[0101] A tipping paper was removed from a cigarette produced for testing of examples, and a material portion and a filter portion were separated. A smoking article was produced by combining the separated material portion and filter portion using a tipping paper having a porosity of about 100 CU that was produced by applying the OPV process and the fragrance carrier printing process using an ethanol-based fragrance carrier ink containing 0.4% fragrance material.

Example 3

[0102] A smoking article was produced in the same way as in Example 2 except that the ethanol-based fragrance carrier ink contained 0.7% fragrance material.

Example 4

[0103] A smoking article was produced in the same way as in Example 2 except that the ethanol-based fragrance carrier ink contained 1.25% fragrance material.

Comparative Example 5

[0104] A smoking article was produced in the same way as in Example 2 except that the ethanol-based fragrance carrier ink contained 1.5% fragrance material.

Comparative Example 4

[0105] A smoking article was produced in the same way as in Example 2 except that, unlike in Examples 2 to 5, the

fragrance printing process was performed by stirring the fragrance material in the ink without including the fragrance material in a carrier.

Experimental Example 2: Evaluation of index materials of tipping paper for reducing tobacco smell on fingers - no binder applied

[0106] In order to measure the effect of reducing a tobacco smell on fingers when smoking cigarettes according to the examples and the comparative example, changes in contents of vanillin and ethyl vanillin in smoke collected from the tipping paper were analyzed, and results thereof are shown in Table 3 below.

[0107] All of the smoking articles according to the examples and the comparative example were smoked two weeks after being produced. Smoking conditions were set as follows: a puff volume of 55 ml, a puff time of 2 seconds, a puff cycle of 20 seconds, and a puff number of 12. The analysis of contents of vanillin and ethyl vanillin was performed by gas chromatography (GC) analysis of smoke collected by wrapping a Cambridge filter pad (CFP) around the tipping paper 130.

[Table 3]

Classification	Details	Vanillin (mg/g)	Ethylvanillin (mg/g)	Remarks
Example 2	OPV+fragrance carrier (0.40%)	0.012	0.002	-
Example 3	OPV+fragrance carrier (0.70%)	0.021	0.005	-
Example 4	OPV+fragrance carrier (1.25%)	0.040	0.012	-
Comparative Example 5	OPV+fragrance carrier (1.5%)	0.065	0.029	-
Comparative Example 4	OPV+fragrance material (1.25%)	0.028	0.007	Some of the scent was lost during cigarette production

[0108] As shown in Table 3, vanillin and ethyl vanillin components were detected in all of the examples. In this way, it was confirmed that the detected vanillin and ethyl vanillin components may serve to mask a tobacco smell on fingers by coming in contact with the fingers. Meanwhile, from the results of analysis of Example 4 and Comparative Example 4, it can be confirmed that, while the contents of the fragrance material in the ink were the same, more vanillin and ethyl vanillin components were detected in the case in which fragrance carrier printing was performed by including the fragrance material in the carrier material (Example 4) as compared to the case in which fragrance printing was performed without including the fragrance material in a carrier (Comparative Example 4).

[0109] Further, from the results of analysis of Examples 2 to 4 and Comparative Example 5, it was found that the amounts of vanillin and ethyl vanillin components expressed in the tipping paper tended to increase with an increase in the content of the fragrance material in the fragrance carrier ink. However, in the case of Comparative Example 5 in which the content of the fragrance material included in a carrier was 1.5%, a problem occurred in that a fragrance spread to other tipping paper, to which the fragrance should not be applied, in addition to being spread to the tipping paper of the present invention during a cigarette mass production process. It was found that, in Example 4 in which the content of the fragrance material included in a carrier was 1.25%, the effect of reducing a tobacco smell on fingers caused by smoking was excellent and the tipping paper could be applied to cigarette mass production without any problems.

Example 6

[0110] A smoking article was produced in the same way as in Example 4 described above with reference to Table 3, except that the ethanol-based fragrance carrier ink contained 1.0% binder. A polymer material having a molecular weight of about 18,000 and a glass transition temperature of about 80 °C was used as the binder.

Example 7

[0111] A smoking article was produced in the same way as in Example 6 except that the ethanol-based fragrance

carrier ink contained 3.0% binder.

Example 8

[0112] A smoking article was produced in the same way as in Example 6 except that the ethanol-based fragrance carrier ink contained 5.0% binder.

Example 9

[0113] A smoking article was produced in the same way as in Example 6 except that the ethanol-based fragrance carrier ink contained 15.0% binder.

Experimental Example 3: Evaluation of index materials of tipping paper for reducing tobacco smell on fingers - binder applied

[0114] In order to measure the effect of reducing a tobacco smell on fingers when smoking cigarettes according to the examples and the comparative example, changes in contents of vanillin and ethyl vanillin in smoke collected from the tipping paper were analyzed, and results thereof are shown in Table 4 below.

[Table 4]

Classification	Details	Two weeks after production		Two months after production		Remarks
		Vanillin (mg/g)	Ethyl vanillin (mg/g)	Vanillin (mg/g)	Ethyl vanillin (mg/g)	
Comparative Example 4	OPV+fragrance material(125%) +binder(0.0%)	0.028	0.007	0.019	0.003	-
Example 4	OPV+fragrance carrier(1.25%)+binder (0.0%)	0.040	0.012	0.029	0.009	-
Example 6	OPV+fragrance carrier(1.25%)+binder (1.0%)	0.062	0.023	0.043	0.014	-
Example 7	OPV+fragrance carrier(1.25%)+binder (3.0%)	0.121	0.045	0.090	0.040	-
Example 8	OPV+fragrance carrier(1.25%)+binder (5.0%)	0.200	0.070	0.146	0.056	-
Example 9	OPV+fragrance carrier(1.25%)+binder (15.0%)	0.260	0.116	0.235	0.098	Excessive curl occurred in tipping paper

[0115] As shown in Table 4, it was found that the amounts of vanillin and ethyl vanillin components expressed in the tipping paper tended to increase with an increase in the content of the binder in the fragrance carrier ink. However, in the case of Example 9 in which the content of the binder was 15%, there was a problem in that an excessive curl occurred in the tipping paper. It was found that, when the content of the binder was in a range of 5% to 10%, the effect of reducing a tobacco smell on fingers caused by smoking was excellent and the tipping paper curl issue could also be solved.

Example 10

[0116] A smoking article was produced in the same way as in Example 8 described above with reference to Table 4, except that the ethanol-based fragrance carrier ink contained 5.0% microcapsules. As the microcapsules, microcapsules

each having a diameter in a range of about 1.5 μm to 5.0 μm were used, wherein a core of each microcapsule was an ethanol-based fragrance, a shell of each microcapsule was made of polyvinyl alcohol, and Na_2SO_4 was used as a cross-linking agent.

Example 11

[0117] A smoking article was produced in the same way as in Example 10 except that the ethanol-based fragrance carrier ink contained 10.0% binder.

Example 12

[0118] A smoking article was produced in the same way as in Example 11 except that the ethanol-based fragrance carrier ink contained 15.0% microcapsules.

Example 13

[0119] A smoking article was produced in the same way as in Example 12 except that the ethanol-based fragrance carrier ink contained 25.0% microcapsules.

Experimental Example 4: Evaluation of index materials of tipping paper for reducing tobacco smell on fingers - binder applied, microcapsules applied

[0120] In order to measure the effect of reducing a tobacco smell on fingers when smoking cigarettes according to the examples and the comparative example, changes in contents of vanillin and ethyl vanillin in smoke collected from the tipping paper were analyzed, and results thereof are shown in Table 5 below.

[Table 5]

Classification	Details	Vanillin (mg/g)	Ethyl vanillin (mg/g)	Remarks
Example 8	OPV+fragrance carrier(1.25%) +binder(5.0%)	0.200	0.070	
Example 10	OPV+fragrance carrier(1.25%) +binder(5.0%)+ capsules(5.0%)	0.243	0.130	
Example 11	OPV+fragrance carrier(1.25%) +binder(10.0%)+ capsules(5.0%)	0.357	0.231	
Example 12	OPV+fragrance carrier(1.25%) +binder(10.0%)+ capsules(15.0%)	0.541	0.385	
Example 13	OPV+fragrance carrier(1.25%) +binder(10.0%)+ capsules(25.0%)	0.878	0.522	Intensity of external scent increased excessively/ Surface of tipping paper was contaminated

[0121] As shown in Table 5, it was found that the amounts of vanillin and ethyl vanillin components expressed in the tipping paper tended to increase with an increase in the content of the microcapsules in the fragrance carrier ink. However, in the case of Example 13 in which the content of the microcapsules was 25%, the intensity of an external scent generated while a cigarette was stored before being smoked increased excessively, and the surface of the tipping paper was contaminated due to breakage of the microcapsules. It was found that, when the content of the microcapsules is in a range of 10% to 20%, the effect of reducing a tobacco smell on fingers caused by smoking was excellent and the problems relating to the intensity of the external scent and contamination of the surface of the tipping paper could be solved.

Experimental Example 5: Evaluation of workability of printing on tipping paper/workability of subsequent process

[0122] In order to confirm workability of printing on the tipping paper produced according to the examples of the present invention and workability of a subsequent process for producing cigarettes after the printing, physical characteristics of

the tipping paper were analyzed, and results thereof are shown in Table 6 below. In Experimental Example 5, the analysis of physical characteristics of tipping paper was carried out on tipping paper before the tipping paper was assembled to each of the smoking articles according to Example 8 and Examples 10 to 12.

[Table 6]

Classification	Details	Workability of printing	Adhesion between front and rear surfaces of tipping paper	Slip property	Curl of tipping paper (mm)
Comparative Example 1	OPV only	Good	None	Good	0.7
Comparative Example 4	OPV+fragrance material (1.25%)	Good	Good	Good	1.0
Example 8	OPV+fragrance carrier(1.25%) +binder(5.0%)	Good	None	Good	1.0
Example 10	OPV+fragrance carrier(1.25%) +binder(5.0%)+ capsules (5.0%)	Good	None	Good	3.0
Example 11	OPV+fragrance carrier(12.5%) +binder(10.0%)+ capsules (5.0%)	Good	None	Good	5.0
Example 12	OPV+fragrance carrier(12.5%) +binder(10.0%)+capsules (15.0%)	Good	None	Good	4.0

[0123] As shown in Table 6, in all of Example 8 and Examples 10 to 12, the workability of printing on the tipping paper was good, a problem of adhesion between front and rear surfaces of the tipping paper, which may occur when the paper is rolled while the ink is not completely dried and the ink on the front surface is spread to the rear surface, did not occur, the slip property was good without a problem in that the surface of the tipping paper was too slippery or rough, and a curl of the tipping paper was also within an appropriate numerical value range. Accordingly, it was confirmed that, within the scope of the examples, there was no problem in terms of the workability of fragrance carrier printing using the fragrance carrier ink including the fragrance material, binder, and the microcapsules.

Example 14

[0124] A tipping paper was removed from a cigarette produced for testing of examples, and a material portion and a filter portion were separated. A smoking article was produced by combining the separated material portion and filter portion using a tipping paper having a porosity of about 100 CU that was produced by applying the OPV process and the fragrance carrier printing process using an ethanol-based fragrance carrier ink containing 1.25% fragrance material. Here, the fragrance material contained 5% vanillin and 10% ethyl vanillin.

Example 15

[0125] A smoking article was produced in the same way as in Example 14 except that the fragrance material contained 10% vanillin.

Example 16

[0126] A smoking article was produced in the same way as in Example 14 except that the fragrance material contained 20% vanillin.

Example 17

[0127] A smoking article was produced in the same way as in Example 14 except that the fragrance material contained

30% vanillin.

Example 18

- 5 **[0128]** A smoking article was produced in the same way as in Example 14 except that the fragrance material contained 40% vanillin.

Comparative Example 5

- 10 **[0129]** A smoking article was produced in the same way as in Example 15 except that, unlike in Examples 13 to 17, the fragrance printing process was performed by stirring the fragrance material in the ink without including the fragrance material in a carrier.

Experimental Example 6: Evaluation of color stability according to changes in content of vanillin in fragrance material

- 15 **[0130]** For evaluation of color stability of the tipping paper according to changes in content of vanillin in the fragrance material, the degrees of color change of cigarettes immediately after production thereof and cigarettes two months after production thereof were quantified by color difference (ΔE) in the CIELAB color space, and results thereof are shown in Table 7. The cigarettes were stored for two months under conditions of a temperature of about 40 °C and a relative
20 humidity of about 60%.

[Table 7]

Classification	Details	Color change (ΔE)
25 Comparative Example 1	OPV only	0.43
Comparative Example 5	OPV+fragrance material(1.25%) [vanillin(20.0%), ethyl vanillin(10.0%)]	1.26
30 Example 14	OPV+fragrance carrier(1.25%) [vanillin(5.0%), ethyl vanillin(10.0%)]	0.57
Example 15	OPV+fragrance carrier(1.25%) [vanillin(10.0%), ethyl vanillin(10.0%)]	0.71
Example 16	OPV+fragrance carrier(1.25%) [vanillin(20.0%), ethyl vanillin(10.0%)]	0.82
Example 17	OPV+fragrance carrier(1.25%) [vanillin(30.0%), ethyl vanillin(10.0%)]	1.70
35 Example 18	OPV+fragrance carrier(1.25%) [vanillin(40.0%), ethyl vanillin(10.0%)]	2.20

- [0131]** From the results of analysis of Examples 14 to 18, it was found that the degree of discoloration of the tipping paper increased with an increase in the content of vanillin in the fragrance material (while the content of ethyl vanillin was fixed at 10%). Particularly, it can be seen that the degree of discoloration increased sharply to a numerical value at which the discoloration could even be observed by visual inspection in Examples 17 and 18 in which the content of vanillin was higher than or equal to 30%, and the degree of discoloration of the tipping paper was insignificant in Examples 14 to 16 in which the content of vanillin was in a range of 5% to 20%. Also, from the results of analysis of Example 16 and Comparative Example 5, it was confirmed that, while the contents of vanillin and ethyl vanillin in the fragrance material were the same, the degree of discoloration was lower in the case in which fragrance carrier printing was performed by including the fragrance material in the carrier material (Example 16) as compared to the case in which fragrance printing was performed without including the fragrance material in a carrier (Comparative Example 5).

Example 19

- 50 **[0132]** A smoking article was produced in the same way as in Example 14 described above with reference to Table 7, except that the fragrance material contained 20% vanillin and 5% ethyl vanillin.

Example 20

- 55 **[0133]** A smoking article was produced in the same way as in Example 19 except that the fragrance material contained 20% ethyl vanillin.

Example 21

[0134] A smoking article was produced in the same way as in Example 19 except that the fragrance material contained 30% ethyl vanillin.

Example 22

[0135] A smoking article was produced in the same way as in Example 19 except that the fragrance material contained 40% ethyl vanillin.

Experimental Example 7: Evaluation of color stability according to changes in content of ethyl vanillin in fragrance material

[0136] For evaluation of color stability of the tipping paper according to changes in content of ethyl vanillin in the fragrance material, the degrees of color change of cigarettes immediately after production thereof and cigarettes two months after production thereof were quantified by color difference (ΔE) in the CIELAB color space, and results thereof are shown in Table 8. The cigarettes were stored for two months under conditions of a temperature of about 40 °C and a relative humidity of about 60%.

[Table 8]

Classification	Details	Color change (ΔE)
Comparative Example 1	OPV only	0.43
Comparative Example 5	OPV+fragrance material(1.25%) [vanillin(20.0%), ethyl vanillin(10.0%)]	1.26
Example 19	OPV+fragrance carrier(1.25%) [vanillin(20.0%), ethyl vanillin(5.0%)]	0.61
Example 16	OPV+fragrance carrier(1.25%) [vanillin(20.0%), ethyl vanillin(10.0%)]	0.82
Example 20	OPV+fragrance carrier(1.25%) [vanillin(20.0%), ethyl vanillin(20.0%)]	1.68
Example 21	OPV+fragrance carrier(1.25%) [vanillin(20.0%), ethyl vanillin(30.0%)]	1.92
Example 22	OPV+fragrance carrier(1.25%) [vanillin(20.0%), ethyl vanillin(40.0%)]	2.17

[0137] As in Experimental Example 6, from the results of analysis of Examples 19 to 22, it was found that the degree of discoloration of the tipping paper increased with an increase in the content of ethyl vanillin in the fragrance material (while the content of vanillin was fixed at 20%). Particularly, it can be seen that the degree of discoloration increased sharply to a numerical value at which the discoloration could even be observed by visual inspection in Examples 20 to 22 in which the content of ethyl vanillin was higher than or equal to 20%, and the degree of discoloration of the tipping paper was insignificant in Examples 16 and 19 in which the content of ethyl vanillin was in a range of 5% to 10%.

Experimental Example 8: Smoking sensory evaluation using tipping paper to which fragrance carrier is applied

[0138] In order to confirm sensory characteristics of the tipping paper to which the fragrance carrier is applied according to the present invention, sensory evaluation was performed with respect to external scent intensity, tobacco taste intensity, intensity of the tobacco smell on fingers after smoking, intensity of the scent remaining on the fingers after smoking, and satisfaction with the scent remaining on the fingers, for the smoking articles according to Example 1, Comparative Example 1, and Comparative Example 4.

[0139] The sensory evaluation was performed by a panel of twenty evaluators using the smoking articles according to Example 1, Comparative Example 1, and Comparative Example 4, based on a scale of 8 points.

[0140] FIG. 2 shows results of smoking sensory evaluation relating to smoking articles stored at room temperature for two weeks after being produced according to Example 1, Comparative Example 1, and Comparative Example 4. FIG. 3 shows results of smoking sensory evaluation relating to smoking articles stored at room temperature for two months after being produced according to Example 1, Comparative Example 1, and Comparative Example 4.

[0141] Referring to FIGS. 2 and 3, it can be seen that external scent intensity (that is, the scent intensity before the cigarette is rubbed by fingers of a smoker or saliva is delivered from the smoker's mouth to the cigarette) increased noticeably in the cigarette according to Comparative Example 4 to which fragrance printing was applied as compared to the cigarette according to Comparative Example 1 to which fragrance printing was not applied. On the other hand, it

can be seen that, in the cigarette according to Example 1 to which fragrance carrier printing was applied, the external scent intensity somewhat increased as compared to the cigarette according to Comparative Example 1, but the external scent intensity had a significantly lower numerical value as compared to Comparative Example 4.

[0142] It can be seen that the intensity of the scent remaining on the fingers after smoking increased significantly in Comparative Example 4 and Example 1 as compared to Comparative Example 1 and increased slightly in Example 1 as compared to Comparative Example 4. It can be seen that the intensity of the tobacco smell on the fingers after smoking reduced in Comparative Example 4 and Example 1 as compared to Comparative Example 1 and reduced in Example 1 as compared to Comparative Example 4.

[0143] Considering together the fact that the external scent intensity had a lower numerical value in Example 1 as compared to Comparative Example 4 and the fact that the intensity of the scent remaining on the fingers after smoking had a higher numerical value in Example 1 as compared to Comparative Example 4, it can be confirmed that the amount of fragrance expressed before smoking relatively decreased and the amount of fragrance expressed during smoking relatively increased in the case in which the fragrance material was included in a carrier and printed (Example 1) as compared to the case in which the fragrance material was printed without being included in a carrier (Comparative Example 4).

[0144] Example 1, Comparative Example 1, and Comparative Example 4 showed no significant difference in terms of tobacco taste intensity. Thus, it is predicted that the taste of tobacco smoke would not be degraded due to applying fragrance printing.

Experimental Example 9: Smoking sensory evaluation according to whether microcapsules are additionally applied

[0145] In order to confirm changes in sensory characteristics according to whether the microcapsules are added, sensory evaluation was performed with respect to external scent intensity, tobacco taste intensity, intensity of the tobacco smell on fingers after smoking, intensity of the scent remaining on the fingers after smoking, and satisfaction with the scent remaining on the fingers, for the smoking articles according to Examples 10 to 12 and Comparative Example 1. The sensory evaluation was performed by a panel of twenty evaluators using the smoking articles according to Example 10 to 12 and Comparative Example 1, based on a scale of 8 points.

[0146] FIG. 4 shows results of smoking sensory evaluation relating to smoking articles two weeks after production thereof according to Examples 10 to 12 and Comparative Example 1.

[0147] Referring to FIG. 4, the external scent intensity, intensity of the scent remaining on the fingers after smoking, and satisfaction with the scent remaining on the fingers tended to increase and the intensity of the tobacco smell on the fingers after smoking tended to decrease with an increase in the content of the binder and/or microcapsules in the fragrance carrier ink.

[0148] It was confirmed that, in all of Examples 10 to 12, an increase in the intensity of the scent remaining on the fingers after smoking as compared to Comparative Example 1 was larger than an increase in external scent intensity as compared to Comparative Example 1. Thus, it can be seen that, in all of Examples 10 to 12, the fragrance was substantially not expressed during storage of the cigarettes and then was substantially expressed due to the smoking behavior of the smoker.

[0149] The scope of the present invention is defined by the claims.

immediately after production thereof and cigarettes two months after production thereof were quantified by color difference (ΔE) in the CIELAB color space, and results thereof are shown in Table 7. The cigarettes were stored for two months under conditions of a temperature of about 40 °C and a relative humidity of about 60%.

[Table 7]

Classification	Details	Color change (ΔE)
Comparative Example 1	OPV only	0.43
Comparative Example 5	OPV+fragrance material(1.25%) [vanillin(20.0%), ethyl vanillin(10.0%)]	1.26
Example 14	OPV+fragrance carrier(125%) [vanillin(5.0%), ethyl vanillin(10.0%)]	0.57
Example 15	OPV+fragrance carrier(1.25%) [vanillin(10.0%), ethyl vanillin(10.0%)]	0.71
Example 16	OPV+fragrance carrier(125%) [vanillin(20.0%), ethyl vanillin(10.0%)]	0.82
Example 17	OPV+fragrance carrier(1.25%) [vanillin(30.0%), ethyl vanillin(10.0%)]	1.70
Example 18	OPV+fragrance carrier(1.25%) [vanillin(40.0%), ethyl vanillin(10.0%)]	2.20

[0150] From the results of analysis of Examples 14 to 18, it was found that the degree of discoloration of the tipping paper increased with an increase in the content of vanillin in the fragrance material (while the content of ethyl vanillin was fixed at 10%). Particularly, it can be seen that the degree of discoloration increased sharply to a numerical value at which the discoloration could even be observed by visual inspection in Examples 17 and 18 in which the content of vanillin was higher than or equal to 30%, and the degree of discoloration of the tipping paper was insignificant in Examples 14 to 16 in which the content of vanillin was in a range of 5% to 20%. Also, from the results of analysis of Example 16 and Comparative Example 5, it was confirmed that, while the contents of vanillin and ethyl vanillin in the fragrance material were the same, the degree of discoloration was lower in the case in which fragrance carrier printing was performed by including the fragrance material in the carrier material (Example 16) as compared to the case in which fragrance printing was performed without including the fragrance material in a carrier (Comparative Example 5).

Example 19

[0151] A smoking article was produced in the same way as in Example 14 described above with reference to Table 7, except that the fragrance material contained 20% vanillin and 5% ethyl vanillin.

Example 20

[0152] A smoking article was produced in the same way as in Example 19 except that the fragrance material contained 20% ethyl vanillin.

Example 21

[0153] A smoking article was produced in the same way as in Example 19 except that the fragrance material contained 30% ethyl vanillin.

Example 22

[0154] A smoking article was produced in the same way as in Example 19 except that the fragrance material contained 40% ethyl vanillin.

Experimental Example 7: Evaluation of color stability according to changes in content of ethyl vanillin in fragrance material

[0155] For evaluation of color stability of the tipping paper according to changes in content of ethyl vanillin in the fragrance material, the degrees of color change of cigarettes immediately after production thereof and cigarettes two months after production thereof were quantified by color difference (ΔE) in the CIELAB color space, and results thereof are shown in Table 8. The cigarettes were stored for two months under conditions of a temperature of about 40 °C and a relative humidity of about 60%.

[Table 8]

Classification	Details	Color change (ΔE)
Comparative Example 1	OPV only	0.43
Comparative Example 5	OPV+fragrance material(1.25%) [vanillin(20.0%), ethyl vanillin(10.0%)]	1.26
Example 19	OPV+fragrance carrier(125%) [vanillin(20.0%), ethyl vanillin(5.0%)]	0.61
Example 16	OPV+fragrance carrier(1.25%) [vanillin(20.0%), ethyl vanillin(10.0%)]	0.82
Example 20	OPV+fragrance carrier(1.25%) [vanillin(20.0%), ethyl vanillin(20.0%)]	1.68
Example 21	OPV+fragrance carrier(1.25%) [vanillin(20.0%), ethyl vanillin(30.0%)]	1.92
Example 22	OPV+fragrance carrier(1.25%) [vanillin(20.0%), ethyl vanillin(40.0%)]	2.17

[0156] As in Experimental Example 6, from the results of analysis of Examples 19 to 22, it was found that the degree of discoloration of the tipping paper increased with an increase in the content of ethyl vanillin in the fragrance material (while the content of vanillin was fixed at 20%). Particularly, it can be seen that the degree of discoloration increased

sharply to a numerical value at which the discoloration could even be observed by visual inspection in Examples 20 to 22 in which the content of ethyl vanillin was higher than or equal to 20%, and the degree of discoloration of the tipping paper was insignificant in Examples 16 and 19 in which the content of ethyl vanillin was in a range of 5% to 10%.

5 Experimental Example 8: Smoking sensory evaluation using tipping paper to which fragrance carrier is applied

[0157] In order to confirm sensory characteristics of the tipping paper to which the fragrance carrier is applied according to the present invention, sensory evaluation was performed with respect to external scent intensity, tobacco taste intensity, intensity of the tobacco smell on fingers after smoking, intensity of the scent remaining on the fingers after smoking, and satisfaction with the scent remaining on the fingers, for the smoking articles according to Example 1, Comparative Example 1, and Comparative Example 4.

[0158] The sensory evaluation was performed by a panel of twenty evaluators using the smoking articles according to Example 1, Comparative Example 1, and Comparative Example 4, based on a scale of 8 points.

[0159] FIG. 2 shows results of smoking sensory evaluation relating to smoking articles stored at room temperature for two weeks after being produced according to Example 1, Comparative Example 1, and Comparative Example 4. FIG. 3 shows results of smoking sensory evaluation relating to smoking articles stored at room temperature for two months after being produced according to Example 1, Comparative Example 1, and Comparative Example 4.

[0160] Referring to FIGS. 2 and 3, it can be seen that external scent intensity (that is, the scent intensity before the cigarette is rubbed by fingers of a smoker or saliva is delivered from the smoker's mouth to the cigarette) increased noticeably in the cigarette according to Comparative Example 4 to which fragrance printing was applied as compared to the cigarette according to Comparative Example 1 to which fragrance printing was not applied. On the other hand, it can be seen that, in the cigarette according to Example 1 to which fragrance carrier printing was applied, the external scent intensity somewhat increased as compared to the cigarette according to Comparative Example 1, but the external scent intensity had a significantly lower numerical value as compared to Comparative Example 4.

[0161] It can be seen that the intensity of the scent remaining on the fingers after smoking increased significantly in Comparative Example 4 and Example 1 as compared to Comparative Example 1 and increased slightly in Example 1 as compared to Comparative Example 4. It can be seen that the intensity of the tobacco smell on the fingers after smoking reduced in Comparative Example 4 and Example 1 as compared to Comparative Example 1 and reduced in Example 1 as compared to Comparative Example 4.

[0162] Considering together the fact that the external scent intensity had a lower numerical value in Example 1 as compared to Comparative Example 4 and the fact that the intensity of the scent remaining on the fingers after smoking had a higher numerical value in Example 1 as compared to Comparative Example 4, it can be confirmed that the amount of fragrance expressed before smoking relatively decreased and the amount of fragrance expressed during smoking relatively increased in the case in which the fragrance material was included in a carrier and printed (Example 1) as compared to the case in which the fragrance material was printed without being included in a carrier (Comparative Example 4).

[0163] Example 1, Comparative Example 1, and Comparative Example 4 showed no significant difference in terms of tobacco taste intensity. Thus, it is predicted that the taste of tobacco smoke would not be degraded due to applying fragrance printing.

40 Experimental Example 9: Smoking sensory evaluation according to whether microcapsules are additionally applied

[0164] In order to confirm changes in sensory characteristics according to whether the microcapsules are added, sensory evaluation was performed with respect to external scent intensity, tobacco taste intensity, intensity of the tobacco smell on fingers after smoking, intensity of the scent remaining on the fingers after smoking, and satisfaction with the scent remaining on the fingers, for the smoking articles according to Examples 10 to 12 and Comparative Example 1. The sensory evaluation was performed by a panel of twenty evaluators using the smoking articles according to Example 10 to 12 and Comparative Example 1, based on a scale of 8 points.

[0165] FIG. 4 shows results of smoking sensory evaluation relating to smoking articles two weeks after production thereof according to Examples 10 to 12 and Comparative Example 1.

[0166] Referring to FIG. 4, the external scent intensity, intensity of the scent remaining on the fingers after smoking, and satisfaction with the scent remaining on the fingers tended to increase and the intensity of the tobacco smell on the fingers after smoking tended to decrease with an increase in the content of the binder and/or microcapsules in the fragrance carrier ink.

[0167] It was confirmed that, in all of Examples 10 to 12, an increase in the intensity of the scent remaining on the fingers after smoking as compared to Comparative Example 1 was larger than an increase in external scent intensity as compared to Comparative Example 1. Thus, it can be seen that, in all of Examples 10 to 12, the fragrance was substantially not expressed during storage of the cigarettes and then was substantially expressed due to the smoking

behavior of the smoker.

[0168] Those of ordinary skill in the art related to the present examples should understand that the present invention may be implemented in modified forms within the scope not departing from essential characteristics of the above description. Therefore, the methods disclosed herein should be considered as illustrative rather than limiting. The scope of the present invention is defined by the claims below rather than by the above description, and all differences within the scope equivalent to the claims should be interpreted as falling within the scope of the present invention.

Claims

1. A tipping paper for smoking articles that surrounds at least a partial region of a smoking material portion and a smoking article filter portion so that the smoking material portion and the smoking article filter portion are combined, the tipping paper comprising:

a fragrance carrier which consists of a fragrance material and a carrier material which includes the fragrance material, wherein the carrier material is 2-hydroxypropyl- β -cyclodextrin; wherein the fragrance carrier is included in the tipping paper through a fragrance carrier printing process that uses a fragrance carrier ink including the ethanol, the fragrance material, and the carrier material; and wherein a weight ratio of the fragrance material with respect to the total weight of the fragrance carrier ink is greater than 0% and lower than 1.5%, and a weight ratio of the carrier material with respect to the total weight of the fragrance carrier ink is greater than 0% and lower than or equal to 15%, and wherein the fragrance material included in the carrier material is expressed outside the tipping paper in response to moisture, saliva, or friction.

2. The tipping paper of claim 1, wherein the fragrance material includes at least one or more materials of vanillin and ethyl vanillin.

3. The tipping paper of claim 2, wherein a weight ratio of the vanillin with respect to the total weight of the fragrance material is in a range of 15% to 25%, and a weight ratio of the ethyl vanillin with respect to the total weight of the fragrance material is in a range of 5% to 15%.

4. The tipping paper of claim 1, wherein the fragrance carrier ink further includes a binder, and a weight ratio of the binder with respect to the total weight of the fragrance carrier ink is greater than 0% and lower than or equal to 15%.

5. The tipping paper of claim 4, wherein the binder is a polymer material that is soluble in ethanol and has a molecular weight in a range of 3,000 to 20,000 and a glass transition temperature in a range of 60 °C to 90 °C.

6. The tipping paper of claim 4, wherein the fragrance carrier ink further includes microcapsules, and a weight ratio of the microcapsules with respect to the total weight of the fragrance carrier ink is greater than 0% and lower than or equal to 25%.

7. The tipping paper of claim 6, wherein a weight ratio of the binder with respect to the total weight of the fragrance carrier ink is in a range of 5% to 10%, and a weight ratio of the microcapsules with respect to the total weight of the fragrance carrier ink is in a range of 5% to 20%.

8. The tipping paper of claim 6, wherein

the microcapsules each have a diameter in a range of 1.5 μ m to 5.0 μ m;
the microcapsules each include polyvinyl alcohol, a fragrance, and a cross-linking agent; and
a content ratio of the polyvinyl alcohol and the fragrance included in each microcapsule is in a range of 1:3 to 1:7.

9. The tipping paper of claim 1, wherein the fragrance carrier printing process is performed after an overprint varnish (OPV) process is applied to the tipping paper (130).

10. A smoking article (100) comprising:

a smoking material portion (120) which is wrapped by a smoking material wrapper (120a);
a filter portion (110) whose upstream end is combined with the smoking material portion (120) and which is

wrapped by a filter wrapper (110a); and

a tipping paper (130) according to any one of the preceding claims which surrounds at least a partial region of the smoking material portion (120) and the filter portion (110) so that the smoking material portion (120) and the filter portion (110) are combined.

- 5
11. A method of producing a tipping paper for smoking articles that surrounds at least a partial region of a smoking material portion and a smoking article filter portion so that the smoking material portion and the smoking article filter portion are combined and includes a fragrance material and a carrier material which includes the fragrance material, wherein the carrier material is 2-hydroxypropyl- β -cyclodextrin;
- 10 the method comprising:

adding the carrier material to ethanol and stirring a solution obtained thereby;

adding the fragrance material to the solution in which the carrier material is added to ethanol and stirring a solution obtained thereby;

15 adding a binder to the solution in which the carrier material and the fragrance material are added to ethanol and stirring a solution obtained thereby; and

a printing step in which the solution in which the carrier material, the fragrance material, and the binder are added to ethanol is used as a fragrance carrier ink and printed on the tipping paper;

20 wherein the fragrance carrier ink includes the ethanol, the fragrance material, and the carrier material, and wherein a weight ratio of the fragrance material with respect to the total weight of the fragrance carrier ink is greater than 0% and lower than 1.5%, and a weight ratio of the carrier material with respect to the total weight of the fragrance carrier ink is greater than 0% and lower than or equal to 15%.

- 25 12. The method of claim 11, further comprising, before the printing step, adding microcapsules to the fragrance carrier ink and stirring a solution obtained thereby,

wherein a core of each microcapsule is an ethanol-based fragrance and a shell of each microcapsule is polyvinyl alcohol, and

30 the microcapsules are produced by stirring the ethanol-based fragrance and the polyvinyl alcohol at room temperature, adding a cross-linking agent to a solution in which the ethanol-based fragrance and the polyvinyl alcohol are stirred and stirring a solution obtained thereby at a temperature which is higher than or equal to 60 °C and lower than or equal to 100 °C, and cooling the solution in which the ethanol-based fragrance, the polyvinyl alcohol, and the cross-linking agent are stirred.

Patentansprüche

- 35
1. Mundstückpapier für Rauchartikel, das wenigstens einen Teilbereich eines Rauchmaterialabschnitts und eines Rauchartikel-Filterabschnitts umgibt, so dass der Rauchmaterialabschnitt und der Rauchartikel-Filterabschnitt kombiniert werden, wobei das Mundstückpapier Folgendes umfasst:
- 40

einen Duftstoffträger, der aus einem Duftstoffmaterial und einem Trägermaterial, das das Duftstoffmaterial enthält, besteht, wobei das Trägermaterial 2-Hydroxypropyl- β -Cyclodextrin ist;

wobei der Duftstoffträger im Mundstückpapier durch ein Duftstoffträger-Druckverfahren enthalten ist, das eine Duftstoffträgertinte verwendet, die das Ethanol, das Duftstoffmaterial und das Trägermaterial enthält; und

45 wobei ein Gewichtsanteil des Duftstoffmaterials in Bezug auf das Gesamtgewicht der Duftstoffträgertinte größer als 0 % und kleiner als 1,5 % ist, ein Gewichtsanteil des Trägermaterials in Bezug auf das Gesamtgewicht der Duftstoffträgertinte größer als 0 % und kleiner oder gleich 15 % ist und das Duftstoffmaterial, das im Trägermaterial enthalten ist, in Reaktion auf Feuchtigkeit, Speichel oder Reibung zur Außenseite des Mundstückpapiers abgegeben wird.

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2. Mundstückpapier nach Anspruch 1, wobei das Duftstoffmaterial Vanillin und/oder Ethyl-Vanillin umfasst.

3. Mundstückpapier nach Anspruch 2, wobei ein Gewichtsanteil des Vanillins in Bezug auf das Gesamtgewicht des Duftstoffmaterials im Bereich von 15 % bis 25 % liegt und ein Gewichtsanteil des Ethyl-Vanillins in Bezug auf das Gesamtgewicht des Duftstoffmaterials im Bereich von 5 % bis 15 % liegt.
- 55

4. Mundstückpapier nach Anspruch 1, wobei die Duftstoffträgertinte ferner ein Bindemittel umfasst und ein Gewichts-

anteil des Bindemittels in Bezug auf das Gesamtgewicht der Duftstoffträgerinte größer als 0 % und kleiner oder gleich 15 % ist.

5 5. Mundstückpapier nach Anspruch 4, wobei das Bindemittel ein Polymermaterial ist, das in Ethanol löslich ist und ein Molekulargewicht im Bereich von 3000 bis 20000 und eine Glasübergangstemperatur im Bereich von 60 °C bis 90 °C aufweist.

10 6. Mundstückpapier nach Anspruch 4, wobei die Duftstoffträgerinte ferner Mikrokapseln umfasst und ein Gewichtsanteil der Mikrokapseln in Bezug auf das Gesamtgewicht der Duftstoffträgerinte größer als 0 % und kleiner oder gleich 25 % ist.

15 7. Mundstückpapier nach Anspruch 6, wobei ein Gewichtsanteil des Bindemittels in Bezug auf das Gesamtgewicht der Duftstoffträgerinte im Bereich von 5 % bis 10 % liegt und ein Gewichtsanteil der Mikrokapseln in Bezug auf das Gesamtgewicht der Duftstoffträgerinte im Bereich von 5 % bis 20 % liegt.

8. Mundstückpapier nach Anspruch 6, wobei:

20 die Mikrokapseln jeweils einen Durchmesser im Bereich von 1,5 µm bis 5,0 µm aufweisen;
die Mikrokapseln jeweils Polyvinylalkohol, einen Duftstoff und ein vernetzendes Agens umfassen; und
ein Anteilsverhältnis des Polyvinylalkohols und des Duftstoffs, die in jeder Mikrokapsel enthalten sind, im Bereich von 1:3 bis 1:7 liegt.

25 9. Mundstückpapier nach Anspruch 1, wobei das Duftstoffträger-Druckverfahren ausgeführt wird, nachdem ein Überdrucklack-Verfahren (OPV) beim Mundstückpapier (130) angewendet wurde.

10. Rauchartikel (100), der Folgendes umfasst:

30 einen Rauchmaterialabschnitt (120), der von einer Rauchmaterialhülle (120a) umhüllt ist;
einen Filterabschnitt (110), dessen stromaufwärts liegendes Ende mit dem Rauchmaterialabschnitt (120) kombiniert ist und der durch eine Filterhülle (110a) umhüllt ist; und
ein Mundstückpapier (130) nach einem der vorhergehenden Ansprüche, das wenigstens einen Teilbereich des Rauchmaterialabschnitts (120) und des Filterabschnitts (110) umgibt, so dass der Rauchmaterialabschnitt (120) und der Filterabschnitt (110) kombiniert werden.

35 11. Verfahren zum Herstellen eines Mundstückpapiers für Rauchartikel, das wenigstens einen Teilbereich eines Rauchmaterialabschnitts und eines Rauchartikel-Filterabschnitts umgibt, so dass der Rauchmaterialabschnitt und der Rauchartikel-Filterabschnitt kombiniert werden, und das ein Duftstoffmaterial und ein Trägermaterial, das das Duftstoffmaterial enthält, enthält, wobei das Trägermaterial 2-Hydroxypropyl-β-Cyclodextrin ist; wobei das Verfahren die folgenden Schritte umfasst:

40 Hinzufügen des Trägermaterials zu Ethanol und Rühren der dadurch erhaltenen Lösung;
Hinzufügen des Duftstoffmaterials zur Lösung, bei der das Trägermaterial zu Ethanol hinzugefügt wurde, und Rühren der dadurch erhaltenen Lösung;
Hinzufügen eines Bindemittels zur Lösung, bei der das Trägermaterial und das Duftstoffmaterial zu Ethanol hinzugefügt wurden, und Rühren der dadurch erhaltenen Lösung; und
45 einen Druckschritt, bei dem die Lösung, in der das Trägermaterial, das Duftstoffmaterial und das Bindemittel zu Ethanol hinzugefügt wurden, als eine Duftstoffträgerinte verwendet und auf das Mundstückpapier gedruckt wird;
wobei die Duftstoffträgerinte das Ethanol, das Duftstoffmaterial und das Trägermaterial umfasst und wobei ein Gewichtsanteil des Duftstoffmaterials in Bezug auf das Gesamtgewicht der Duftstoffträgerinte größer als 0 % und kleiner als 1,5 % ist und wobei ein Gewichtsanteil des Trägermaterials in Bezug auf das Gesamtgewicht der Duftstoffträgerinte größer als 0 % und kleiner oder gleich 15 % ist.

55 12. Verfahren nach Anspruch 11, das ferner vor dem Druckschritt das Hinzufügen von Mikrokapseln zur Duftstoffträgerinte und das Rühren der dadurch erhaltenen Lösung umfasst,

wobei ein Kern jeder Mikrokapsel ein Duftstoff auf Ethanolbasis ist und eine Hülle jeder Mikrokapsel Polyvinylalkohol ist, und

die Mikrokapseln durch Rühren des Duftstoffs auf Ethanolbasis und des Polyvinylalkohols bei Raumtemperatur, Hinzufügen eines vernetzenden Agens zu einer Lösung, in der der Duftstoff auf Ethanolbasis und der Polyvinylalkohol gerührt werden, Rühren einer dadurch erhaltenen Lösung bei einer Temperatur, die 60 °C oder mehr und 100 °C oder weniger beträgt, und Kühlen der Lösung, in der der Duftstoff auf Ethanolbasis, der Polyvinylalkohol und das vernetzende Agens gerührt werden, erzeugt werden.

Revendications

1. Papier manchette pour articles à fumer qui entoure au moins une zone partielle d'une partie de matière à fumer et une partie de filtre d'article à fumer de sorte que la partie de matière à fumer et la partie de filtre d'article à fumer sont combinées, le papier manchette comportant :

un support de parfum qui est constitué d'une matière de parfum et d'une matière de support qui inclut la matière de parfum, dans lequel la matière de support est la 2-hydroxypropyl- β -cyclodextrine ;

dans lequel le support de parfum est inclus dans le papier manchette par un processus d'impression de support de parfum qui utilise une encre de support de parfum incluant l'éthanol, la matière de parfum et la matière de support ; et

dans lequel un rapport pondéral de la matière de parfum par rapport au poids total de l'encre de support de parfum est supérieur à 0 % et inférieur à 1,5 %, et un rapport pondéral de la matière de support par rapport au poids total de l'encre de support de parfum est supérieur à 0 % et inférieur ou égal à 15 %, et dans lequel la matière de parfum incluse dans la matière de support est exprimée à l'extérieur du papier manchette en réponse à l'humidité, à la salive ou au frottement.

2. Papier manchette selon la revendication 1, dans lequel la matière de parfum inclut au moins une ou plusieurs matières parmi la vanilline et l'éthyl vanilline.

3. Papier manchette selon la revendication 2, dans lequel un rapport pondéral de la vanilline par rapport au poids total de la matière de parfum est dans une plage de 15 % à 25 %, et un rapport pondéral de l'éthyl vanilline par rapport au poids total de la matière de parfum est dans une plage de 5 % à 15 %.

4. Papier manchette selon la revendication 1, dans lequel l'encre de support de parfum inclut en outre un liant, et un rapport pondéral du liant par rapport au poids total de l'encre de support de parfum est supérieur à 0 % et inférieur ou égal à 15 %.

5. Papier manchette selon la revendication 4, dans lequel le liant est une matière polymère qui est soluble dans l'éthanol et a une masse moléculaire dans une plage de 3 000 à 20 000 et une température de transition vitreuse dans une plage de 60 °C à 90 °C.

6. Papier manchette selon la revendication 4, dans lequel l'encre de support de parfum inclut en outre des microcapsules, et un rapport pondéral des microcapsules par rapport au poids total de l'encre de support de parfum est supérieur à 0 % et inférieur ou égal à 25 %.

7. Papier manchette selon la revendication 6, dans lequel un rapport pondéral du liant par rapport au poids total de l'encre de support de parfum est dans une plage de 5 % à 10 %, et un rapport pondéral des microcapsules par rapport au poids total de l'encre de support de parfum est dans une plage de 5 % à 20 %.

8. Papier manchette selon la revendication 6, dans lequel :

les microcapsules ont chacune un diamètre dans une plage de 1,5 μm à 5,0 μm ;

les microcapsules incluent chacune de l'alcool polyvinylique, un parfum et un agent de réticulation ; et

un rapport de teneur de l'alcool polyvinylique et de la fragrance inclus dans chaque microcapsule est dans une plage de 1:3 à 1:7.

9. Papier manchette selon la revendication 1, dans lequel le processus d'impression de support de parfum est réalisé après l'application d'un processus de vernis de surimpression (OPV) au papier manchette (130).

10. Article à fumer (100) comportant :

une partie de matière à fumer (120) qui est enveloppée par une enveloppe de matière à fumer (120a) ;
 une partie de filtre (110) dont l'extrémité amont est combinée avec la partie de matière à fumer (120) et qui est
 enveloppée par une enveloppe de filtre (110a) ; et
 un papier manchette (130) selon l'une quelconque des revendications précédentes qui entoure au moins une
 zone partielle de la partie de matière à fumer (120) et de la partie de filtre (110) de sorte que la partie de matière
 à fumer (120) et la partie de filtre (110) sont combinées.

11. Procédé de production d'un papier manchette pour articles à fumer qui entoure au moins une zone partielle d'une
 partie de matière à fumer et d'une partie de filtre d'article à fumer de sorte que la partie de matière à fumer et la
 partie de filtre d'article à fumer sont combinées et inclut une matière de parfum et une matière de support qui inclut
 la matière de parfum, dans lequel la matière de support est la 2-hydroxypropyl- β -cyclodextrine ;
 le procédé comportant les étapes consistant à :

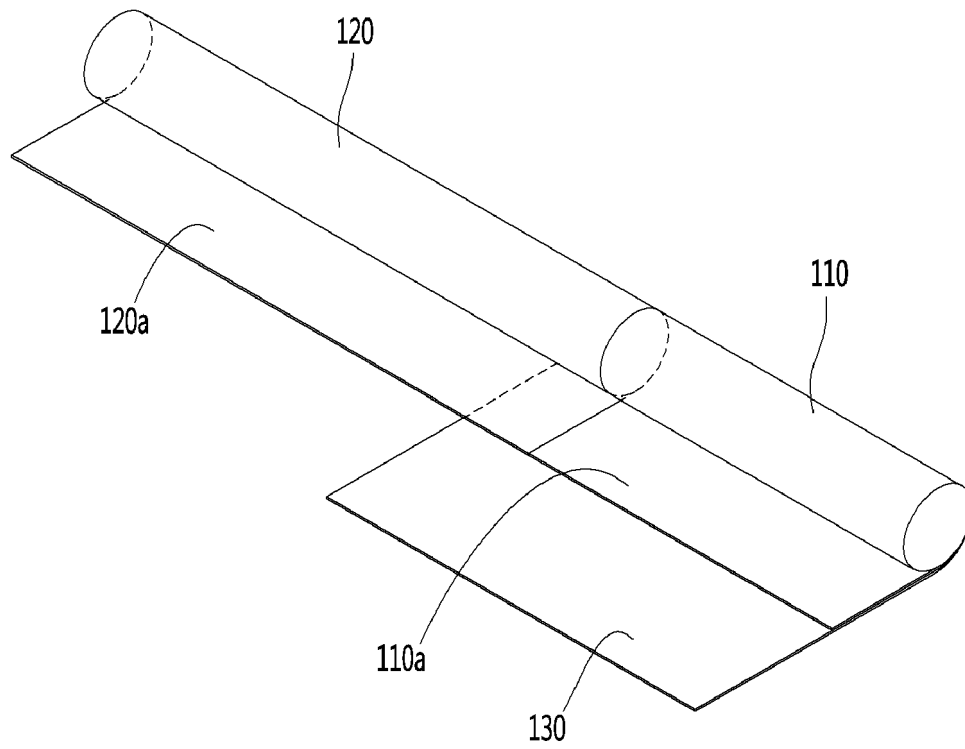
ajouter la matière de support à de l'éthanol et agiter une solution obtenue par ceux-ci ;
 ajouter la matière de parfum à la solution dans laquelle la matière de support est ajoutée à l'éthanol et agiter
 une solution obtenue par ceux-ci ;
 ajouter un liant à la solution dans laquelle la matière de support et la matière de parfum sont ajoutées à l'éthanol
 et agiter une solution obtenue par ceux-ci ; et
 une étape d'impression dans laquelle la solution dans laquelle la matière de support, la matière de parfum et
 le liant sont ajoutés à l'éthanol est utilisée comme une encre de support de parfum et imprimée sur le papier
 manchette ;
 dans lequel l'encre de support de parfum inclut l'éthanol, la matière de parfum et la matière de support, et dans
 lequel un rapport pondéral de la matière de parfum par rapport au poids total de l'encre de support de parfum
 est supérieur à 0 % et inférieur à 1,5 %, et un rapport pondéral de la matière de support par rapport au poids
 total de l'encre de support de parfum est supérieur à 0 % et inférieur ou égal à 15 %.

12. Procédé selon la revendication 11, comportant en outre, avant l'étape d'impression, d'ajouter des microcapsules à
 l'encre de support de parfum et agiter une solution obtenue par celle-ci ;

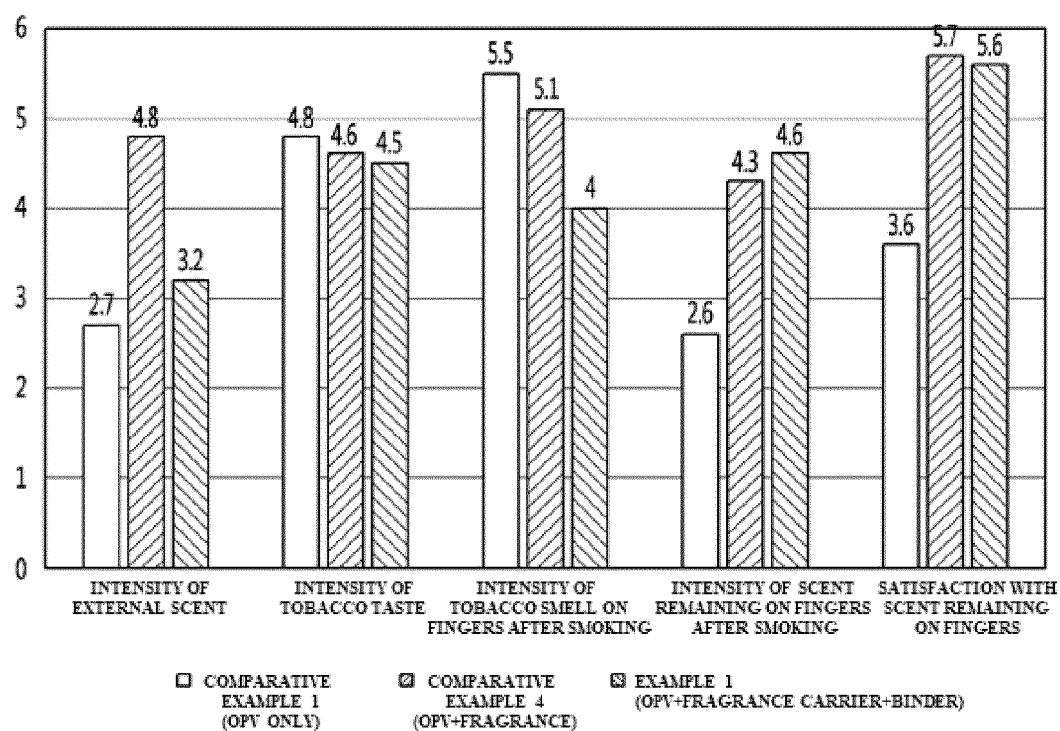
dans lequel un noyau de chaque microcapsule est un parfum à base d'éthanol et une enveloppe de chaque
 microcapsule est de l'alcool vinylique, et
 les microcapsules sont produites en agitant la fragrance à base d'éthanol et l'alcool polyvinylique à température
 ambiante, en ajoutant un agent de réticulation à une solution dans laquelle la fragrance à base d'éthanol et
 l'alcool polyvinylique sont agités et en agitant une solution obtenue par ceux-ci à une température qui est
 supérieure ou égale à 60 °C et inférieure ou égale à 100 °C, et en refroidissant la solution dans laquelle le
 parfum à base d'éthanol, l'alcool polyvinylique et l'agent de réticulation sont agités.

[FIG. 1]

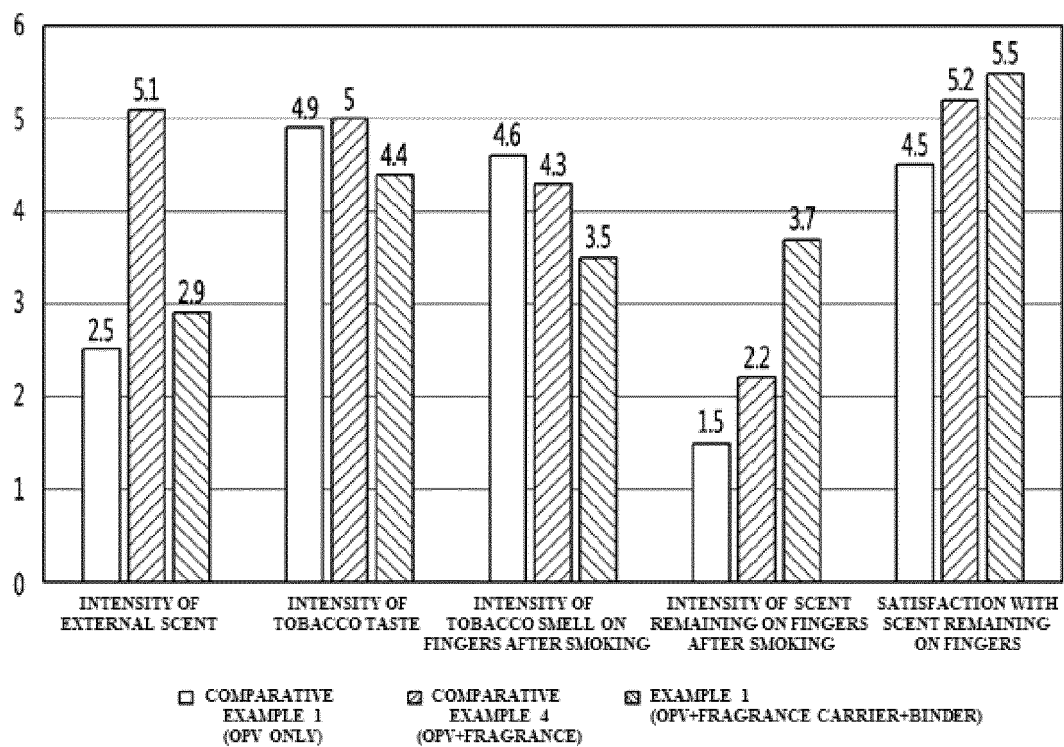
100



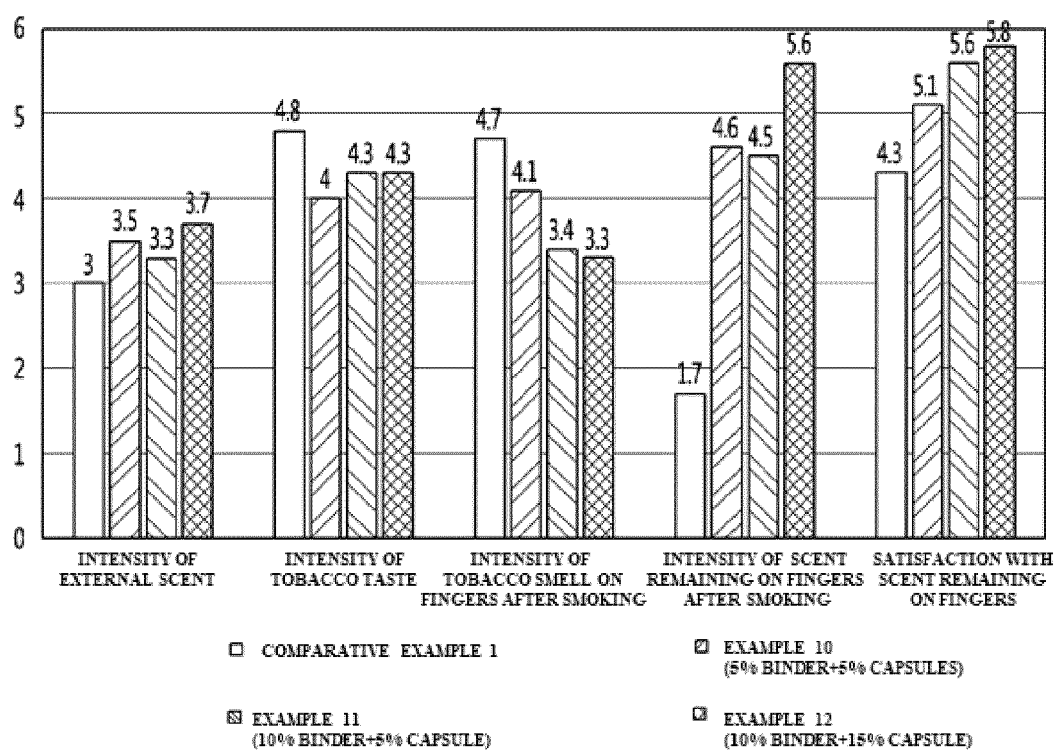
[FIG. 2]



[FIG. 3]



[FIG. 4]



REFERENCES CITED IN THE DESCRIPTION

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