



(12) **DEMANDE DE BREVET CANADIEN
CANADIAN PATENT APPLICATION**

(13) **A1**

(86) Date de dépôt PCT/PCT Filing Date: 2020/07/30
(87) Date publication PCT/PCT Publication Date: 2021/02/04
(85) Entrée phase nationale/National Entry: 2022/01/25
(86) N° demande PCT/PCT Application No.: EP 2020/071512
(87) N° publication PCT/PCT Publication No.: 2021/019016
(30) Priorité/Priority: 2019/07/31 (EP19189339.5)

(51) Cl.Int./Int.Cl. *A24C 5/56* (2006.01)
(71) Demandeur/Applicant:
JT INTERNATIONAL SA, CH
(72) Inventeur/Inventor:
HIDESHIMA, TAKU, LU
(74) Agent: KIRBY EADES GALE BAKER

(54) Titre : ENVELOPPE D'EXTREMITÉ POUR ARTICLE DE GÉNÉRATION D'AÉROSOL
(54) Title: TIPPING WRAPPER FOR AEROSOL GENERATING ARTICLE

(57) **Abrégé/Abstract:**

The invention relates to a tipping wrapper for aerosol generating articles having a base layer with a porosity of less than 1,5 C.U., wherein the base layer contains at least one filler material, the tipping wrapper further comprising a surface which is pigmented with a pigment component which contains CaCO₃ and at least a second component serving as a non-combustible filler, the pigment component having a grammage of at least 2,0 gsm, wherein the pigmented surface has a surface smoothness of at least 400 sec. The invention also relates to a Method for producing a tipping wrapper for cigarettes comprising the steps: a) providing a base layer of the tipping wrapper, b) coating the base layer with a solution containing a filler component, wherein the coated base layer is pressed and heated at a predefined temperature which is greater than 100°C.

Date Submitted: 2022/01/25

CA App. No.: 3145598

Abstract:

The invention relates to a tipping wrapper for aerosol generating articles having a base layer with a porosity of less than 1,5 C.U., wherein the base layer contains at least one filler material, the tipping wrapper further comprising a surface which is pigmented with a pigment component which contains CaCO₃ and at least a second component serving as a non-combustible filler, the pigment component having a grammage of at least 2,0 gsm, wherein the pigmented surface has a surface smoothness of at least 400 sec. The invention also relates to a Method for producing a tipping wrapper for cigarettes comprising the steps: a) providing a base layer of the tipping wrapper, b) coating the base layer with a solution containing a filler component, wherein the coated base layer is pressed and heated at a predefined temperature which is greater than 100°C.

Tipping wrapper for aerosol generating article

Description

The present invention is directed to an aerosol generating article as for example a cigarette. The present application is especially directed to a tipping wrapper for aerosol generating articles as for example cigarettes. Cigarettes known from the state of the art comprise usually several components as for example a filter, a cigarette body and a so-called tipping wrapper, which is usually at least partially wrapped around the filter.

In the state of the art the tipping wrapper, also often referred to as "tipping paper" in the art, has the function to connect the mouthpiece rod and the tobacco rod, but it is furthermore known from the state of the art, that decoration such as printing, hot foiled stamping or embossing is added to this tipping wrapper. As one of the decorations of tipping wrapper is shiny appearance (especially high glossiness), tipping wrapper has been expected to enhance the attractiveness of the product.

A known technique in this field is silver ink printing to obtain such shiny appearance but, in this case, an additional printing process is required.

Moreover, the shiny appearance can be obtained by calandraring a paper containing more than 10 % Kaolin. In this case the problem arises, that ink abrasion from the paper surface after printing may arise.

On the other hand, the tipping wrapper should be non-combustible (it should comprise smoldering resistance) because it is a connecting part of the mouthpiece and the tobacco rod. To

assure sufficient non-combustibility some non-combustible tipping wrapper was developed which a certain amount of non-combustible filler.

As such a filler, titanium dioxide has been widely used. This material has the advantage of high opacity (delivers higher opacity to the paper) and non-combustibility. However, in some countries this material is prohibited because of health concerns.

Additionally tipping wrapper should have a good lip feeling during smoking. Consumers generally like better lip release feelings, which means, that a cigarette should not be stuck on the lip after puffing. For this reason it's common to add lip release varnish on the surface of the tipping wrapper to avoid that it gets stuck on the mouth of the consumer.

However, even if a lip release varnish is added it appears especially in dry atmosphere. Therefore, it is one object of the invention to provide an improved lip release feeling with the tipping wrapper. Another object of the invention is to provide a tipping wrapper which provides a shiny appearance especially without an additional printing process or also without the use of titanium dioxide (TiO₂). Also an improved lip release feeling should be provided.

The above-mentioned objects are met by the object of the independent claims. Advantageous embodiments are object of the sub claims.

A tipping wrapper according to the invention for an aerosol generating article, for example a cigarette has a base layer with a porosity of less than 1,5 C.U., wherein the base layer contains at least one filler material and wherein the tipping wrapper further comprises a surface, especially a pigmented surface, which is pigmented with a pigment component, which contains CaCO₃ and at least a second component serving as a non-combustible filler, wherein the pigment component has a grammage of at least 2,0 gsm, and wherein the pigmented surface has a surface smoothness of at least 400 sec.

Preferably, the tipping wrapper is a tipping paper. Preferably, the material of the tipping wrapper is paper. The here described tipping wrapper fulfills general tipping wrapper requirements as for example to sufficient ink fixability, to non-combustibility and machine runability. Furthermore the tipping wrapper according to the invention comprises a shiny appearance and an improved lip feeling.

In a very preferred embodiment the filler material is chosen from a group of materials which contains Kaolin, CaCO_3 , talc and $\text{Al}(\text{OH})_3$ (aluminum hydroxide).

Therefore, one of these materials can be contained in the filler materials, two, several, or all those materials. Also an arbitrary combination of the materials can be contained as for example Kaolin and talc or CaCO_3 and $\text{Al}(\text{OH})_3$.

The above-mentioned smoothness is preferably measured with the Bekk method. The Bekk smoothness testing is an informative technique for determining the smoothness of a sample.

The smoothness or the roughness is a substantial surface property of papers, cartons or cardboard, coated sheets or the like. The quality of the surface structure has a great influence on the printability and any form of coating.

The Bekk smoothness measurement is a method established in the paper industry based on airflow. This slower the air flows between the paper surface and the ideal plain, the higher the smoothness, expressed in Bekk smoothness seconds. In a preferred method, a representative paper of approximately 10 cm^2 can be tested in the Bekk method.

The above-mentioned glossiness refers to the specular gloss of paper. The specular gloss testing is an informative technique for determining the glossiness of a sample. The glossiness is a substantial surface property of papers, cartons or cardboard, coated or laminated sheets or the like. The quality of the surface glossiness has a great influence on the appearance.

The glossiness measurement is a method established in the paper industry based on specular reflection. The specular gloss expressed as a percentage, of the luminous flux reflected by the sample surface into a specified aperture at the angle of specular reflection to that from a standard specularly reflecting surface under the same conditions. In a preferred method, the light incident on the test piece surface at an angle of 60 degrees.

Another preferred embodiment the second component is chosen from a group of components which contains Kaolin, talc or aluminum hydroxide $\text{Al}(\text{OH})_3$. Also the second component may contain more than one of these components. Also the second component may contain a certain selection of these components as Kaolin and talc or talc, Kaolin and aluminum hydroxide $\text{Al}(\text{OH})_3$.

In another very preferred embodiment, the base layer is a base paper. The above-mentioned pigmented surface can also be referred to as a printing surface. In a preferred embodiment, the pigmented surface is attached to the base layer.

5 The Unit C.U. is understood as so called Coresta Unit which is defined by the volumetric flow rate of air (in the unit cm^3/min) passing through a 1 cm^2 sample of a substrate at an applied pressure difference of 1 kPa.

10 In another preferred embodiment, more than one of the above-mentioned components are comprised. In another preferred embodiment the pigmented layer may comprise a printing. In another preferred embodiment, the pigmentation layer serves for improving the brightness of the tipping wrapper.

15 The smoothness of the pigmented surface is at least 500 sec (measured with the Bekk method).

In another preferred embodiment, the base layer and the pigmented surface build a double layer structure. Here for example these two layers can be attached to each other.

20 In another preferred embodiment of the invention the filler material of the base layer is chosen or contains a material chosen from a group of materials which contains Kaolin, CaCO_3 , talc and aluminum hydroxide ($\text{Al}(\text{OH})_3$). Preferably, more of these materials are comprised in the filler material of the base layer.

25 In another preferred embodiment, the basis weight of the tipping wrapper is greater than 40 gsm, preferred greater than 45 gsm. In another preferred embodiment the basis weight of the tipping wrapper is smaller than 60 gsm, preferably smaller than 55 gsm. Those basis weights have been proven to be in a preferred range especially for machine run ability on manufacturing machines.

30 In another preferred embodiment a thickness of the tipping wrapper is greater than 30 micros, preferably greater than 35 microns.

35 In another preferred embodiment the thickness of the tipping wrapper is smaller than 55 microns, preferably smaller than 50 microns.

Preferably, the thickness along the tipping wrapper surface has a deviation of less than 20 % preferably of less than 10 %. In another preferred embodiment a paper density of the tipping wrapper is greater than 1,1 g/cm³, preferably greater than 1,15 g/cm³. In another preferred
5 embodiment a paper density of the tipping wrapper is smaller than 1,3 g/cm³, preferably smaller than 1,25 g/cm³.

Also this feature enhances the machine run ability on a cigarette making machine.

10 In another preferred embodiment a smoothness of the tipping wrapper is greater than 500 sec, preferably greater than 600 sec and preferably greater than 700 sec. Preferably, a smoothness of the tipping wrapper is smaller than 2500 sec, preferably smaller than 2000 sec.

15 In another preferred embodiment a glossiness of the tipping wrapper is greater than 10 %, preferably greater than 15 % and preferably greater than 20 %. Preferably, a glossiness of the tipping wrapper is smaller than 35 %, preferably smaller than 30 %.

In another preferred embodiment a pigment component contains the CaCO₃ (Calcium carbonate) and Kaolin in a ration which is between 3:7 and 7:3, preferably between 4:6 and 7:3
20 and most preferably between 5:5 and 6:4.

In another preferred embodiment the amount of the pigmentation is higher than 2 gsm, preferably higher than 3 gsm, preferably higher than 4gsm and preferably higher than 5 gsm.

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In another preferred embodiment, the tipping wrapper is free of titanium dioxide (TiO₂). In this case, possible health risks as considered in some countries are avoided.

In another preferred embodiment the pigmented surface is based on a coating solution, which
30 comprises water, a binder component and the pigmentation component. However, also other components may be comprised.

The present invention is furthermore directed to a cigarette comprising a tipping wrapper according to the above description. Preferably, the cigarette comprises a mouthpiece rod, a
35 tobacco rod and a connector to connect those two elements. Preferably, the tipping wrapper

and especially the above-mentioned tipping wrapper serves to connect the mouthpiece rod and the tobacco rod.

5 The present invention is furthermore directed to a method for producing a tipping wrapper for an aerosol-generating article and especially for cigarettes comprising the following steps.

In a first step, a base layer of the tipping wrapper is provided. In a second step, this base layer is coated with a solution containing a pigment component which contains CaCO_3 and at least a second component serving as a non-combustible filler.

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According to the invention, the coated based layer is pressed and heated at a predefined temperature to form a pigmented surface having a surface smoothness of at least 400 sec.

Preferably, the base layer contains at least one filler material as defined earlier.

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In a preferred embodiment of the method the predefined temperature is greater than 100°C , preferably above 140°C , preferably above 150°C , preferably above 170°C and/or the temperature is below 300°C , preferably below 250°C and preferably below 200°C .

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In a preferred embodiment of the method a pulp or a filler mixture can be pressed to a flat wire. In this step it is possible that this mixture loses water from at least one side and preferably both from a top side and from a bottom side. Thereby the water can be sucked off.

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In a subsequent method step the sheet can be pressed between elements and especially between cylinders. In this way more moisture is removed from the paper.

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In another preferred embodiment the paper is dried, wherein especially the paper comes into contact with steam heated cylinders to be dried. Therefore preferably cylinder devices or cylinders are used to dry the paper. Especially heated cylinders and most preferably steam-heated cylinders are used.

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In another preferred embodiment a surface coating and especially a pigmentation unit is used. In another preferred step a coating of a solution (comprising preferably filler and binder) is supplied on at least one surface of the paper. Preferably a coating and especially a pigment component is used which contains CaCO_3 and at least a second component serving as a

non-combustible filler. Preferably the pigment component is supplied with a grammage of a least 2,0 gsm.

5 In another preferred embodiment another drying of the paper is made, preferably again by heated cylinders and most preferably by steam heated cylinders.

In another preferred embodiment, the above-mentioned calendaring process is added. Preferably the paper passes between calendar rollers especially at higher temperatures and pressures. The paper surface becomes therefore smooth and glossy. This is especially possible if there is sufficient filler amount on the surface of the paper.

15 In another preferred embodiment the paper is winded, preferably using a reel. In another preferred embodiment a physical property of the paper is measured, for example the base weight, the opacity and other.

The product provides an improved shiny appearance and a higher surface or smoothness.

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Claims

1. Tipping wrapper for aerosol generating articles having a base layer with a porosity of less than 1,5 C.U., wherein the base layer contains at least one filler material, the tipping wrapper further comprising a surface which is pigmented with a pigment component which contains CaCO_3 and at least a second component serving as a non-combustible filler, the pigment component having a grammage of at least 2,0 gsm, wherein the pigmented surface has a surface smoothness of at least 400 sec.
- 15 2. Tipping wrapper according to claim 1,
characterized in that
the base layer and the pigmented surface build a double layer structure.
3. Tipping wrapper according to at least one of the preceding claims,
20 **characterized in that**
the filler material of the base layer is chosen from a group of materials which contains Kaolin, CaCO_3 , talc and $\text{Al}(\text{OH})_3$.
4. Tipping wrapper according to at least one of the preceding claims,
25 **characterized in that**
the basis weight of the tipping wrapper is greater than 40 gsm, preferably greater than 45 gsm and/or the basis weight of the tipping wrapper is smaller than 60 gsm, preferably smaller than 55 gsm.
- 30 5. Tipping wrapper according to at least one of the preceding claims,
characterized in that
a thickness of the tipping wrapper is greater than 30 microns, preferably greater than 35 microns and/or a thickness of the tipping wrapper is smaller than 55 microns, preferably smaller than 50 microns.

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6. Tipping wrapper according to at least one of the preceding claims,
characterized in that
a paper density of the tipping wrapper is greater than 1,1 g/cm³, preferably greater than
1,15 g/cm³ and/or a paper density of the tipping wrapper is smaller than 1,3 g/cm³, pref-
erably smaller than 1,25 g/cm³.
7. Tipping wrapper according to at least one of the preceding claims,
characterized in that
a smoothness of the tipping wrapper is greater than 500 sec, preferably greater than
600 sec and preferably greater than 700 sec.
8. Tipping wrapper according to at least one of the preceding claims,
characterized in that
a smoothness of the tipping wrapper is smaller than 2500 sec, preferably smaller than
2000 sec.
9. Tipping wrapper according to at least one of the preceding claims,
characterized in that
a glossiness of the tipping wrapper is greater than 10 %, preferably greater than 15 %
and preferably greater than 20 %.
10. Tipping wrapper according to claim 9,
characterized in that
a glossiness of the tipping wrapper is smaller than 35 %, preferably smaller than 30 %.
11. Tipping wrapper according to at least one of the preceding claims,
characterized in that
the pigment component contains CaCO₃ and Kaolin in a ration which is between 3:7
and 7:3, preferably between 4:6 and 7:3, preferably between 5:5 and 6:4.
12. Tipping wrapper according to at least one of the preceding claims,
characterized in that
the pigment component amount is higher than 5 gsm.

13. Tipping wrapper according to at least one of the preceding claims,
characterized in that
the tipping wrapper is free of titanium dioxide (TiO₂).
- 5 14. Tipping wrapper according to at least one of the preceding claims,
characterized in that
the pigmented surface is based on a coating solution which comprises water, a binder
component and the pigmentation component.
- 10 15. Cigarette comprising a tipping wrapper according to at least one of the preceding
claims.
16. Method for producing a tipping wrapper for cigarettes comprising the steps:
- providing a base layer of the tipping wrapper
15 - coating the base layer with a solution containing a pigment component which contains
CaCO₃ and at least a second component serving as a non-combustible filler,
- pressing and heating the coated base layer to form a pigmented surface having a sur-
face smoothness of at least 400 sec.
- 20 17. Method according to the preceding claim,
characterized in that
the coated base layer is pressed and heated at a predefined temperature which is
greater than 100°C, preferably the predefined temperature is above 140°C, preferably
above 150°C and preferably above 170°C, and/or the temperature is below 300°C, pref-
25 erably below 250°C, preferably below 200°C.