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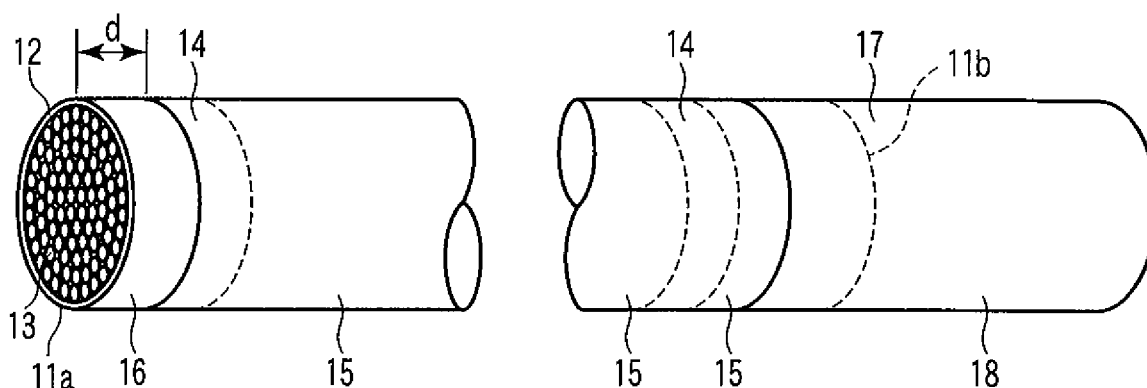
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(54) **LOW FLAME-SPREADING CIGARETTE PAPER**

(57) A cigarette paper exhibiting a low flame-spreading property, includes, on one surface of a base cigarette paper containing a filler in an amount of 2 to 6 g/m² and having a basis weight of 16 to 22 g/m², burn-suppressing

regions coated with a burn-suppressing agent, provided spaced apart from each other, in which the total coating amount of the burn-suppressing agent corresponds to 0.2 to 1.8 g per m² of the coated portion.



FIGURE

Description

Technical Field

5 **[0001]** The present invention relates to a low flame-spreading cigarette paper, and particularly, to a cigarette paper exhibiting both a low flame-spreading property and a low C/T ratio.

Background Art

10 **[0002]** For example, a cigarette paper provided with bands formed of a flame retardant substance coated on a base cigarette paper is proposed (Jpn. Pat. Appln. KOKAI Publication No. 7-300795), in order to hardly cause the flame to spread from the kindling to, e.g., the floor when the cigarette is dropped on the floor through, for example, the carelessness of the smoker. This technique is based on the idea that when regions having a high combustibility and regions having a low combustibility are formed on a cigarette paper, the ordinary smoking can be performed at the region having a high combustibility, but, if a substance is brought into contact with the cigarette at the regions having a low combustibility, the cigarette is self-extinguished.

15 **[0003]** However, where a cigarette is manufactured by using the conventional low-flame spreading cigarette paper noted above, the carbon monoxide/tar ratio (C/T ratio) per cigarette is not sufficiently low.

20 Disclosure of Invention

[0004] Therefore, it is an object of the present invention to provide a cigarette paper exhibiting a low flame-spreading property and achieving a low C/T ratio.

25 **[0005]** According to the present invention, there is provided a cigarette paper exhibiting a low flame-spreading property, comprising, on one surface of a base cigarette paper containing a filler in an amount of 2 to 6 g/m² and having a basis weight of 16 to 22 g/m², burn-suppressing regions coated with a burn-suppressing agent, provided spaced apart from each other, wherein a total coating amount of the burn-suppressing agent corresponds to 0.2 to 1.8 g per m² of the coated portion.

30 Brief Description of Drawings

[0006] The single figure is a schematic oblique view, partly broken away, exemplifying a construction of a cigarette wrapped with a cigarette paper according to one embodiment of the present invention.

35 Best Mode for Carrying Out the Invention

[0007] The present invention will now be described in more detail.

[0008] In the cigarette paper of the present invention, burn-suppressing regions coated with a burn-suppressing agent are formed apart from each other on one surface of a base cigarette paper.

40 **[0009]** The base cigarette paper is based on an ordinary pulp such as flax pulp that is generally used for cigarette papers. However, the base cigarette paper contains a filler in an amount of 2 to 6 g/m², and has a basis weight of 16 to 22 g/m².

[0010] As the filler, use may be made of materials that are used generally including, for example, carbonates such as calcium carbonate and potassium carbonate, and hydroxides such as calcium hydroxide and magnesium hydroxide.

45 **[0011]** A burn adjusting agent such as citric acid or a salt thereof (sodium salt or potassium salt) may be added to the cigarette paper. These burn-adjusting agents, if added, may be used in an amount of up to 2% by weight in the base cigarette paper.

50 **[0012]** On one surface of the base cigarette paper, burn-suppressing regions, which are formed by coating of a burn-suppressing agent, are provided apart from each other. The burn-suppressing regions may be provided in the form of a plurality of stripes such that when a tobacco rod is wrapped with the cigarette paper, they extend in the longitudinal direction of the tobacco rod and are spaced apart from each other in the circumferential direction of the tobacco rod. Alternatively, the burn-suppressing regions may be provided in the form of a plurality of annular rings such that they extend in the circumferential direction of the tobacco rod and are spaced apart from each other in the longitudinal direction of the tobacco rod. In any case, the total coating amount of the burn-suppressing agent (dry basis) corresponds to 0.2 to 1.8 g/m² per m² of the coated region.

55 **[0013]** As the burn-suppressing agent, use may be preferably made of, for example, proteins such as gelatin, casein, albumin, and gluten; polysaccharides exhibiting a viscosity-increasing property such as starch, xanthan gum (echo gum), locust bean gum, guar gum (guar pack), tragacanth gum, tamarind seed polysaccharide (glyroid), karaya gum, gum

arabic, pullulan, dextrin, cyclo dextrin (Oligoseven), and gutty; polysaccharides exhibiting a gelling property such as carrageenan, curdlan, agar-agar, gelatin, farselan, pectin, juran gum, and Kelco Gel; a lipid such as lecithin; natural polymer derivatives such as sodium alginate, carboxymethyl cellulose, methyl cellulose, propylene glycol alginate ester, and processed starch (such as starch phosphate); synthesized polymeric compounds such as sodium polyacrylate and various polymeric emulsifying agents; inorganic ammonium salts such as ammonium chloride, ammonium phosphate, ammonium hydrogen phosphate, ammonium dihydrogen phosphate, ammonium bromide and ammonium sulfate; inorganic hydroxides such as barium hydroxide, calcium hydroxide, and aluminum hydroxide; an inorganic salt flame retardant such as sodium borate, boric acid, zinc chloride, magnesium chloride, calcium chloride, and sodium sulfate. Also, finely pulverized cellulose, microcrystalline cellulose, flax pulp, and wood pulp have similar effects. These burn-suppressing agents can be used singly or in combination of two or more of these. Sodium alginates having various degrees of polymerization are commercially available. In the present invention, sodium alginate having a polymerization degree of 500 to 900 is preferred. Sodium alginate having such a high degree of polymerization exhibits a high burn-suppressing effect even when used in a small amount.

[0014] In the present invention, the low flame-spreading property and the low C/T ratio can be exhibited at the same time by setting the amount of the filler in the base cigarette paper, the basis weight of the base cigarette paper, and the total coating amount of burn-suppressing agent within the ranges described above.

[0015] The low flame-spreading cigarette paper of the present invention is used to wrap a tobacco rod formed of, for example, tobacco shreds, and generally, the surface on which the burn-suppressing agent is coated is brought into contact with the tobacco rod.

[0016] FIG. 1 illustrates a cigarette wrapped with a cigarette paper on which a burn-suppressing agent is coated in the form of annular rings.

[0017] Referring to FIG. 1, a cigarette 10 comprises a tobacco rod 11 consisting of a tobacco filler 13 that is wrapped with a base cigarette paper 12 in the form of a column. The base cigarette paper 12 may have an inherent air permeability of about 10 to 100 CORESTA units. In general, the tobacco rod 11 has a circumference of 17 to 26 mm and a length of 49 to 90 mm. An ordinary filter 18 may be attached to the proximal end portion (i.e., downstream edge portion in the inhaling direction) of the tobacco rod 11 by using a chip paper 17 according to the ordinary method.

[0018] An annular region 14 coated with a burn-suppressing agent is formed on the base cigarette paper 12, defining a burn-suppressing region. Where a plurality of annular burn-suppressing regions 14 are formed as illustrated in FIG. 1, these annular regions 14 are formed apart from each other in the longitudinal direction of the tobacco rod.

[0019] An ordinary burn region 15 that is not coated with a burn-suppressing agent is formed between adjacent annular burn-suppressing regions 14. Since the region 15 is constituted by a part of the base cigarette paper 12, it can burn under the ordinary smoking state like the base cigarette paper 12 itself. It follows that the region 15 acts as an ordinary burn region. For example, it is possible to form 1 to 3 annular burn-suppressing regions 14. Also, the annular burn-suppressing region 14 may have a width of 4 to 7 mm in the longitudinal direction and generally have a thickness of 0.1 to 5 μm . Where a plurality of burn-suppressing regions 14 are formed, distance between the adjacent burn-suppressing regions 14 is preferably 18 to 25 mm.

[0020] In the cigarette shown in FIG. 1, a region 16 covering a distance d from the tip is not coated with a burn-suppressing agent. This section at the tip portion, which is not coated with the burn-suppressing agent, also constitutes an ordinary burn region, and can correspond to the region that is combusted by one puff or two puffs in the ordinary cigarette. Incidentally, where a plurality of burn-suppressing regions 14 are provided, the ordinary burn region 16 may not be formed ($d = 0$). However, where a single burn-suppressing region 14 is provided, the distance d from the tip 11a of the tobacco rod can be set at 10 to 25 mm. It is not particularly necessary to form a burn-suppressing region 14 on the inner surface of the cigarette paper corresponding to that portion of the cigarette paper 12 which is covered with the chip paper 17.

[0021] When the cigarette 10 is ignited at the tip 11a and inhaled to be burnt, the cigarette can burn at the ordinary burn region 15 like an ordinary cigarette and the flavor and taste can be enjoyed. However, if the cigarette 10 under the ignited state is put on a combustible material such as a carpet, a tatami mat, a wooden article, cloths, or clothing, the burn-suppressing region 14 extending in the combusting direction, the heat absorption by the combustible substance, and the expanded tobacco shreds collectively serve to extinguish the cigarette 10, and prevent the combustible substance from catching fire. Also, the cigarette wrapped with the cigarette paper of the present invention is low in the C/T ratio in the mainstream smoke.

[0022] The present invention will be described by way of Examples below. However, the present invention is not limited by these Examples.

Examples 1 to 13 and Comparative Examples 1 to 12

[0023] A base paper (width 27 mm; length 1.500m) of the specification shown in Table 1 was coated (printed) with an aqueous solution of sodium alginate of various concentrations (0.5 to 20% by weight) at a constant width of 7 mm in the

longitudinal direction and a constant spacing of 20 mm in the form of stripes by a direct gravure method, forming a total of 56 burn-suppressing agent-coated regions. For the cigarette paper thus obtained, the total coating amount of sodium alginate was measured according to the procedures described below. The results are shown also in Table 1. As shown in Table 1, the total coating amount of the burn-suppressing agent per m² of the region coated with the burn-suppressing agent (sodium alginate) corresponded to 0.2 to 1.8g in the papers of Examples 1 to 13. This coating amount of the burn-suppressing agent can be converted to the amount of the burn-suppressing agent per area of the cigarette paper by being multiplied by 7/27, yielding 0.05 to 0.47 g/m². Incidentally, sodium alginate used in each of Examples 5, 8 and 11 was I-S manufactured by KIMIKA (registered trademark) (polymerization degree: 650 to 670; viscosity of its 3% by weight aqueous solution at 25°C: 29976.9 cP), and sodium alginate used in each of the other Examples was IL-2 manufactured by KIMIKA (registered trademark) (polymerization degree: 30 to 180; viscosity of its 3% by weight aqueous solution at 25°C: 907.2 cP).

[0024] A tobacco rod consisting of American blend of tobacco shreds (tar amount without a filter: 19 to 20 mg) was wrapped with the cigarette paper obtained above, and was cut such that the first coated region was arranged 5 mm spaced apart from the burn edge of the cigarette. Each cigarette was 59 mm long, and had two burn-suppressing agent-coated regions.

[0025] The cigarette thus obtained was subjected to a burn test in accordance with ASTM E-2187-04 so as to measure the value of PFLB (percent full-length burn). Also, the CO amount in the mainstream smoke, the number of puffs and the tar amount for each cigarette sample were measured by the methods described below in respect of these cigarette samples. The results are shown in Table 2.

<Measurement of Total Coating Amount of Sodium Alginate>

[0026] Measurement was made as follows in accordance with "Quantitative Analytical Method of Sodium Alginate in Food" described in "Food Hygienics Magazine", Vol. 5, pp. 297-302 (1988), without carrying out the degreasing, the treatment with a dilute sulfuric acid, and the protein-removing treatment.

[0027] The cigarette paper coated with the burn-suppressing agent (1.5000m; width 27 mm) (about 1.0g) was cut into pieces each sized at 5 mm square. Then, 40 mL of a 1% by weight aqueous solution of sodium hydrogen carbonate was added thereto, and heated for 5 minutes in a warm water bath at 60°C. Then, the mixture was sufficiently mixed, stirred, and subjected to centrifugal separation (3,500 rotations, 10 minutes; the same applies to the following) to give a supernatant liquor (extracted liquid). The extraction residue was similarly subjected again to the extraction to give a supernatant liquor (extracted liquid). In addition, 20 mL of a 1% by weight aqueous solution of sodium hydrogen carbonate was added to and mixed sufficiently with the extraction residue to give supernatant liquor (extracted liquid). These three extracted liquid were combined, and a 1% by weight aqueous solution of sodium hydrogen carbonate was added to 100 mL, which was used as a test solution.

[0028] 2 mL of copper-hydrochloric acid solution (8.5M hydrochloric acid containing 0.05% by weight of copper sulfate) and 1 mL of a naphthoresorcinol solution (0.4% by weight aqueous solution of 1,3-dihydroxynaphthalene) were added to each of 1 mL of a sodium alginate standard solution (1% by weight aqueous solution of sodium hydrogen carbonate containing sodium alginate at a concentration of 0 to 0.2 mg/mL) and 1 mL of the test solution noted above. Then, each mixture was heated for 65 minutes in a boiling water bath, and then cooled in ice water, to which 4 mL of butyl acetate was added. The mixture was shaken and subjected to centrifugal separation.

[0029] 1 mL was taken from the supernatant liquor after the centrifugal separation, diluted by adding 3 mL of butyl acetate and subjected to a colorimetric at 566 nm, and the total coating amount was calculated.

<Measurement of CO Amount and the Number of Puffs>

[0030] For measuring the CO amount, the tobacco smoke was collected by using an 8-port linear smoking machine (SM 342) manufactured by FILTRONA Inc. For the burn of the cigarette, the suction of 35 mL/2 seconds was carried out at an interval of 60 seconds according to the ISO standards, and the smoke passing through the glass fiber filter was collected in a gas bag. The suction of the cigarette sample was stopped when the sample reached the standard burn length (51 mm from the ignition edge of the cigarette (8 mm apart from the tip side as measured from the boundary between the cigarette paper and the chip paper)). The number of puffs at this point was counted and recorded. After the burning, the igniting portion was removed and, then, blank puffing was performed three times so as to collect the gas remaining in the cigarette. In this fashion, the gas of the cigarette sample was collected in the gas bag, and the total particulate matter (TPM) was collected at the glass fiber filter.

[0031] The CO amount per cigarette sample was measured with a CO measuring apparatus manufactured by FILTRONA Inc., using the gas collected in the gas bag and

<Measurement of Tar Amount>

[0032] From the particulate components collected at the glass fiber filter in measuring the CO amount, the crude tar amount was weighed, and then the filter was put in a serum bottle and vigorously shaken together with 10 mL of 2-propanol (GC grade, manufactured by Wako Junyaku K.K.). The extracted liquor was filtered and poured into a vial. Then, the extracted liquor was applied to a chromatograph so as to measure the water amount and the nicotine amount. The quantitative determination was carried out by the internal standard method, and the tar amount was obtained by subtracting the water amount and the nicotine amount from the crude tar amount.

Table 1: Specification of cigarette paper

Example	Base cigarette paper				Total coating amount of burn-suppressing agent (g/m ²)
	Filler (g/m ²)	Basis weight (g/m ²)	Burn-adjusting agent (% by weight)	Air permeability (CORESTA)	
Comp. Ex. 1	7.7	25	0.3	35	0
Comp. Ex. 2	5.2	21	0.3	45	0
Comp. Ex. 3	4.1	21	0.3	35	0
Comp. Ex. 4	2.5	20	0.3	37	0
Comp. Ex. 5	2.1	19	0.3	31	0
Comp. Ex. 6	7.7	26	0.3	35	1.8
Comp. Ex. 7	7.7	26	1.0	35	1.8
Comp. Ex. 8	7.7	26	0.3	35	2.2
Comp. Ex. 9	7.7	26	1.0	35	2.2
Comp. Ex. 10	2.1	19	0.3	31	2.3
Comp. Ex. 11	2.1	26	0.3	32	0.5
Comp. Ex. 12	5.2	21	0.3	45	2.0
Ex. 1	5.2	21	0.3	45	0.3
Ex. 2	5.2	21	0.3	45	1.2
Ex. 3	5.2	21	0.3	45	1.6
Ex. 4	5.2	21	0.3	45	1.8
Ex. 5	4.1	21	0.3	35	0.3
Ex. 6	4.1	21	0.3	35	1.0
Ex. 7	4.1	21	0.3	35	1.8
Ex. 8	2.5	21	0.3	37	0.2
Ex. 9	2.5	20	0.3	37	0.7
Ex. 10	2.5	20	0.3	37	1.8
Ex. 11	2.1	19	0.3	31	0.2
Ex. 12	2.1	19	0.3	31	0.6
Ex. 13	2.1	19	0.3	31	1.0

Table 2: Test results

Example	PFLB (%)	Tar amount per cig. (mg)	CO amount per cig. (mg)	C/T ratio	Puff number	Remarks
Comp. Ex. 1	100	19.6	16.0	0.82	7.4	
Comp. Ex. 2	81-95	21.0	15.2	0.72	7.6	
Comp. Ex. 3	87-99	21.8	16.0	0.73	7.8	
Comp. Ex. 4	81-95	23.2	16.2	0.70	8.1	
Comp. Ex. 5	20-40	23.7	16.8	0.71	8.2	
Comp. Ex. 6	20-40	21.1	18.4	0.87	8.2	
Comp. Ex. 7	20-40	21.2	19.3	0.91	8.4	
Comp. Ex. 8	0-5	21.6	19.0	0.88	8.4	
Comp. Ex. 9	0-5	21.1	19.2	0.91	8.2	
Comp. Ex. 10	0-5	-	-	-	-	Impossible to measure; the cigarette went out
Comp. Ex. 11	0-5	22.9	20.6	0.90	8.5	
Comp. Ex. 12	0-5	-	-	-	-	Impossible to measure; the cigarette went out
Ex. 1	0-5	21.4	15.6	0.73	7.8	
Ex. 2	0-5	22.3	16.5	0.74	8.2	
Ex. 3	0-5	22.8	17.0	0.75	8.4	
Ex. 4	0-5	23.0	17.2	0.75	8.5	
Ex. 5	0-5	22.0	16.3	0.74	7.9	
Ex. 6	0-5	23.0	17.4	0.76	8.4	
Ex. 7	0-5	23.5	17.9	0.76	8.6	
Ex. 8	0-5	23.4	16.4	0.70	8.2	
Ex. 9	0-5	23.8	16.8	0.71	8.4	
Ex. 10	0-5	25.1	18.1	0.72	9.0	
Ex. 11	0-5	25.0	17.8	0.71	8.7	
Ex. 12	0-5	25.3	18.2	0.72	8.9	
Ex. 13	0-5	25.9	18.8	0.73	9.1	

[0033] From the results shown in Table 2, it can be seen that the cigarette papers (Examples 1-13) in which a burn-suppressing agent is coated spaced from each other on a base cigarette paper containing a filler in an amount of 2 to 6 g/m² and having a basis weight of 16 to 22 g/m² such that the total coating amount corresponds to 0.2 to 1.8 g/m² exhibit a low flame-spreading property and a low C/T ratio.

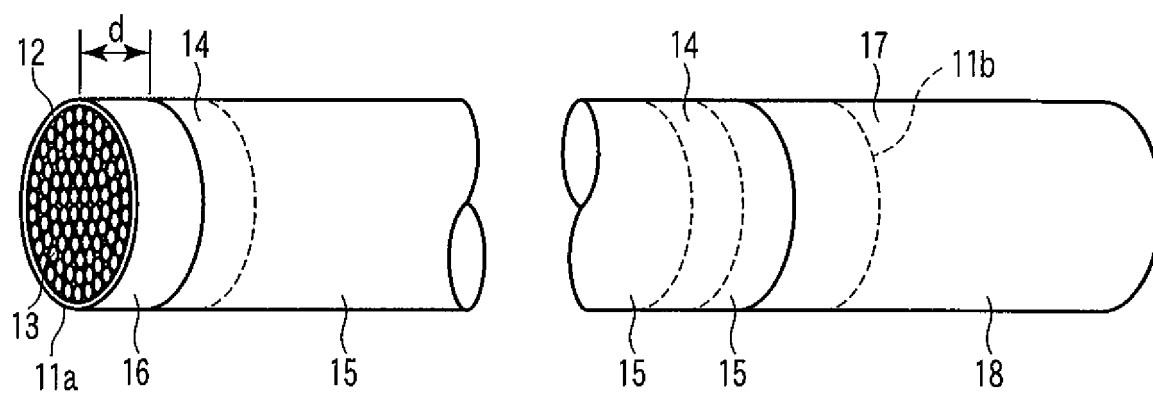
[0034] As has been described above, the present invention provides a cigarette paper which exhibits a low flame-spreading property and achieves a low C/T ratio.

Claims

1. A cigarette paper exhibiting a low flame-spreading property, comprising, on one surface of a base cigarette paper containing a filler in an amount of 2 to 6 g/m² and having a basis weight of 16 to 22 g/m², burn-suppressing regions coated with a burn-suppressing agent, provided spaced apart from each other, wherein a total coating amount of

the burn-suppressing agent corresponds to 0.2 to 1.8 g per m² of the coated portion.

2. The cigarette paper according to claim 1, wherein the burn-suppressing regions are in a form of a plurality of stripes such that when a tobacco rod is wrapped with the cigarette paper, they extend in a longitudinal direction of the tobacco rod and are spaced apart from each other in a circumferential direction of the tobacco rod.
3. The cigarette paper according to claim 1, wherein the burn-suppressing regions are in a form of a plurality of annular rings such that when a tobacco rod is wrapped with the cigarette paper, they extend in a circumferential direction of the tobacco rod and are spaced apart from each other in a longitudinal direction of the tobacco rod.
4. The cigarette paper according to claim 1, wherein the burn-suppressing agent is sodium alginate.
5. The cigarette paper according to claim 4, wherein the alginic acid has a degree of polymerization of about 500 to about 900.



FIGURE

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2006/303861

A. CLASSIFICATION OF SUBJECT MATTER

D21H27/00 (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

D21H27/00, A24D1/00-15/42, A24C1/00-5/60, A24D1/00-3/18

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2006

Kokai Jitsuyo Shinan Koho 1971-2006 Toroku Jitsuyo Shinan Koho 1994-2006

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	WO 02/37991 A1 (SCHWEITZER-MAUDUIT INTERNATIONAL), 16 May, 2002 (16.05.02), All references & JP 2004-512849 A & US 2002-139381 A1 & US 2004-182407 A1 & EP 1333729 A & AU 3295202 A & CA 2427830 A & BR 115333 A & CN 1474659 A	1-4 5
X	WO 02/78471 A1 (LORILLARD LICENSING COMPANY, L.L.C.), 10 October, 2002 (10.10.02), All references & JP 2004-528838 A & US 2002-179106 A1 & US 2004-123874 A1 & EP 1381291 A & CA 2442616 A	1-3

☒ Further documents are listed in the continuation of Box C.
 ☐ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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Date of the actual completion of the international search
06 April, 2006 (06.04.06)Date of mailing of the international search report
18 April, 2006 (18.04.06)Name and mailing address of the ISA/
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2006/303861

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 2003/136420 A1 (Schweitzer-Mauduit International, Inc.), 24 July, 2003 (24.07.03), Pages 3 to 4; Par. Nos. [0032], [0041] to [0044] & JP 2005-514939 A & US 2004-255966 A1 & EP 1482815 A & WO 03/61410 A & CA 2467767 A & BR 307111 A & CN 1612700 A	1-4 5
A	WO 02/17737 A1 (JAPAN TOBACCO INC.), 07 March, 2002 (07.03.02), All references & US 2003-145869 A1 & US 2003-150466 A1 & EP 1321048 A1 & EP 1329165 A1 & WO 02/19848 A1 & AU 8020701 A & AU 8448801 A & CA 2420596 A & CA 2421717 A & CN 1466424 A & CN 1452463 A	1-5
A	US 5820998 A1 (Schweitzer-Mauduit International, Inc.), 13 October, 1998 (13.10.98), All references & JP 7-300795 A & EP 671505 A2 & FI 951054 A & BR 9500813 A & CA 2126494 A	1-5
A	GB 1524211 A1 (BRITISH-AMERICAN TOBACCO CO., LTD.), 06 September, 1978 (06.09.78), All references & JP 51-95197 A & US 4077414 A & DE 2559071 A & BE 837440 A & CH 604576 A & NL 7600147 A & AU 8786375 A & FI 753635 A & BR 7600035 A & CA 1035230 A & DK 5576 A & ZA 7507980 A	1-5

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 7300795 A [0002]

Non-patent literature cited in the description

- Quantitative Analytical Method of Sodium Alginate in Food. *Food Hygienics Magazine*, 1988, vol. 5, 297-302 [0026]