PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 :
A24B 15/16

A1

(11) International Publication Number: **WO 97/32492**

(43) International Publication Date: 12 September 1997 (12.09.97)

(21) International Application Number: PCT/GB97/00589

(22) International Filing Date: 4 March 1997 (04.03.97)

(30) Priority Data:
9605117.2 7 March 1996 (07.03.96) GB

(71) Applicant *(for all designated States except US)*: BRITISH-AMERICAN TOBACCO COMPANY LIMITED [GB/GB]; Millbank, Knowle Green, Staines, Middlesex TW18 1DY (GB).

(72) Inventor; and
(75) Inventor/Applicant *(for US only)*: McADAM, Kevin, Gerard [GB/GB]; 60 Summit Way, Midanbury, Southampton, SO18 4ST (GB).

(74) Agents: MACLEAN, Kenneth, John, Hamson et al.; British-American Tobacco Company Limited, Patents Dept., Technology Centre, Regents Park Road, Southampton SO15 8TL (GB).

(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

Published
With international search report.

(54) Title: SMOKABLE FILLER MATERIAL FOR SMOKING ARTICLES

(57) Abstract

This invention relates to a smokable filler material which comprises casing material as a fuel material, along with an inorganic filler, a binder and an aerosol generating source. This material has good taste and flavour characteristics and contains relatively little tobacco material.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AM	Armenia	**GB**	United Kingdom	**MW**	Malawi
AT	Austria	**GE**	Georgia	**MX**	Mexico
AU	Australia	**GN**	Guinea	**NE**	Niger
BB	Barbados	**GR**	Greece	**NL**	Netherlands
BE	Belgium	**HU**	Hungary	**NO**	Norway
BF	Burkina Faso	**IE**	Ireland	**NZ**	New Zealand
BG	Bulgaria	**IT**	Italy	**PL**	Poland
BJ	Benin	**JP**	Japan	**PT**	Portugal
BR	Brazil	**KE**	Kenya	**RO**	Romania
BY	Belarus	**KG**	Kyrgystan	**RU**	Russian Federation
CA	Canada	**KP**	Democratic People's Republic of Korea	**SD**	Sudan
CF	Central African Republic			**SE**	Sweden
CG	Congo	**KR**	Republic of Korea	**SG**	Singapore
CH	Switzerland	**KZ**	Kazakhstan	**SI**	Slovenia
CI	Côte d'Ivoire	**LI**	Liechtenstein	**SK**	Slovakia
CM	Cameroon	**LK**	Sri Lanka	**SN**	Senegal
CN	China	**LR**	Liberia	**SZ**	Swaziland
CS	Czechoslovakia	**LT**	Lithuania	**TD**	Chad
CZ	Czech Republic	**LU**	Luxembourg	**TG**	Togo
DE	Germany	**LV**	Latvia	**TJ**	Tajikistan
DK	Denmark	**MC**	Monaco	**TT**	Trinidad and Tobago
EE	Estonia	**MD**	Republic of Moldova	**UA**	Ukraine
ES	Spain	**MG**	Madagascar	**UG**	Uganda
FI	Finland	**ML**	Mali	**US**	United States of America
FR	France	**MN**	Mongolia	**UZ**	Uzbekistan
GA	Gabon	**MR**	Mauritania	**VN**	Viet Nam

SMOKABLE FILLER MATERIAL FOR SMOKING ARTICLES

This invention relates to smokable filler material for smoking articles, and in particular to filler material which may not necessarily comprise any tobacco filler material.

In the many efforts which have been made to provide alternative smokable filler materials very few, if any, materials have been found which produce a smoke taste and flavour which is acceptable to smokers of conventional tobacco containing products. Therefore, most alternative filler materials have been used in conjunction with cut tobacco leaf or tobacco-containing reconstituted products. However, even in this form the unacceptable taste of these filler materials is noticeable and detracts from smoking pleasure.

Commonly used in tobacco filler materials are casing materials applied as a casing sauce to the tobacco blend, usually before cutting of the blended material occurs. The casing sauce can include materials such as sugars, humectants and aromatic substances, such as flavours. Casing materials can also include less volatile flavour materials, such as the materials derived from cocoa beans, vanilla beans, tonka beans and deer tongue, for example. Casing materials are commonly added to tobacco at an application level of 3 - 10%.

This invention seeks to provide a tobacco substitute material which utilises one or more of the group known as

casing materials as a fuel material in a smokable filler material.

It is an object of the present invention to provide a smokable filler material with acceptable taste and flavour characteristics for the consumer, which smokable filler material contains little tobacco, and preferably no tobacco, therein.

It is also an object of the invention to provide a smokable filler material which has a lower static peak burning temperature than tobacco. We have found that some materials exhibit cooler static peak burning temperatures, so much so that the ash of the filler material can be touched almost immediately after smoking, or even during the smoking process, without burning one's finger, or indeed furniture or other combustible materials.

It is a further object of the invention to provide a smokable filler material which has acceptable taste and flavour characteristics and is thus suitable for inclusion with tobacco material, if desired, without detracting from the taste and flavour of the natural tobacco products. Alternatively, the filler material may comprise 100% of the smoking article filler material.

The present invention provides a smoking article smokable filler material comprising a non-tobacco fuel material comprising one or more casing materials, a substantially non-combustible inorganic filler, an aerosol generating source, and a binder.

Preferably, where the casing material is caramel the caramel is used in combination with at least one other casing material.

Carbon, an expansion medium and an organic filler may all be optional additional materials suitable for use in the filler material, depending on the final product characteristics required. For example, a foamed or non-foamed, i.e. expanded, product would additionally comprise an expansion medium, such as starch, in an appropriate amount.

The carbon may be present in an amount up to about 20%, the expansion medium may be present in an amount up to 30%, all dry weight of the dry materials in the mixture.

The smoking article smokable filler material may preferably comprise about 10% to about 70% casing material, about 2% to about 30% aerosol generating source, about 5% to about 80% inorganic filler material, about 5% to about 25% binder, 0 to about 30% expansion medium and 0 to about 20% carbon.

Preferably the total casing material is less than 50%, more preferably less than 40% and even more preferably less than 30%, by weight of the smokable filler material.

Suitably when the casing material comprises more than one casing material and includes cocoa, the cocoa is the larger portion of the casing material.

Preferably the amount of aerosol generating material is about 15% or less, by weight of the smokable filler material.

Preferably the amount of inorganic filler material is more than about 30%, more preferably more than about 40%, and even more preferably more than about 50%, by weight of the smokable filler material.

Preferably the amount of binder is less than 15% by weight of the smokable filler material, if the binder is not pectin.

Preferably the amount of sugar, if present, is less than 15% by weight of the smokable filler material.

Advantageously the casing material comprises at least two or three individual casing materials and may comprise up to about seven or eight casing materials.

The smokable filler material may suitably comprise 10-68% total casing material, which may be comprised of 0-15% licorice, 0-50% cocoa, 0-13% propylene glycol, 0-26% sugar, 0-6% honey, 0-1% St. Johns Bread, 0-1% tartaric acid, 0-13% glycerol and 9-67% chalk.

The better known casing materials are sugars and related materials, such as cane sugar, invert sugar, fruit sugar from fruit juices, such as prune juice for example, demerara sugar, maple sugar, sucrose, honey, caramel and molasses; humectants such as propylene glycol, glycerol, diethylene glycol, butylene glycol and sorbitol; distilled water, licorice, coffee, vanillin, apple derivatives, clove, cocoa, St. John's Bread, and acids, such as citric and tartaric acids, for example. Other suitable casing materials will be known to the skilled man.

The proportion of casing material utilised will depend on the smoke taste and flavour produced, and by the requirement, if any, to produce a low sidestream smokable filler material. The nature of the smoking article wrapper utilised with the smokable filler material will also be a determinant of the composition of the filler material, as well as the permeability of the wrapper material.

Top flavour compositions are also used on smoking material. Advantageously the smokable filler material of the present invention also comprises one or more of a top flavour typical of those used on cigarette tobacco filler material in order to provide a taste and flavour similar to that of a conventional tobacco-containing cigarette.

Preferably the smokable filler material is a substantially non-tobacco material. As used herein, the term substantially non-tobacco material should be taken to mean containing about 5% or less tobacco material by weight of the filler, more preferably less than 3% by weight tobacco material, and even more preferably no tobacco material therein.

Advantageously the casing material mixture may be subjected to a pre-treatment step before sheet formation, which step may comprise heating to about 140°C for about 6 minutes.

Advantageously tobacco extract material may be included in the casing material fuel. The tobacco extract material may suitably be in a purified form or a synthetic analogue of the tobacco extract in whole or in part.

Preferably, the non-combustible inorganic filler is selected from those materials described in our co-pending PCT application. An organic filler may also substitute for a proportion of the inorganic filler, or be used alone as the filler material. The subject matter of our co-pending PCT Application NO. PCT/GB 95/02110 relating to suitable inorganic and organic materials for the present invention is to be considered as incorporated herein by reference thereto. This PCT application will be known herein as our co-pending PCT application. The non-combustible inorganic materials include, such as for example, chalk, perlite, vermiculite, diatomaceous earth, colloidal silica, magnesium oxide, magnesium sulphate or other low density, non-combustible, inorganic filler materials known to those skilled in the art. Organic fillers include inorganic salts of organic acids, polysaccharide material, or, for example, organic binder material, present at a level greater than the level required for that material to act purely as a binder.

Suitable binder materials for the present invention include the well known cellulosic or cellulosic derivative binders, alginic or pectinaceous binders, all of which are described in our co-pending PCT application, particularly in relation to the non-combustible wrapper thereof. The binder may be an organic binder, for example, cellulose derivatives, such as sodium carboxymethyl cellulose, methyl cellulose, hydroxypropyl cellulose, hydroxyethyl cellulose or cellulose ethers, alginic binders including soluble alginates such as ammonium alginate, sodium alginate, sodium

calcium alginate, calcium ammonium alginate, potassium alginate, magnesium alginate, triethanol-amine alginate and propylene glycol alginate, or insoluble alginates which can be rendered soluble by the addition of solubilising agents, such as ammonium hydroxide. Examples of these include aluminium, copper, zinc and silver alginates. Alginates which are initially soluble but which, during processing, undergo treatment to render them insoluble in the final product may also be used, e.g. sodium alginate going to calcium alginate. Other organic binders include gums such as gum arabic, gum ghatti, gum tragacanth, Karaya, locust bean, acacia, guar, quince seed or xantham gums, or gels such as agar, agarose, carrageenans, fucoidan and furcellaran. Pectins and pectinaceous materials can also be used as binders. Starches can also be used as organic binders. Other suitable gums can be selected by reference to handbooks, such as Industrial Gums, Ed. Whistler (Academic Press). Inorganic non-combustible binders, such as potassium silicate, magnesium oxide in combination with potassium silicate, or some cements, for example, and mixtures thereof, may also be used, usually in the alternative. Combinations of all of the above may also be used.

The aerosol generating source preferably comprises aerosol forming means, such as glycerol and/or other aerosol forming compounds illustrated in our co-pending PCT application. These include polyhydric alcohols, propylene glycol and triethylene glycol, esters such as triethyl

citrate, triacetin or triethylene glycol diacetate (TEGDA), or high boiling point hydrocarbons. Other suitable aerosol forming means will be known to those skilled in the art.

As indicated above, the smokable filler material may suitably be an extruded material, which extruded material may be a foamed or non-foamed material. Suitable expansion mediums or foaming means are described in our co-pending PCT application, the subject matter thereof in relation to expansion mediums being incorporated herein by reference thereto. Suitable expansion mediums include starch, pullulan or other polysaccharides, including cellulose derivatives, solid foaming agents, inorganic salts and organic acids providing *in situ* gaseous agents, organic gaseous agents, inorganic gaseous agents and volatile liquid foaming agents. Water is most commonly the preferred volatile expansion agent for such expansion systems. Alternative expansion agents are well known. The extruded material may be rods, strands, filaments or sheet material which is then cut to provide filler material. Alternatively the smokable filler material may be cast as a sheet using known conventional band casting or paper making techniques. Entwining or twisting of the strands or filaments may be desirable to provide air passages, if the extruded material does not allow the drawing of air or smoke therealong. Other downstream processing techniques may also be used to improve pressure drop. Various extruded forms are described in our co-pending PCT application and should be taken to be incorporated herein by reference thereto.

The smokable filler material may advantageously also comprise carbon material, activated or not. Preferably the carbon material is powdered or granular carbon material.

Plasticisers, such as glycerol, propylene glycol, or other well known plasticisers, may optionally be present at levels at which they do not become the main aerosol component of the smoke.

Smoking article filler material according to the invention may be used with conventional tobacco filler material or other tobacco substitute material as a diluent or a means of lowering the static peak burning temperature of the cigarette rod. It may also be used alone as the smoking article filler material.

Smoking article filler material according to the invention is suitable for use in conventional paper wrapped smoking articles, as well as in the alternative smoking article wrapper described in our co-pending PCT application. The subject matter of our PCT application relating to smoking article wrappers is incorporated herein by reference. The smoking article filler material is also suitable for use in the alternative smoking articles described by R.J. Reynolds in their patent applications deriving from US Serial No. 650,604 filed 14 September 1984 and US Serial No. 684,537 filed 21 December 1984, as either the aerosol generating means or the solid fuel element in those devices known as 'Premier'-type devices. Indeed, it may also be suitable in other aerosol delivery articles. The present material may partially or fully replace the

materials described in those US specifications, and others deriving therefrom. The filler material of the present invention may also be known as a fuel source material.

The invention also provides a smoking article comprising a wrapper enwrapping a rod of smokable filler material as described above.

Advantageously the wrapper is a substantially non-combustible wrapper such as that described in our co-pending PCT application. The subject matter thereof relating to the substantially non-combustible wrapper is to be considered as incorporated herein by reference thereto. In summary, the wrapper comprises predominantly non-combustible, particulate, inorganic filler material, a binder, and/or a plasticiser, and optionally a small amount of fibre. These materials have all been described above.

Preferably the substantially non-combustible wrapper is comprised of predominantly non-combustible inorganic filler material. The term 'predominantly' as used herein means at least about 65% and usually 70%. The inorganic filler material advantageously yields very little or substantially no visible sidestream smoke when the smoking article is lit. Preferably the non-combustible wrapper comprises at least 80%, and more preferably at least 90% inorganic filler material by weight of the wrapper.

The non-combustible wrapper may comprise a small amount of cellulosic fibre material. Preferably the fibre material comprises less than 10%, more preferably less than 5%, and even more preferably less than 2% by weight of the non-

combustible wrapper. Most advantageously the fibre material is not present in the wrapper.

Preferably the wrapper comprises a binder and/or a plasticiser. These components may be present at up to 30% by weight of the wrapper. Advantageously the binder is not present at more than 25% by weight of the wrapper. The exact proportions will depend on the taste characteristics, acceptable visible sidestream smoke emission and strength of the desired product, and the processing techniques used. The binder may be present at about 8-10% by weight of the wrapper, although it may be present at about 5% or less by weight of the wrapper.

The wrapper, although not giving much, if any, visible sidestream smoke, does produce an ash of an acceptable colour and quality. The smoking article also has a visible burn line which advances along the article and enables the smoker to determine whether the article is alight and to monitor the smoking process. The visible burn line may be formed as a result of burning the organic binder. Alternatively, colour changing compounds can be included in the wrapper composition. Colourants which give the wrapper an other than white colour may also be included. These colourants may also change colour as heating occurs, providing a visible burn line, e.g. $CuSO_4.5H_2O$.

The nature of the binder selected will also determine the permeability of the outer wrapper. Binders, such as sodium carboxymethyl cellulose and propylene glycol alginate, have been found to be particularly effective at

producing an outer wrapper sufficiently permeable to sustain combustion of the fuel source within the wrapper. The latter binder gave the more permeable outer for the same outer wrapper composition. Hydration time of some binders can play a part in determining the efficacy of the binders. Conventionally understood strong binders such as hydroxypropyl cellulose can be used at lower levels to increase the wrapper permeability but this has to be balanced against the strength of the wrapper.

The plasticiser may be present in the wrapper at up to 20% by weight thereof. The plasticiser is preferably present at about 10% or less, preferably 5% or less, by weight of the wrapper. The plasticiser may be glycerol, propylene glycol, or low melting point fats or oils for example. Depending on the method of production selected for the wrappers, the plasticiser may be absent from the wrapper composition. The plasticiser helps in the drying stages of the wrapper to prevent shape distortion, particularly if direct heat, e.g. hot air, is the drying medium. The amount of plasticiser, binder or other organic filler material will affect the appearance of the burn line, i.e. the burn line width, and the amount of visible sidestream of the article. Preferably the width of the burn line is not greater than 10mm, is preferably not more than 5mm and more preferably is between 2-3mm in width. The width of the burn line depends on the composition of the burnable material in the article.

In order that the invention may be easily understood and readily carried into effect the following examples were performed to illustrate the invention and aspects thereof.

EXAMPLE 1

A number of smokable filler material preparations were made in accordance with the amounts given in Table 1 below. The dry material were each mixed with the syrupy sugars and other liquid materials, along with 230ml of water. The binder, in each case propylene glycol alginate, was pre-hydrated. The total solids in each mixture, excluding water, was an amount of 100g, thus the percentage figures given in the Table also equate to grams.

With respect to the glycerol present in the mixtures, the total amount of glycerol includes an amount of glycerol normally present in a casing as a humectant, say 3% by weight, or in the mixtures of Table 1 say 3g, plus an additional amount, say 10% by weight of the total solids (excluding water), i.e. 10g in the mixtures of Table 1, as the aerosol generating source. It will be understood that one of the other usual humectant materials found in the casing sauce could be used in a smokable filler mixture according to the invention as a humectant, along with the same or another material in a larger amount as an aerosol generating source.

The wet mixture was then extruded on to plastic sheets through a syringe having a circular nozzle of 1mm diameter to produce strands of the filler material. The strands were left to dry in air at room temperature overnight. Strands

of sample No. 1 were used to fill a 69mm long outer wrapper, known hereinafter as outers, prepared as described below. The weights of filler material and outer are given in Table 1. Likewise, successive outers were filled with strands from successive samples. The filled outers were joined to a 27mm long filter element of fibrous cellulose acetate having a pressure drop of 70mm WG and then smoked under standard machine smoking conditions of a 35cm^3 puff of 2 seconds duration every minute to a butt length of 35mm, including the filter element. The results are shown in Table 2.

The results show high smoke deliveries of total particulate matter and a relatively high puff number for the length of cigarette produced. This can be attributed to the lack of tobacco which has its own natural burn control substances therein which regulate the puff numbers. Conventional cigarette design techniques can be utilised to produce the desired level of smoke delivery and puff number. For example, increasing the permeability of the outer wrapper can be the means used to decrease the puff number. Other methods, such as utilising burn control additives or changing the overall level of materials, for example, will be known to the skilled man.

The smoking articles produced provided a flavourful smoke which was comparable to conventional tobacco-filled cigarettes. It was observed that the level of sugars utilised significantly affects the taste and flavour of the smoking articles. Lower levels of sugar are preferred.

In Examples 2 and 3 fuel materials were prepared by mixing the solid particulate ingredients in a food blender. The liquid components were added while the solid components were being rapidly stirred in order to ensure thorough mixing. After all the water had been added the mixture was stirred for 30 minutes to allow the binder sufficient time for complete hydration. The resulting slurry was cast onto a heated stainless steel rotating drum which was maintained at a temperature of 105°C. The slurry was introduced onto the drum through a slit of 0.75mm width. The dried sheet material was collected from the drum in sheet form conditioned at 60% relative humidity overnight and shredded through an office shredder. The resulting strands were similar in size to tobacco strands.

The samples were then assembled into paper-wrapped cigarettes 84mm long, with a 27mm cellulose acetate filter and 32mm tipping. The cigarettes were smoked under standard ISO machine smoking conditions as described above to a 35mm butt length. Smoke deliveries were obtained gravimetrically using a Cambridge filter pad.

EXAMPLE 2

Table 3 provides further mixtures where only one casing material is used as the fuel material.

The smoke delivery data illustrates the effectiveness of these casing materials as fuel material capable of producing smoke. In the tables the fuel composition figures are given in grams but in the proportions given can equally be thought of as percentage figures.

EXAMPLE 3

In the addition of casing materials to the tobacco blend it is usual to pre-treat the casing. The following samples show the effect of such a pre-treatment step in an effort to mimic the taste and flavour effects which the casings have in their normal application. In Samples 23 and 26 a small amount of tobacco dust in substitute for chalk was added to a blend which in all other respects is the same as Sample 11 above. Similarly, Samples 24 and 25 comprise tobacco extract and a synthetic analogue of a fraction of a tobacco extract in order to attempt to mimic the processes seen in conventional tobacco usage of casing material.

In Sample 23, 5g of tobacco dust and 100ml water was mixed with the dry casing mix. In Sample 24 the tobacco extract was prepared by extracting 5g Virginia tobacco in 150ml boiling water. After half hour 100ml was decanted and mixed with the dry casing fuel mix. In Sample 25 0.5g of a synthetic analogue of a fraction of a tobacco extract was added to the dry mix with 100ml water.

In Samples 23-25 (after addition of the additives) the fuel mixture was pre-heated to 140°C for 6 minutes before the addition of further water as denoted in the table and casting using the drum caster. Sample 26 was not subjected to pre-treatment before casting.

The fuel material of the present invention exhibits good taste and flavour characteristics, lower static peak burning temperatures, lower sidestream smoke and a more localised burn zone. All of these features are improvements

over prior proposed tobacco substitute materials or alternative smokable filler materials. The low sidestream smoke characteristics can be enhanced by careful selection of the cigarette wrapper utilised in the smoking article.

TABLE 1

Composition of Fuels used for Smoking Purposes

No.	Licorice (%)	Cocoa (%)	PG (%)	Glycerol (%)	SUGAR (%)				Honey (%)	St. John's Bread (%)	Tartaric Acid (%)	PGA (%)	Chalk (%)
					Cane	Invert	Fruit	Demerera					
1	5	5	0	13	0	6	0	7	0	0	0	10	54
2	5	5	0	13	0	2	0	2.3	0	0	0	10	62.7
3	5	5	0	13	0	12	0	14	0	0	0	10	41
4	5	5	0	13	6	0	0	7	0	0	0	10	54
5	5	5	0	13	0	0	6	7	0	0	0	10	54
6	5	5	0	13	0	0	0	7	6	0	0	10	54
7	5	5	0	13	0	6	0	6	0	0	0	10	55
8	5	5	0	13	0	6	6	0	0	0	0	10	55
9	5	5	0	13	6	6	0	0	0	0	0	10	55
10	5	5	0	13	0	6	0	0	6	0	0	10	55
11	5	5	13	0	0	6	0	7	0	0	0	10	54
12	5	5	6.5	6.5	0	6	0	7	0	0	0	10	54
13	15	5	0	13	0	6	0	7	0	0	0	10	44
14	5	15	0	13	0	6	0	7	0	0	0	10	44
15	10	10	0	13	0	6	0	7	0	0	0	10	44
16	10	0	0	13	0	6	0	7	0	0	0	10	54
17	0	10	0	13	0	6	0	7	0	0	0	10	54
18	5	5	0	13	0	6	6	6	0	0	0	10	55
19	5	50	0	13	0	6	0	7	0	0	0	10	19
20	5	5	0	13	0	6	0	7	0	0	0	10	54
21	5	5	0	13	0	6	0	7	0	1	1	10	52

PG - Propylene Glycol
PGA - Propylene Glycol Alginate

TABLE 2

Deliveries and Static Peak Temperatures (SPT)

Sample No.	Outer Wt (g)	Fuel Wt (g)	TPM (mg)	Puff Number	SPT (°C)
1	0.4676	0.9385	12.2	14	
2	0.4169	1.0447	15.2	15	712
3	04238	1.0193	18.6	15	750
4	0.4412	0.8781	17.9	15	712
5	0.4603	0.8668	16.0	15	717
6	0.4554	0.8606	12.1	15	739
7	0.3795	1.0341	16.6	14	759
8	0.4506	0.811	15.7	14	770
9	0.4281	0.9622	10.7	8	725
10	0.4274	1.0604	20.3	15	773
11	0.4234	0.8621	14.4	15	
12	0.4389	0.9962	14.6	15	
13	0.4250	0.9323	7.5	13	
14	0.4458	1.0939	27.7	15	
15	0.4772	1.0295	12.0	15	
16	0.4582	0.7873	8.8	15	
17	0.4071	0.9655	21.2	15	
18	0.4882	1.042	27.0	15	
19	0.4902	0.934	31.6	20	
20	0.4298	0.9868	24.2	20	
21	0.4505	0.8195	15.1	20	

TABLE 3

Material (g)	Sample No. 20	21	22
Licorice (spray dried)	10	-	-
Cocoa	-	-	10
Sugar (demerara)	-	10	-
Glycerol	13	13	13
Water(ml)	360	400	440
PGA	10	10	10
Chalk	67	67	67
Smoke data			
Fuel weight in cigarette(g)	0.86	1.01	0.87
Puff Number	6	7	6
Smoke Delivery (wet tar)(mg)	8.1	11.7	9.6

TABLE 4

Material (g)	Sample No. 23	24	25	26
Licorice (spray dried)	5	5	5	5
Cocoa	5	5	5	5
Sugar	13	13	13	13
Glycerol	13	13	13	13
PGA	10	10	10	10
Chalk	49	53	53.5	49
Tobacco dust	5	-	-	5
Tobacco extract	-	1	-	-
Tobacco extract fraction - synthetic analogue	-	-	0.5	-
Water (ml)	270	245	250	340
Smoke Data				
Fuel weight in cigarette (g)	1.37	1.30	1.29	1.05
Puff Number	11	9	9	8
Smoke delivery (wet tar) (mg)	14.8	12.9	10.4	11.4

CLAIMS

1. A smoking article smokable filler material comprising a non-tobacco fuel material comprising one or more casing materials, a substantially non-combustible inorganic filler, aerosol generating source, and a binder.
2. A smokable filler material according to Claim 1, wherein where one or more of carbon, an expansion medium and an organic filler are optional additional materials.
3. A smokable filler material according to Claim 1 or 2, wherein the smokable filler material comprises about 10% to about 70% casing material, about 2% to about 30% aerosol generating source, about 5% to about 80% inorganic filler material, about 5% to about 25% binder, 0 to about 30% expansion medium and 0 to about 20% carbon.
4. A smokable filler material according to Claims 1, 2 or 3, wherein the total casing material is less than 50%.
5. A smokable filler material according to any one of the preceding claims, wherein the casing material is selected from one or more of the group consisting of sugars and related materials, such as cane sugar, invert sugar, fruit sugar from fruit juices, such as prune juice for example, demerara sugar, maple sugar, sucrose, honey, caramel and molasses; humectants such as propylene glycol, glycerol, diethylene glycol, butylene glycol and sorbitol; distilled water,

licorice, coffee, vanillin, apple derivatives, clove, cocoa, St. John's Bread, and acids such as citric and tartaric acids, for example.

6. A smokable filler material according to any one of the preceding claims, wherein top flavour compositions are also utilised in the smokable filler material.

7. A smokable filler material according to any one of the preceding claims, wherein the filler material is a substantially non-tobacco material containing about 5% or less tobacco material by weight of the filler.

8. A smokable filler material according to any one of the preceding claims, wherein tobacco extract material and/or tobacco identical amino acids are included in the filler material.

9. A smokable filler material according to Claim 3, wherein the non-combustible, inorganic material is selected from the group consisting of chalk, perlite, vermiculite, diatomaceous earth, colloidal silica, magnesium oxide, magnesium sulphate or other low density, non-combustible, inorganic filler materials.

10. A smokable filler material according to Claim 3 or 9, wherein the binder is either an organic binder selected from the group comprising a cellulosic or cellulosic derivative binder, an alginic or pectinaceous binder, a gum or a gel, or an inorganic, non-combustible binder, such as potassium silicate, magnesium oxide in combination with potassium silicate, or some cements, and mixtures thereof.

11. A smokable filler material according to Claims 3, 9 or 10, wherein the aerosol generating source comprises aerosol forming means selected from the group consisting of polyhydric alcohols, propylene glycol, triethylene glycol, glycerol, esters or high boiling point hydrocarbons.

12. A smokable filler material according to Claims 3, 9, 10 or 11, wherein said suitable expansion medium is selected from the group consisting of starch, pullulan or other polysaccharides, including cellulose derivatives, solid foaming agents, inorganic salts and organic acids providing *in situ* gaseous agents, organic gaseous agents, inorganic gaseous agents and volatile liquid foaming agents.

13. A smoking article comprising smokable filler according to any one of the preceding claims, wherein said filler is wrapped in a paper wrapper or in a substantially non-combustible wrapper comprising predominantly non-combustible, inorganic filler material, a binder and/or a plasticiser, and optionally a small amount of fibre.

14. A smoking article according to Claim 13, wherein said non-combustible, inorganic filler material is particulate.

15. Smoking article smokable filler material substantially as hereinabove described with reference to the Examples hereof.

INTERNATIONAL SEARCH REPORT

Inte nal Application No
PCT/GB 97/00589

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A24B15/16

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)
IPC 6 A24B

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

Electronic data base consulted during the international search (name of data base and, where practical, 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	FR 2 174 637 A (IMPERIAL CHEMICAL INDUSTRIES LTD) 12 October 1973 see example 2 ---	1-13,15
X	US 4 197 861 A (KEITH) 15 April 1980 see column 2, line 26 - line 31 see column 4, line 37 - line 57; example ---	1,2, 4-13,15
X	GB 1 170 858 A (PHILIP MORRIS INCORPORATED) 19 November 1969 see page 5, line 18 - line 58; example 6 see page 5, line 82 - page 6, line 24 ---	1,2, 4-13,15
X	US 3 931 824 A (MIANO ET AL.) 13 January 1976 see column 5, line 20 - line 62; example VIII --- -/--	1,2, 4-13,15

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"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

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
26 May 1997	11.06.97

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax (+31-70) 340-3016	Lepretre, F

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Inte· ·nal Application No
PCT/GB 97/00589

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 008 723 A (BORTHWICK ET AL.) 22 February 1977 see examples 6-21	1-13,15
X	FR 2 236 430 A (IMPERIAL CHEMICAL INDUSTRIES) 7 February 1975 see example 6	1-13,15

1

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inte ›nal Application No
PCI/GB 97/00589

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 2174637 A	12-10-73	CA 975235 A	30-09-75
		CH 574717 A	30-04-76
		DE 2307884 A	06-09-73
		GB 1412878 A	05-11-75
		JP 48098099 A	13-12-73
		NL 7302789 A	04-09-73
		US 3934594 A	27-01-76
US 4197861 A	15-04-80	NONE	
GB 1170858 A	19-11-69	CH 510409 A	31-07-71
		DE 1692932 A	20-04-72
		FR 1535520 A	
		NL 6708411 A	18-12-67
US 3931824 A	13-01-76	NONE	
US 4008723 A	22-02-77	BE 764732 A	23-09-71
		CA 923006 A	20-03-73
		CH 568027 A	31-10-75
		DE 2114084 A	23-12-71
		FR 2109564 A	26-05-72
		GB 1299296 A	13-12-72
		LU 62830 A	24-03-71
		NL 7103799 A,B	27-09-71
		OA 3623 A	30-03-71
		SE 383953 B	12-04-76
		US 3885574 A	27-05-75
		ZA 7101889 A	29-11-72
FR 2236430 A	07-02-75	GB 1445111 A	04-08-76
		BE 816823 A	27-12-74
		DE 2430284 A	06-02-75
		JP 50031096 A	27-03-75
		NL 7408195 A	13-01-75
		US 3894543 A	15-07-75