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(54) **SMOKABLE FILLER MATERIAL CONTAINING A FRUIT PRODUCT**

RAUCHBARES FÜLLMATERIAL ENTHALTEND EIN FRUCHTPRODUKT

MATIERE DE CHARGE POUVANT ETRE FUMEE ET CONTENANT UNE MATIERE TIREE DE FRUITS

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EP 1 294 242 B1

Description

[0001] This invention relates to a smokable filler material, in particular but not exclusively, a smokable filler material to be used in cigarettes.

[0002] Filler materials that are suitable for use as tobacco substitute material have been proposed for many years. However, relatively little investigation into the use of material derived from fruit has been undertaken- Where fruit has been used, the fruit is usually a minor constituent added to provide sugar and amino acids or as a structure-former, see, for example, UK Patent specification No. 1 412 878. Similarly, US4,083, 371 utilises similar materials including husks together with fruit concentrate and optionally carob bean flour. In both specifications the main organic combustible material, i.e. the main fuel material, is selected from chaff, straw, bran, husks or shell material, i.e. the waste products of cereals or nuts.

[0003] WO 97/32490 discloses a smokable filler material comprising aerosol generating means, a non-combustible inorganic filler, a binder and an extract of a fuel source. The smokable material may also include a biopolymer, which may be a pectin derived from a plant or fruit material. Accordingly, WO 97/32490 requires the extraction of a specific element from a fruit material and does not contemplate the use of whole fruit material and forms of fruit material derived therefrom as a major organic combustible fuel material.

[0004] This invention is able to provide a smokable filler material in which fruit material is the or one of the main combustible fuel materials of the smokable filler material.

[0005] The invention is also able to be used with or without additional tobacco material, whether cut tobacco leaf or cut reconstituted tobacco sheet material.

[0006] Furthermore, the smokable filler material has a smoking quality that enables the product developer to select appropriate flavours and casings in order to provide an acceptable smoking taste and flavour.

[0007] The smoke derived from smokable filler material according to the invention also provides significant reduction to the smoker of some smoke components.

[0008] The present invention provides a smokable filler material according to Claim 1, wherein the inorganic filler material is in the range of 30-90% by weight of the dry materials and the fruit material is in the range of 10-50 % by weight of the dry materials, and is one or more of the group comprising whole fruit, dried fruit, fruit pulp, fruit concentrate, fruit paste, fruit purée, and powdered fruit.

[0009] Smokable filler material produced by means of casting advantageously comprises inorganic filler material in the range of 50-80%, and more preferably >60% and even more preferably >70% by weight of the dry materials.

[0010] Alternatively, smokable filler material produced by means of an extrusion process preferably comprises inorganic filler material in the range of 30-70% by weight of the dry materials- More preferably the inorganic filler material is in the range of 35-60%, and is even more preferably in the range 45-55% and more preferably about 50% by weight of the dry materials.

[0011] The binder is preferably in the range of 3-25% by weight of the dry materials. More preferably the binder is in the range of 5-15%, and is more preferably less then 12% or even more preferably less than 10% by weight of dry materials. The binder may advantageously be about 7.5% by weight of dry materials.

[0012] The fruit material is in the range of 10-50% by weight of the dry materials. For a smokable filler material made by a casting process the fruit material is more preferably in the range of 10-15% and is even more preferably 10% or more, and may advantageously be about 12.5%. For a smokable filler material made by the extrusion process, the fruit material is in the range of 10-50% by weight of dry materials. More preferably the fruit material is in the range of 10-30% and is even more preferably about 20% by weight of the dry materials.

[0013] The smokable filler material made by a casting process may advantageously comprise 10-20% fruit, 10% sodium alginate, 70% chalk and 10% glycerol. An acceptable filler material can be produced using 7.5% sodium alginate with a consequent increase in the fruit content.

[0014] The smokable filler material made by an extrusion process may advantageously comprise 10-20% fruit, 20% starch, 50% chalk, 10% hydroxypropylcellulose and 0-10% glycerol.

[0015] The non-combustible inorganic filler material is preferably an inorganic filler selected from the group comprising silicates or alumino-silicates, such as perlite, vermiculite, diatomaceous earth, talc or colloidal silica; or metal oxides, metal salts or hydroxides such as magnesium oxide, magnesium sulphate, calcium or magnesium carbonate or alumina. Advantageously the inorganic filler is a low density material, suitably of $<5g/cm^3$, preferably less than $4gcm^3$ and more preferably $<3g/cm^3$. Mixtures of these fillers are also acceptable.

[0016] The smokable filler material may also comprise an organic filler. Advantageously the organic filler material is inert or relatively inert when alone, i.e. will not readily maintain burning, but in a mixture may become more combustible, i.e. will maintain burning. Suitable organic fillers include insoluble alginates, such as calcium or magnesium alginate, calcium pectinate or alginic acid, as well as non-modified cellulose, such as treated or non-treated wood pulp or alpha cellulose, for example. Mixtures of inert organic fillers and inorganic fillers may also be used.

[0017] The organic filler is advantageously present in the range of 0-40%. The organic filler helps to, improve the ash

characteristics of the smokable filler material. It may be advantageous to include a combustible organic material with naturally low nitrogen content, i.e. less than 0.25%, more advantageously less than 0.20% and even more advantageously less than 0.1% dwb of total nitrogen.

[0018] Advantageously the binder is an organic binder, such as an alginate, a gum, a cellulose (modified or natural), a pectin or pectinaceous binder, or the Group I or II metal salts of these binders, such as sodium carboxymethylcellulose or sodium alginate.

[0019] Much preferred binders are alginic binders which include soluble alginates such as ammonium alginate, sodium alginate, sodium calcium alginate, calcium ammonium alginate, potassium alginate, triethanol-amine alginate and propylene glycol alginate. Alginic binders provide the preferred smoking mechanics and taste and flavour properties for the smokable filler according to the invention.

[0020] Cellulosic binders include, for example, cellulose derivatives, such as sodium carboxymethylcellulose, methyl cellulose, hydroxypropylcellulose, hydroxyethyl cellulose or cellulose ethers. These binders are preferred for extrusion purposes.

[0021] Other organic binders include gums such as gum arabic, gum ghatti, gum tragacanth, Karaya, locust bean, acacia, guar, quince seed or xanthan gum, or gels such as agar, agarose, carrageenans, fucoidan and furcelleran. 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 some cements, for example, Portland cement, may also be used. Combinations of the above may also be used.

[0022] If the binder is an alginate, and in particular the monovalent alginates, it is desirable in the processing stage to keep the pH of the slurry above 5 and below 3, i.e, in the range 3-5, in order to improve the binding properties of the alginate. This may be achieved by balancing the fruit and inorganic filler content, or by neutralising the slurry by the addition of an acidic material such as citric acid or basic material such as sodium carbonate, for example.

[0023] The fruit material is suitably one or more of most derivatives from fruit, such as either whole fruit, dried fruit, fruit pulp, fruit concentrate, i.e. the fruit residue arising from the manufacture of fruit juices, fruit paste, fruit purée, a powdered extract of the fruit or a liquid extract of the fruit. If a liquid extract is used, the extract is preferably not purely sugars from the fruit. Mixtures of each class are also acceptable. Granulation of the fruit material by, for example, mixing a fruit liquid or syrup with the inorganic filler, drying and granulating is also advantageous for some fruit derivatives, in terms of ease of processing.

[0024] Preferably the fruit selected has a low sugar content, i.e. of the order of 70% or less. It has been found to be advantageous for high sugar containing fruits to have sugar removed therefrom, so that upon addition of the fruit material the sugar content is preferably less than 20%.

[0025] Advantageously the fruit material is selected from the class comprising soft fruits, citrus fruit, berries or processed fruit material, such as dried powders or dietary fibre. Preferably the fruit material is selected to have a low nitrogen content, advantageously of <1.8% dwb and more advantageously of <1.0% dwb, and even more advantageously of <0.6% dwb. The fruit is suitably selected from one or more of the following: pineapple, mango, raisin, apple, banana, apricot, lemon, peach, kiwi or grape. The first three of this list are particularly preferred. Seeds from these materials are not, at this stage, considered to be of value in the present invention.

[0026] Fruit powder or concentrate may each be mixed with water until fully dissolved. Pulp from fruit is suitably pulverised thereby becoming finely divided, yet allowing the fibres to remain relatively intact. Fibres may be separated from the liquid in order to change the ratio of fibres to liquid, if desired. If dried fruit is utilised, the fruit is preferably boiled in water. If high sugar fruits are utilised they are preferably boiled and percolated, for example, to remove a proportion of the organic acids and sugars, and then blended to produce a homogeneous mixture or paste.

[0027] 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 No. WO96/07336. 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.

[0028] Preferably aerosol generating means is incorporated into the filler material at a level of 0-30%. For a smokable filler material made by a drum cast process the aerosol generating means is more preferably in the range of 5-15%, and even more preferably about 10% by weight of the dry materials. For a smokable filler material made by an extrusion process the aerosol generating means is more preferably in the range 0-10% and even more preferably in the range 3-5% or less by weight of dry materials. The aerosol generating means is pumped into the barrel of the extruder. Plasticisers are also desirable. If the plasticiser is the same as one of the list of suitable aerosol forming materials, the plasticiser may suitably be present at a level such that it is not the main aerosol producer. Each of the additional components, i.e. those other than filler, fruit and binder, are selected according to the final material properties desired.

[0029] Other taste and flavour materials, such as coffee, cocoa, caramel, flavours from roots, such as ginger or licorice, for example, tobacco dust or tobacco extracts may also be added to the smokable filler material at levels <10%, and preferably at levels of <5%, by weight of the dry materials.

[0030] The smokable filler material is advantageously prepared by mixing all the powdered material (excluding the binder), adding water, then gradually introducing the binder whilst subjecting the mixture to high shear. Further water is then added to achieve the desired viscosity.

[0031] Preferably the final slurry has a viscosity between 60,000 - 400,000 centipoise and is more preferably in the range of 150,000.- 250,000 centipoise. The final viscosity will depend on the method of casting (drum or band), extrusion or paper making process to be used.

[0032] The final slurry is then suitable for casting whereupon it may then be stored, conditioned, and then shredded to produce cut smokable filler material.

[0033] The smokable filler material may alternatively be produced by means of extrusion, which extruded material may be a foamed or non-foamed material. Suitable expansion medium or foaming means are described in our co-pending PCT Application No. WO 96/07336, 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. The expansion medium may partly replace the inorganic filler. The expansion medium may be present in the range of 0-40% by weight of the dry materials and preferably less than 30% and more preferably is about 20%. Water is most commonly the preferred volatile expansion agent for such expansion systems. Alternative expansion agents are well known. The smokable filler material is advantageously prepared by mixing all the powdered material including the binder, then pumping water and glycerol into the barrel of the extruder. The extruded material may be rods, strands, filaments or sheet material which is then cut to provide filler material. 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, if required, if extruded as a rod. Various extruded forms are described in our co-pending PCT application and should be taken to be incorporated herein by reference thereto.

[0034] The smokable filler material may also comprise a burn additive to enhance the smoking properties of the filler material. Depending on the properties of the filler the burn additive is either a burn promoter or a burn retardant. Suitable burn additives may be selected from one or more of salts of Group I or II metals such as acetates, citrates and other burn promoters known to the skilled man. Suitable burn retardants include magnesium hydroxide, mono-ammonium phosphate or magnesium chloride, for example.

[0035] The smokable filler material may also comprise an ash improver, which is advantageously present in the filler in the range of 0-5%. Appropriate ash improvers include one or more of mica, perlite, clays, such as, for example, vermiculite, kaolinites, talcs, saponites, bentonites, as well as ash improvers such as disodium hydrogen orthophosphate, sodium carbonate or diammonium phosphate, for example.

[0036] The present invention also provides a smoking article comprising a rod of smokable filler material, according to an aspect of the present invention, wrapped in a wrapper.

[0037] The smokable filler material may comprise 100% of the rod of material wrapped in a wrapper. Alternatively the smokable filler material of the invention may be blended with cut tobacco or tobacco containing sheet, such as a reconstituted sheet, for example. Preferably the amount of tobacco material in such a blend is not more than 40% and is more preferably <30% by weight of the final blend.

[0038] The wrapper may suitably be a paper wrapper or a substantially non-combustible wrapper, such as that described in International Patent Application, Publication No. WO 96/07336. The subject matter of that application as it relates to the substantially non-combustible wrapper is incorporated herein by reference. The wrapper thereof advantageously contains at least 65% inorganic particulate filler material, such as those inorganic materials described above.

[0039] A conventional cellulose pulp paper wrapper may have a permeability in the range 2-300 CU and preferably less than 100 CU. Such a wrapper may also be a low total filler paper such as disclosed in our European Patent Application No. 0 404 580 and comprising less than 14% magnesium oxide or hydroxide, for example.

[0040] In order that the invention may be easily understood and readily carried into effect, reference will now be made to the following Examples.

EXAMPLE 1

[0041] The general process is described below.

[0042] Initially, water, glycerol and chalk are mixed thoroughly using a Silverson mixer until a homogeneous slurry is produced. The fruit powder or concentrate is separately mixed with a small amount of water and stirred until fully dissolved. If dried fruits are used the fruit is boiled in tap water for 20-30 minutes, and blended in a food processor until a homogeneous paste is produced. Percolation to remove the organic acids and sugars may be desirable, depending on the sugar content of the fruits.

[0043] The fruit paste or fruit solution is added to the chalk slurry and mixed. Depending on the alginate binder used the control of pH is of importance, since a low pH has been found to detrimentally effect the binding properties of sodium

alginate or ammonium alginate binder, resulting in a poorer quality sheet material which after cutting is unable to run satisfactorily through a cigarette maker because of its reduced strength.

[0044] Finally, the binder is added gradually to the mix, with more water if required. The final viscosity of the slurry should ideally lie between 150,000 and 250,000 centipoise.

[0045] The slurries in the following Examples were cast on a drum caster to produce a uniform sheet. The resulting sheet is stored at approximately 60%RH for 24 hours prior to shredding using a Hauni tobacco shredder or a paper-type shredder. After the strands have been conditioned for 48 hours the material is ready to be made into cigarettes on a cigarette maker.

EXAMPLE 2 (not according to the invention)

[0046] As representative samples three classes of fruit were used to produce smokable filler material. Pineapple concentrate (75° BRIX) obtained from HAX Limited, London, powdered mango extract obtained from Key Ingredients Limited, Cheltenham and raisins (whole fruit) from Tesco Supermarket were each separately appropriately processed into cast sheet material and cut. The proportions of each of the materials are: 7.5% fruit material, 12.5% sodium alginate binder, 70% coarse chalk inorganic filler and 10% glycerol aerosol former.

[0047] Cut material of each was then fabricated into cigarettes of 24.70mm diameter, 64mm length with a 20mm cellulose acetate filter and-a paper wrapper of 5CU with 0.55% potassium citrate burn additive added thereto. This cigarette construction enabled direct comparison to a control commercial cigarette, in this case, a King Size, full flavour, Virginia style cigarette.

[0048] The cigarettes were smoked under standard machine smoking conditions of 35ml puff of 2 second duration per minute. A statistically relevant number of cigarettes were smoked (see Proctor, C. et al. The Analyst, October 1988, v. 113 p1509-1513). In this instance, 5 cigarettes per pad on a port and a mean of 4 ports was taken.

[0049] The mainstream smoke deliveries are given below in Table 1, along with the achieved reduction in deliveries compared to the control cigarette (see Table 2).

TABLE 1

The influence of fruit type of mainstream smoke deliveries									
Cigarette Code	**Fuel Dry weight** (g)	**Puff No.**	**TPM (mg/** Cig)	**Water (mg/** Cig)	**CO (mg/** cig)	**Nicotine (mg/** cig)	**NFDPM (mg/** cig)	**Glycerol (mg/cig)**	**NHFDPM (mg/** cig)
Pineapple	1.11	5.7	11.23	4.74	4.40	-	6.49	5.89	0.6
Mango	1.17	6.3	10.42	3.96	5.40	-	6.47	6.35	0.12
Raisins	1.21	6.3	9.83	3.03	4.80	-	6.80	5.75	1.05
Control	0.78	8.0	21.63	4.81	15.00	1.42	15.40	-	15.40
NFDPM = Nicotine free dry particulate matter (TPM - NFDPM = water + nicotine) NHFDPM = Nicotine and humectant free dry particulate matter (NFDPM - NHFDPM = glycerol)									

TABLE 2

Achieved reductions (%)						
Cigarette Code	**% Reduction in**					**Dilution (W+G/TPM) (%)**
	TPM	**Water**	**NFDPM**	**CO**	**NHFDPM**	
Pineapple	48	1	61	71	97	. 95
Mango	52	18	62	64	99	99
Raisins	55	37	60	68	89	89
238 SE555	-	-	-	-	-	22
W = Water G = glycerol						

EXAMPLE 3

[0050] Other experimental mixtures produced included the following samples.

TABLE 3

	Fuel (%)	Sodium Alginate (%)	Glycerol (%)	Chalk (%)
Spray dried tomato	20	7.5	10	62.5
Vacuum dried blackcurrant	20	7.5	10	62.5
Vacuum dried pineapple (I)	20	7.5	10	62.5
Pineapple concentrate 75° Brix(II)	20	7.5	10	62.5
Apple concentrate 75° Brix	20	7.5	10	62.5
Strawberry concentrate 75°C Brix	20	7.5	10	62.5
Banana concentrate 68°C Brix	20	7.5	10	62.5
Rosemary Dry Powder	20	7.5	10	62.5
Pineapple concentrate 75° (*) Bxix(III)	7.5	12.5	10	70
Vacuum dried mango (*)	7.5	12.5	10	70.
Dry Raisins (*)	7.5	12.5	10	70
(*) : not according to the invention				

[0051] As can be seen from all of the examples, there are quite significant smoke delivery advantages using smokable filler material according to the invention.

[0052] The table shows, in particular, a significant dilution in mainstream and sidestream smoke deliveries.

[0053] Furthermore, the material also performs well in a conventional cigarette manufacturing situation, thereby not requiring modification of existing apparatus.

[0054] A smoke low in nitrogen-derived compounds is obtained. Surprisingly, a low dry particulate matter content of smoke is also obtained. Despite high levels of non-combustible inorganic filler a substantial smoke aerosol is generated which comprises mainly glycerol and water.

[0055] The final product also provides a product low in nitrogen and mean ammonia nitrogen (see Table 4).

TABLE 4

Mean Total Nitrogen & Ammonia of Drumcast Sheet Materials		
Sample Description	**Total Nitrogen (% dwb)**	**Mean Ammonia Nitrogen (% dwb) .**
Tobacco SE555	**2.00**	**0.016**
Pineapple I	0.06	0.00
Tomato	0.30	0.00
Blackcurrant	0.04	0.00
Strawberry	0.02	0.00
Pineapple II	0.02	0.00
Apple	0.01	0.00
Banana	0.05	0.00
Rosemary	0.18	0.00
Mango	0.07	0.00
Pineapple III	0.02	0.00
Raisins .	0.09	0.00
Extracted Raisins	0.02	0.00

Example 4

[0056] The general process for extrusion is described below. A dry mix is made up from chalk (50%), dried fruit or powdered fruit (20%), pregelatinised starch (20%) and hydroxypropyl cellulose (10%). The mix is then fed into an extruder and water and glycerol (3-5%) pumped into the extruder. The extruder barrel is heated at points along the barrel so as

to produce temperatures at the heated extruder zones which are typically 70, 100, 110, 120 and 130 degrees Celsius. The pressure at the die is typically about 30 bar, and should in any case be less than 100 bar. The screw profile of the extruder should be such that enough energy is put into the mix to produce a blown extrudate when the material exits the extruder die. The extrudate formed is in the shape of a tube or a foamed sheet. Ideally the tube is produced with a very small diameter hole running longitudinally through the centre.

[0057] The extrudate is carried away from the extruder die by a suitable haul-off system.

Claims

1. A smokable filler material comprising a non-combustible inorganic filler, a binder, and as a major organic combustible fuel material, a fruit material, wherein said inorganic filler is in the range of 30-90% by weight of the dry materials and said fruit material is in the range of 10-5G% by weight of the dry materials and said fruit material is one or more of the group comprising whole fruit, dried fruit, fruit pulp, fruit concentrate, fruit paste, fruit puree and powdered fruit.

2. A smokable filler material according to Claim 1, wherein said inorganic filler material is in the range of 50 - 80% by weight of the dry materials.

3. A smokable filler material according to Claim 2, wherein said inorganic filler material is more than 60% by weight of the dry materials.

4. A smokable filler material according to Claim 3, wherein said inorganic filler material is more than 70% by weight of the dry materials.

5. A smokable filler material according to Claim 1, wherein said inorganic filler is in the range of 30-70% by weight of the dry materials.

6. A smokable filler material according to Claim 5, wherein said inorganic filler material is in the range 35-60% by weight of the dry materials.

7. A smokable filler material according to Claim 6, wherein said inorganic filler material is in the range 45-55% by weight of the dry materials.

8. A smokable filler material according to Claim 7, wherein said inorganic filler material is about 50% by weight of the dry materials.

9. A smokable filler material according to any one of the preceding claims, wherein said binder is in the range of 3-25% by weight of the dry materials.

10. A smokable filler material according to Claim .9, wherein said binder is in the range of 5-15% by weight of the dry materials.

11. A smokable filler material according to Claim 10, wherein said binder is less than 12% by weight of the dry materials.

12. A smokable filler material according to Claim 11, wherein said binder is less than 10% by weight of the dry materials.

13. A smokable filler material according to Claim 12, wherein said binder is about 7.5% by weight of the dry materials.

14. A smokable filler material according to any preceding claim, wherein said fruit material is in the range 10-30% by weight of the dry materials.

15. A smokable filler material according to Claim 14, wherein said fruit material is in the range 10-15% by weight of the dry materials.

16. A smokable filler material according to Claim 15, wherein said fruit material is about 12.5% by weight of the dry materials.

17. A smokable filler material according to Claim 14, wherein said fruit material is about 20% by weight of the dry materials.

18. A smokable filler material according to any one of the preceding claims, wherein said non-combustible inorganic filler is selected from the group comprising silicates or alumino-silicates, metal oxides, metal salts or metal hydroxides.

19. A smokable filler material according to any one of the preceding claims, wherein said inorganic filler is a low density material.

20. A smokable filler material according to Claim 19, wherein said inorganic filler has a density of less than $5g/cm^3$.

21. A smokable filler material according to Claim 20, wherein said density is less than $3g/cm^3$.

22. A. smokable filler material according to any one of the preceding claims, wherein said smokable filler material comprises an organic filler.

23. A smokable filler material according to Claim 22, wherein said organic filler is selected from the group comprising insoluble alginates, calcium pectinate, alginic acid or non-modified cellulose.

24. A smokable filler material according to any one of Claims 22 or 23, wherein said organic filler is present in the range of 0-40% by weight of the dry materials.

25. A smokable filler material according to any one of the preceding claims, wherein said smokable filler material comprises a combustible organic material with naturally low nitrogen content.

26. A smokable filler material according to any one of the preceding claims, wherein said binder is an organic binder.

27. A smokable filler material according to Claim 26, wherein said organic binder is selected from the group comprising an alginate, a gum, a cellulose (modified or natural), a pectin or pectinaceous binder, or the Group I or II metal salts of these binders.

28. A smokable filler material according to any one of the preceding claims, wherein said fruit material is one or more of most derivatives of fruit.

29. A smokable filler material according to Claim 28, wherein said fruit material has a low sugar content of the order of 70% by weight of the dry materials or less.

30. A smokable filler material according to any one of the preceding claims, wherein said fruit material is selected from the class comprising soft fruits, citrus fruit, berries or processed fruit material.

31. A smokable filler material according to Claim 30, wherein said fruit material has a low nitrogen content.

32. A smokable filler material according to any one of the preceding claims, wherein said fruit material is selected from one or more of pineapple, mango, raisin, apple, banana, apricot, lemon, peach, kiwi or grape.

33. A smokable filler material according to any one of the preceding claims, wherein said smokable filler material comprises aerosol generating means.

34. A smokable filler material according to Claim 33, wherein said aerosol generating means are incorporated into said filler material at a level of 0-30% by weight of the dry materials.

35. A smokable filler material according to Claim 34, wherein said aerosol generating means are in the range of 5-15% by weight of the dry materials.

36. A smokable filler material according to Claim 35, wherein said aerosol generating means are about 10% by weight of the dry materials.

37. A smokable filler material according to Claim 34, wherein said aerosol generating means, are incorporated into said filler material at a level in the range of 0-10-% by weight of the dry materials.

38. A smokable filler material according to Claim 37, wherein said range is 3-5% by weight of the dry materials.

39. A smokable filler material according to any one of the preceding claims, wherein said filler is produced by a casting process.

40. A smokable filler material according to any one of Claims 1-38, wherein said filler material is produced by an extrusion process.

41. A smokable filler material according to Claim 40, wherein said smokable filler material comprises an expansion medium.

42. A smokable filler material according to Claim 41, wherein said expansion medium is present in the range 0-40% by weight of the dry materials.

43. A smokable filler material according to Claim 42, wherein said expansion medium is less than 30% by weight of dry materials.

44. A smokable filler material according to Claim 43, wherein said expansion medium is about 20% by weight of the dry materials.

45. A smoking article comprising a rod of smokable filler material wrapped in a wrapper, said smokable filler material being according to any one of the preceding claims.

46. A smoking article according to Claim 45, wherein said smokable filler material is blended with cut tobacco or tobacco containing sheet.

47. A smoking article according to Claim 46, wherein said cut tobacco or tobacco containing sheet is not more than 40% by weight of the final blend.

48. A smoking article according to Claim 45, wherein said wrapper is a paper wrapper or a substantially non-combustible wrapper.

Patentansprüche

1. Rauchbares Füllmaterial enthaltend einen nichtbrennbaren anorganischen Füllstoff, einen Binder und als hauptsächlichen organischen Brennstoff ein Fruchtmaterial, wobei der anorganische Füllstoff im Bereich von 30 bis 90 Gewichts-%, bezogen auf die Trockenmaterialien, und das Fruchtmaterial im Bereich von 10 bis 50 Gewichts-%, bezogen auf die Trockenmaterialien, enthalten ist und das Fruchtmaterial ausgewählt ist aus einem oder mehreren der Gruppe umfassend ganze Frucht, getrocknete Frucht, Fruchtfleisch, Fruchtkonzentrat, Fruchtbrei, pürierte Frucht sowie pulverisierte Frucht.

2. Rauchbares Füllmaterial gemäß Anspruch 1, wobei der anorganische Füllstoff im Bereich von 50 bis 80 Gewichts-% enthalten ist, bezogen auf die Trockenmaterialien.

3. Rauchbares Füllmaterial gemäß Anspruch 2, wobei der anorganische Füllstoff zu mehr als 60 Gewichts-% enthalten ist, bezogen auf die Trockenmaterialien.

4. Rauchbares Füllmaterial gemäß Anspruch 3, wobei der anorganische Füllstoff zu mehr als 70 Gewichts-% enthalten ist, bezogen auf die Trockenmaterialien.

5. Rauchbares Füllmaterial gemäß Anspruch 1, wobei der anorganische Füllstoff im Bereich von 30 bis 70 Gewichts-% enthalten ist, bezogen auf die Trockenmaterialien.

6. Rauchbares Füllmaterial gemäß Anspruch 5, wobei der anorganische Füllstoff im Bereich von 35 bis 60 Gewichts-% enthalten ist, bezogen auf die Trockenmaterialien.

7. Rauchbares Füllmaterial gemäß Anspruch 6, wobei der anorganische Füllstoff im Bereich von 45 bis 55 Gewichts-% enthalten ist, bezogen auf die Trockenmaterialien.

8. Rauchbares Füllmaterial gemäß Anspruch 7, wobei der anorganische Füllstoff zu etwa 50 Gewichts-% enthalten ist, bezogen auf die Trockenmaterialien.

9. Rauchbares Füllmaterial gemäß einem der vorhergehenden Ansprüche, wobei der Binder im Bereich von 3 bis 25 Gewichts-% enthalten ist, bezogen auf die Trockenmaterialien.

10. Rauchbares Füllmaterial gemäß Anspruch 9, wobei der Binder im Bereich von 5 bis 15 Gewichts-% enthalten ist, bezogen auf die Trockenmaterialien.

11. Rauchbares Füllmaterial gemäß Anspruch 10, wobei der Binder zu weniger als 12 Gewichts-% enthalten ist, bezogen auf die Trockenmaterialien.

12. Rauchbares Füllmaterial gemäß Anspruch 11, wobei der Binder zu weniger als 10 Gewichts-% enthalten ist, bezogen auf die Trockenmaterialien.

13. Rauchbares Füllmaterial gemäß Anspruch 12, wobei der Binder zu etwa 7,5 Gewichts-% enthalten ist, bezogen auf die .Trockenmaterialien.

14. Rauchbares Füllmaterial gemäß einem der vorhergehenden Ansprüche, wobei das Fruchtmaterial im Bereich von 10 bis 30 Gewichts-% enthalten ist, bezogen auf die Trockenmaterialien.

15. Rauchbares Füllmaterial gemäß Anspruch 14, wobei das Fruchtmaterial im Bereich von 10 bis 15 Gewichts-% enthalten ist, bezogen auf die Trockenmaterialien.

16. Rauchbares Füllmaterial gemäß Anspruch 15, wobei das Fruchtmaterial zu etwa 12,5 Gewichts-% enthalten ist, bezogen auf die Trockenmaterialien.

17. Rauchbares Füllmaterial gemäß Anspruch 14, wobei das Fruchtmaterial zu etwa 20 Gewichts-% enthalten ist, bezogen auf die Trockenmaterialien.

18. Rauchbares Füllmaterial gemäß einem der vorhergehenden Ansprüche, wobei der nichtbrennbare anorganische Füllstoff ausgewählt ist aus der Gruppe umfassend Silikate oder Alumosilikate, Metalloxide, Metallsalze oder Metallhydroxide.

19. Rauchbares Füllmaterial gemäß einem der vorhergehenden Ansprüche, wobei der anorganische Füllstoff ein Material niedriger Dichte ist.

20. Rauchbares Füllmaterial gemäß Anspruch 19, wobei der anorganische Füllstoff eine Dichte von weniger als 5 g/cm^3 aufweist.

21. Rauchbares Füllmaterial gemäß Anspruch 20, wobei die Dichte weniger als 3 g/cm^3 beträgt.

22. Rauchbares Füllmaterial gemäß einem der vorhergehenden Ansprüche, wobei das rauchbare Füllmaterial einen organischen Füllstoff umfasst.

23. Rauchbares Füllmaterial gemäß Anspruch 22, wobei der organische Füllstoff ausgewählt ist aus der Gruppe umfassend unlösliche Alginate, Calciumpektinat, Alginsäure oder unmodifizierte Zellulose.

24. Rauchbares Füllmaterial gemäß Anspruch 22 oder 23, wobei der organische Füllstoff im Bereich von 0 bis 40 Gewichts-% enthalten ist, bezogen auf die Trockenmaterialien.

25. Rauchbares Füllmaterial gemäß einem der vorangehenden Ansprüche, wobei das rauchbare Füllmaterial ein brennbares organisches Material mit natürlicherweise niedrigem Stickstoffgehalt umfasst.

26. Rauchbares Füllmaterial gemäß einem der vorangehenden Ansprüche, wobei der Binder ein organischer Binder ist.

27. Rauchbares Füllmaterial gemäß Anspruch 26, wobei der Binder ausgewählt ist aus der Gruppe, umfassend ein Alginat, Kautschuk, Zellulose (modifiziert oder naturbelassen), Pektin oder pektinischen Binder oder Metallsalze

dieser Binder der Gruppen 1 oder II.

28. Rauchbares Füllmaterial gemäß einem der vorangehenden Ansprüche, wobei das Fruchtmaterial eines oder mehrere der meisten Fruchtderivate ist.

29. Rauchbares Füllmaterial gemäß Anspruch 28, wobei das Fruchtmaterial einen niedrigen Zuckergehalt in der Größenordnung von 70 Gewichts-% oder weniger aufweist, bezogen auf die Trockenmaterialien.

30. Rauchbares Füllmaterial gemäß einem der vorangehenden Ansprüche, wobei das Fruchtmaterial ausgewählt ist aus der Klasse, umfassend Strauchbeeren, Zitrusfrüchte, Beeren oder verarbeitetes Fruchtmaterial.

31. Rauchbares Füllmaterial gemäß Anspruch 30, wobei das Fruchtmaterial einen niedrigen Stickstoffgehalt aufweist.

32. Rauchbares Füllmaterial gemäß einem der vorangehenden Ansprüche, wobei das Fruchtmaterial ausgewählt ist einem oder mehreren von Ananas, Mango, Rosine, Apfel, Banane, Aprikose, Zitrone, Pfirsich, Kiwi oder Weintraube.

33. Rauchbares Füllmaterial gemäß einem der vorangehenden Ansprüche, wobei das rauchbare Füllmaterial-Aerosol erzeugende Mittel umfasst.

34. Rauchbares Füllmaterial gemäß Anspruch 33, wobei die Aerosol erzeugenden Mittel im Füllmaterial in einer Menge von 0 bis 30 Gewichts-%, bezogen auf die Trockenmaterialien enthalten sind.

35. Rauchbares Füllmaterial gemäß Anspruch 34, wobei die Aerosol erzeugenden Mittel im Bereich von 5 bis 15 Gewichts-% enthalten sind, bezogen auf die Trockenmaterialien.

36. Rauchbares Füllmaterial gemäß Anspruch 35, wobei die Aerosol erzeugenden Mittel zu etwa 10 Gewichts-% enthalten sind, bezogen auf die Trockenmaterialien.

37. Rauchbares Füllmaterial gemäß Anspruch 34, wobei die Aerosol erzeugenden Mittel im Füllmaterial in einer Menge im Bereich von 0 bis 10 Gewichts-% enthalten sind, bezogen auf die Trockenmaterialien.

38. Rauchbares Füllmaterial gemäß Anspruch 37, wobei der Bereich 3 bis 5 Gewichts-% beträgt, bezogen auf die Trockenmaterialien.

39. Rauchbares Füllmaterial gemäß einem der vorhergehenden Ansprüche, wobei der Füllstoff in einem Gussverfahren hergestellt ist.

40. Rauchbares Füllmaterial gemäß einem der Ansprüche 1 bis 38, wobei der Füllstoff in einem Extrusionsverfahren hergestellt ist.

41. Rauchbares Füllmaterial gemäß Anspruch 40, wobei das rauchbare Füllmaterial ein Expansionsmedium umfasst.

42. Raüchbares Füllmaterial gemäß Anspruch 41, wobei das Expansionsmedium im Bereich von 0 bis 40 Gewichts-% bezogen auf die Trockenmaterialien enthalten ist.

43. Rauchbares Füllmaterial gemäß Anspruch 42, wobei das Expansionsmedium zu weniger als 30 Gewichts-% bezogen auf die Trockenmaterialien enthalten ist.

44. Rauchbares Füllmaterial gemäß Anspruch 43, wobei das Expansionsmedium zu etwa 20 Gewichts-% bezogen auf die Trockenmaterialien enthalten ist.

45. Rauchartikel umfassend einen Stab aus rauchbarem Füllmaterial gemäß einem der vorhergehenden Ansprüche, eingewickelt in eine Umhüllung.

46. Rauchartikel gemäß Anspruch 45, wobei das rauchbare Füllmaterial mit geschnittenem Tabak oder tabakhaltigem Blatt vermischt ist.

47. Rauchartikel gemäß Anspruch 46, wobei der geschnitte Tabak oder das tabakhaltige Blatt nicht mehr als 40 Gewichts-

% der fertigen Mischung ausmacht.

48. Rauchartikel gemäß.Anspruch 45, wobei die Umhüllung eine Papierumhüllung oder eine im Wesentlichen nicht brennbare Umhüllung ist.

Revendications

1. Matière de charge pouvant être fumée, comprenant une charge inorganique non combustible, un liant et comme matière de charge organique combustible majeure, une matière de fruit, où ladite charge inorganique est présente dans l'intervalle allant de 30 à 90% en poids des matières sèches et ladite matière de fruit est présente dans l'intervalle allant de 10 à 50% en poids des matières sèches et ladite matière de fruit est une ou plusieurs parmi le groupe comprenant le fruit complet, le fruit séché, la pulpe de fruit, un concentré de fruit, une pâte de fruit, une purée de fruit, et le fruit en poudre.

2. Matière de charge pouvant être fumée selon la revendication 1, où ladite matière de charge inorganique est présente dans l'intervalle allant de 50 à 80% en poids des matières sèches.

3. Matière de charge pouvant être fumée selon la revendication 2, où ladite matière de charge inorganique est présente à plus de 60% en poids des matières sèches.

4. Matière de charge pouvant être fumée selon la revendication 3, où ladite matière de charge inorganique est présente à plus de 70% en poids des matières sèches.

5. Matière de charge pouvant être fumée selon la revendication 1, où ladite charge inorganique est présente dans l'intervalle allant de 30 à 70% en poids des matières sèches.

6. Matière de charge pouvant être fumée selon la revendication 5, où ladite matière de charge inorganique est présente dans l'intervalle allant de 35 à 60% en poids des matières sèches.

7. Matière de charge pouvant être fumée selon la revendication 6, où ladite matière de charge inorganique est présente dans l'intervalle allant de 45 à 55% en poids des matières sèches.

8. Matière de charge pouvant être fumée selon la revendication 7, où ladite matière de charge inorganique est présente à environ 50% en poids des matières sèches.

9. Matière de charge pouvant être fumée selon l'une quelconque des revendications précédentes, où ledit liant est présent dans l'intervalle allant de 3 à 25% en poids des matières sèches.

10. Matière de charge pouvant être fumée selon la revendication 9, où ledit liant est présent dans l'intervalle allant de 5 à 15% en poids des matières sèches.

11. Matière de charge pouvant être fumée selon la revendication 10, où ledit liant est présent à moins de 12% en poids des matières sèches.

12. Matière de charge pouvant être fumée selon la revendication 11, où ledit liant est présent à moins de 10% en poids des matières sèches.

13. Matière de charge pouvant être fumée selon la revendication 12, où ledit liant est présent à environ 7,5% en poids des matières sèches.

14. Matière de charge pouvant être fumée selon l'une quelconque des revendications précédentes, où ladite matière de fruit est présente dans l'intervalle allant de 10 à 30% en poids des matières sèches.

15. Matière de charge pouvant être fumée selon la revendication 14, où ladite matière de fruit est présente dans l'intervalle allant de 10 à 15% en poids des matières sèches.

16. Matière de charge pouvant être fumée selon la revendication 15, où ladite matière de fruit est présente à environ

12,5% en poids des matières sèches.

17. Matière de charge pouvant être fumée selon la revendication 14, où ladite matière de fruit est présente à environ 20% en poids des matières sèches.

18. Matière de charge pouvant être fumée selon l'une quelconque des revendications précédentes, où ladite charge inorganique non combustible est choisie parmi le groupe comprenant des silicates ou alumino-silicates, des oxydes métalliques, des sels métalliques ou des hydroxydes métalliques.

19. Matière de charge pouvant être fumée selon l'une quelconque des revendications précédentes, où ladite charge inorganique est une matière de faible densité.

20. Matière de charge pouvant être fumée selon la revendication 19, où ladite charge inorganique a une densité inférieure à 5 g/cm^3.

21. Matière de charge pouvant être fumée selon la revendication 20, où ladite charge inorganique a une densité inférieure à 3 g/cm^3.

22. Matière de charge pouvant être fumée selon l'une quelconque des revendications précédentes, où ladite matière de charge pouvant être fumée comprend une charge organique.

23. Matière de charge pouvant être fumée selon la revendication 22, où ladite charge organique est choisie parmi le groupe comprenant des alginates insolubles, le pectinate de calcium, l'acide alginique ou la cellulose non modifiée.

24. Matière de charge pouvant être fumée selon l'une quelconque des revendications 22 ou 23, où ladite charge organique est présente dans l'intervalle allant de 0 à 40% en poids des matières sèches.

25. Matière de charge pouvant être fumée selon l'une quelconque des revendications précédentes, où ladite matière de charge pouvant être fumée comprend une matière organique combustible avec une teneur en azote naturellement faible.

26. Matière de charge pouvant être fumée selon l'une quelconque des revendications précédentes, où ledit liant est un liant organique.

27. Matière de charge pouvant être fumée selon la revendication 26, où ledit liant organique est choisi parmi le groupe comprenant un alginate, une gomme, une cellulose (modifiée ou naturelle), une pectine ou un liant pectinique, ou des sels d'un métal du groupe I ou II de ces liants.

28. Matière de charge pouvant être fumée selon l'une quelconque des revendications précédentes, où ladite matière de fruit est un ou plusieurs de beaucoup de dérivés de fruit.

29. Matière de charge pouvant être fumée selon la revendication 28, où ladite matière de fruit a une faible teneur en sucre, de l'ordre de 70% en poids des matières sèches ou moins.

30. Matière de charge pouvant être fumée selon l'une quelconque des revendications précédentes, où ladite matière de fruit est choisie parmi la classe comprenant les fruits sans noyau, les agrumes, les baies ou une matière de fruit traitée.

31. Matière de charge pouvant être fumée selon la revendication 30, où ladite matière de fruit a une faible teneur en azote.

32. Matière de charge pouvant être fumée selon l'une quelconque des revendications précédentes, où ladite matière de fruit est choisie parmi un ou plusieurs de l'ananas, la mangue, le raisin, la pomme, la banane, l'abricot, le citron, la pêche, le kiwi ou le raisin.

33. Matière de charge pouvant être fumée selon l'une quelconque des revendications précédentes, où ladite matière de charge pouvant être fumée comprend des moyens générant un aérosol.

34. Matière de charge pouvant être fumée selon la revendication 33, où lesdits moyens générant un aérosol sont

incorporés dans ladite matière de charge à un taux de 0-30% en poids des matières sèches.

35. Matière de charge pouvant être fumée selon la revendication 34, où lesdits moyens générant un aérosol sont présents à un intervalle allant de 5 à 15% en poids des matières sèches.

36. Matière de charge pouvant être fumée selon la revendication 35, où lesdits moyens générant un aérosol sont présents à environ 10% en poids des matières sèches.

37. Matière de charge pouvant être fumée selon la revendication 34, où lesdits moyens générant un aérosol sont incorporés dans ladite matière de charge à un taux situé dans l'intervalle allant de 0 à 10% en poids des matières sèches.

38. Matière de charge pouvant être fumée selon la revendication 37, où ledit intervalle est de 3 à 5% en poids des matières sèches.

39. Matière de charge pouvant être fumée selon l'une quelconque des revendications précédentes, où ladite charge est produite par un processus de coulée.

40. Matière de charge pouvant être fumée selon l'une quelconque des revendications 1 à 38, où ladite charge est produite par un processus d'extrusion.

41. Matière de charge pouvant être fumée selon la revendication 40, où ladite matière de charge pouvant être fumée comprend un milieu d'expansion.

42. Matière de charge pouvant être fumée selon la revendication 41, où ledit milieu d'expansion est présent en l'intervalle de 0 à 40% en poids des matières sèches.

43. Matière de charge pouvant être fumée selon la revendication 42, où ledit milieu d'expansion est présent à moins de 30% en poids des matières sèches.

44. Matière de charge pouvant être fumée selon la revendication 43, où ledit milieu d'expansion est présent à environ 20% en poids des matières sèches.

45. Article à fumer comprenant un bâtonnet d'une matière de charge pouvant être fumée, enveloppé dans une enveloppe, ladite matière de charge pouvant être fumée étant selon l'une quelconque des revendications précédentes.

46. Article à fumer selon la revendication 45, dans lequel ladite matière de charge pouvant être fumée est mélangée à du tabac coupé ou une feuille contenant du tabac.

47. Article à fumer selon la revendication 46, dans lequel ledit tabac coupé ou ladite feuille contenant du tabac n'est pas présente à plus de 40% en poids du mélange final.

48. Article à fumer selon la revendication 45, dans lequel ladite enveloppe est une enveloppe en papier ou une enveloppe sensiblement non combustible.