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(54) **THERMALLY CONDUCTIVE TOBACCO COMPOSITION, METHOD FOR PROVIDING THE TOBACCO COMPOSITION, AND USE**

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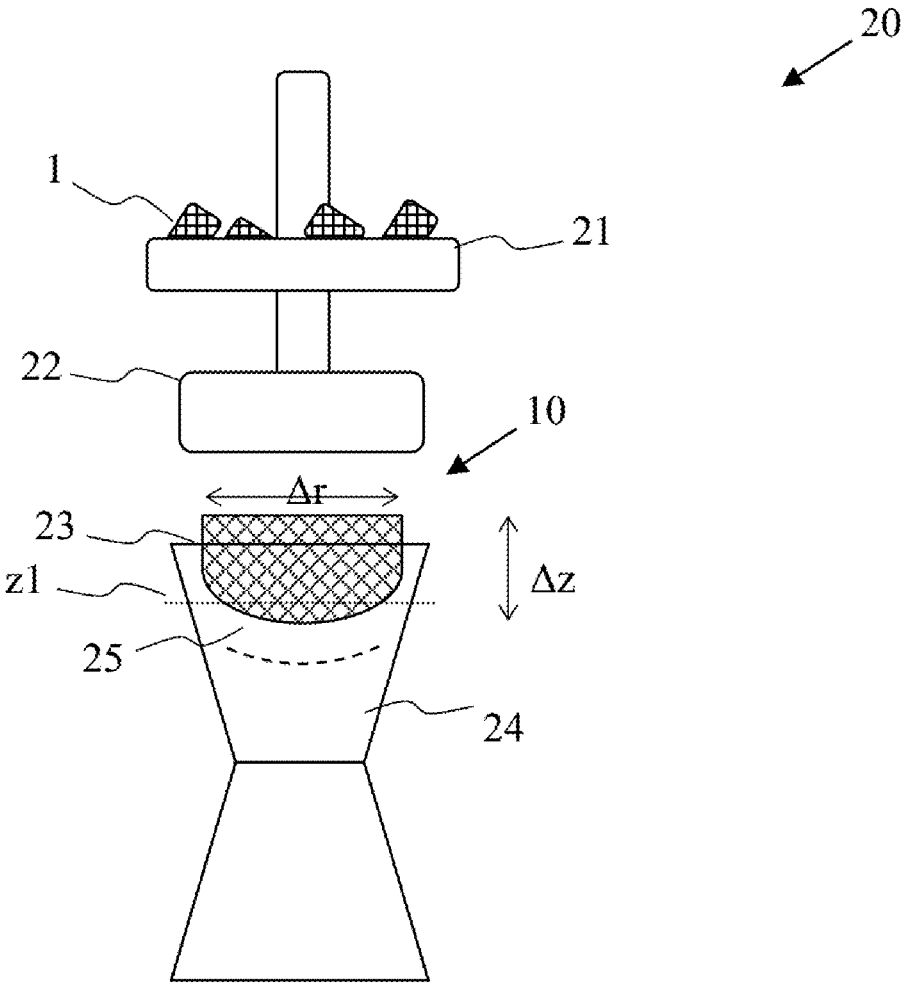
(57) **ABSTRACT**

A heat-conducting tobacco composition comprising at least one sort of tobacco in at least one confectioning of the tobacco for smoking tobacco consumption. The heat-conducting tobacco composition is configured or designed as a tobacco article for at least one smoking article selected from the following group: dry tobacco article for cigarettes, cigarillos, cigars, semi-dry tobacco article for smoking tobacco pipes, moist tobacco article for water pipes; wherein the heat-conducting tobacco composition further comprises at least one metallic, in particular noble metallic component which performs a physical heat-conducting function during smoking, in particular when exposed to heat by ember/glow or by heating elements of the smoking article, and which is chemically inert at least in the temperature range required for smoking, and which is admixed to the tobacco and distributed in the tobacco composition in such a way that the heat distribution within the tobacco composition is homogenized during smoking.



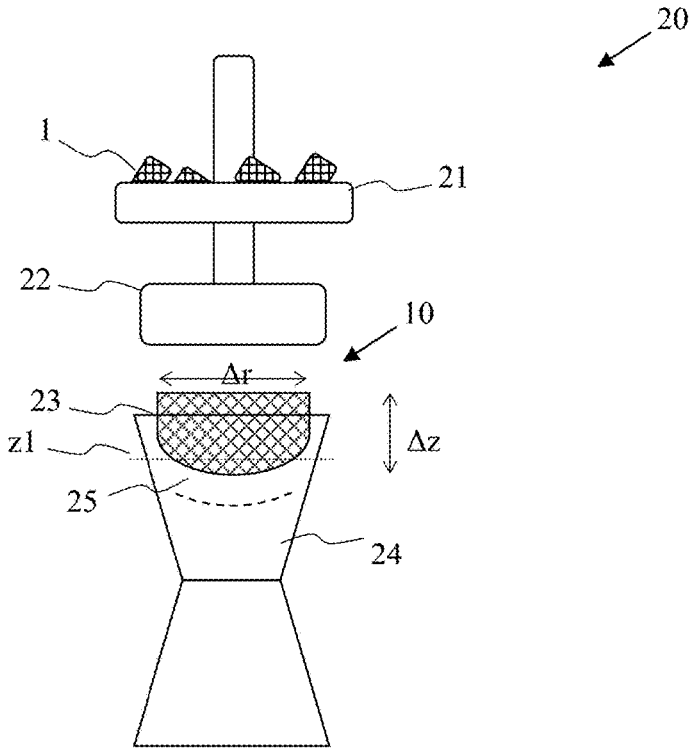


Fig. 1

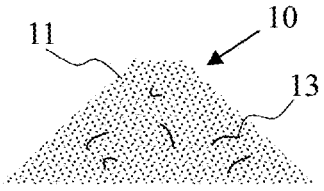


Fig. 2

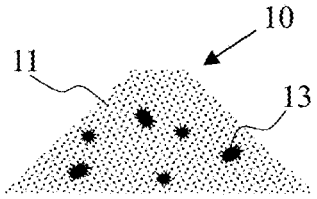


Fig. 3

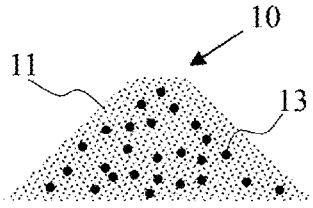


Fig. 4

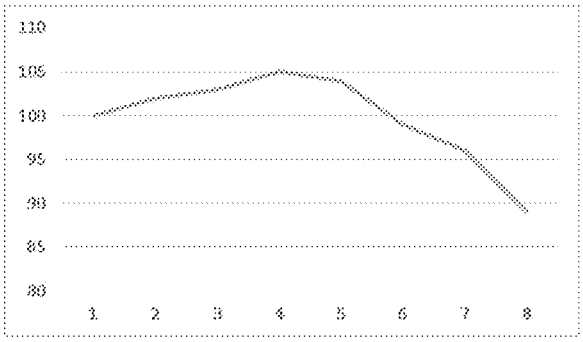


Fig. 5A

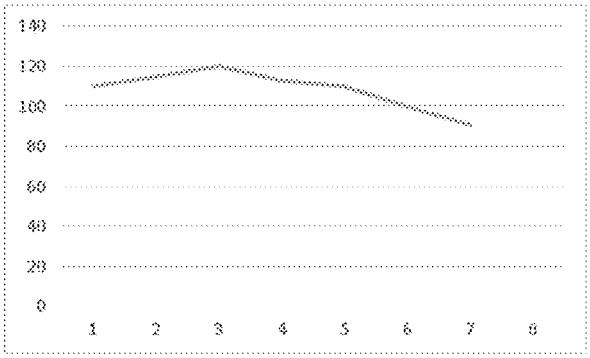


Fig. 5B

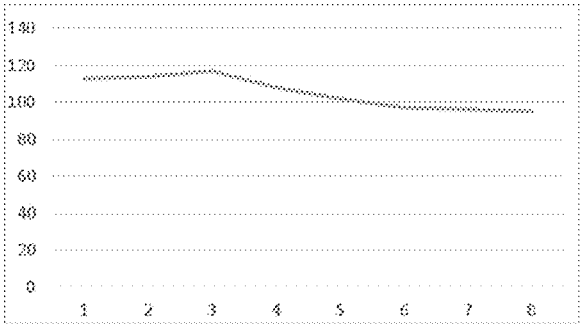


Fig. 5C

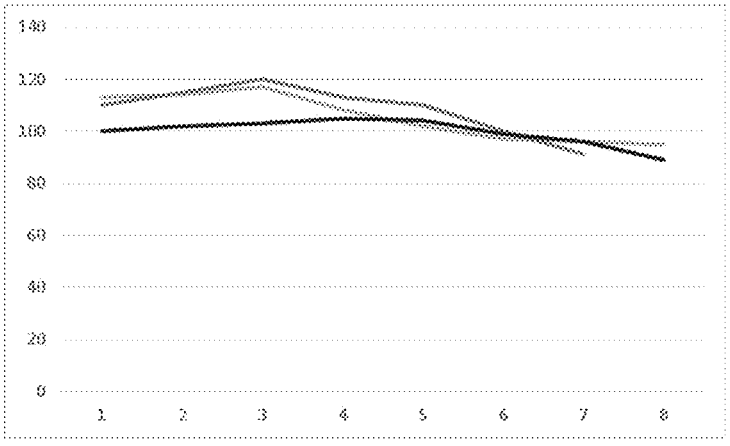


Fig. 5D

THERMALLY CONDUCTIVE TOBACCO COMPOSITION, METHOD FOR PROVIDING THE TOBACCO COMPOSITION, AND USE

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application is the U.S. national stage of International Application No. PCT/DE2020/100911, filed on 2020 Oct. 21. The international application claims the priority of DE 102019129154.2 filed on 2019 Oct. 29; all applications are incorporated by reference herein in their entirety.

BACKGROUND

[0002] The present invention relates to a tobacco composition and a method for providing the tobacco composition. Furthermore, the present invention also relates to a use of chemically inert additives for tobacco, in particular in smoking by means of water pipes. Last but not least, the present invention also relates to specific configurations resp. confectionings for tobacco compositions for specific smoking articles. In particular, the invention relates to a tobacco composition and a method according to the preamble of the respective independent claim.

[0003] Tobacco is consumed in diverse ways, including smoking tobacco. Smoking tobacco may classically be consumed through cigarettes, cigarillos, cigars, tobacco pipes, hookahs (water pipes) or the like smoking articles. In this process, the tobacco is at least partially burned, especially at a temperature that depends on the type of tobacco. Depending on each individual application, the tobacco (or a tobacco mixture) is ideally provided with an optimum moisture content for the application. In other words, tobacco pipes typically use more moist tobacco than cigarettes, and water pipes typically use even more moist tobacco than tobacco pipes. Depending on how moist the tobacco is, and depending on how large the volume is in which the tobacco is to be ignited or smoldered/glowed, a certain temperature gradient will be established within the volume (for example, within a combustion chamber).

[0004] For many smoking applications, it is desirable that the temperature at which the tobacco is consumed or smolders or glows should be specified as precisely as possible, and should remain constant as far as possible irrespective of the progress of the smoking process, and should also be ensured as homogeneously as possible over the entire volume. This requirement also applies in particular to pipes or water pipes, which have a comparatively large-volume receiver head (or combustion chamber) for the tobacco. In many applications, a disadvantageously strong temperature gradient cannot be satisfactorily avoided in this receiving volume. Especially in the case of water pipes, an external heat source is also used in some applications, which introduces the heat energy into the tobacco from the outside (not purely autonomous self-combustion, but externally induced combustion).

[0005] Therefore, there is interest in optimization measures to realize an improved combustion or heat input or temperature distribution in such smoking articles, especially also in water pipes.

[0006] DE 60 2004 009 682 T2 describes the use of nanoscale gold particles for catalyst purposes. EP 1 909 604 B1 describes metal particles in connection with catalytic effects on combustion, in particular for the purpose of reducing detrimental constituents in smoke. WO 2006/124448 A2 describes the use of comparatively small metal particles (in particular <20 μm) in connection with catalytic effects. WO 2015/091880 A1 describes methods for reducing chemical constituents (in particular nicotine constituents) in tobacco. WO 2015/123422 A1 describes a tobacco-containing gel for a tobacco product that is as smokeless as possible.

[0007] US 2018/0242633A1, CN109567269A, CN109123795A describe so-called non-burning tobacco products. DE 20 2019 101 425 U1 describes the use of a catalyst unit in connection with chemical aspects in the burning of tobacco. WO 2018/228 131 A1 describes smoking articles with tobacco, which can be brought to temperature by supplying external electrical energy via electrical wiring extending inside the tobacco.

SUMMARY

[0008] It is an object to provide for a device and a method with which the heat energy generated in the tobacco, in particular during smoking, can be optimally utilized, in particular without electrical heat sources within the tobacco. It is also an object to provide for a tobacco composition in such a way that smoking can be carried out in an optimized manner with respect to the combustion of the tobacco, in particular with optimized heat exposure from the outside. Last but not least, it is an object to design a smoking article or to equip or load it in such a way that the temperature during smoking can be specified as precisely as possible, even in the event that a comparatively large volume has to be filled with the tobacco mixture and/or that the heat effect cannot be optimized in a simple device-related manner.

[0009] At least one of these objects is solved by a heat-conducting tobacco composition according to claim **1** as well as by a method according to the adjoining method claim. Advantageous further embodiments of the invention are explained in the respective subclaims. The features of the embodiments described below can be combined with each other, unless this is explicitly negated.

DETAILED DESCRIPTION

[0010] Provided is a heat-conducting tobacco composition comprising at least one sort/type of tobacco in at least one confectioning of the tobacco for smoking tobacco consumption, in particular as a tobacco blend, wherein the heat-conducting tobacco composition is configured or designed as a tobacco article for at least one smoking article from the following group: (relatively) dry tobacco article for cigarettes, cigarillos, cigars, semi-dry tobacco article for smoking tobacco pipes, (relatively) moist tobacco article for water pipes.

[0011] According to the invention, it is suggested that the heat-conducting tobacco composition further comprises at least one metallic, in particular noble metallic component which performs a physical heat-conducting function during smoking (or is configured to provide a heat-conducting function in physical manner), in particular when exposed to heat by ember/glow or by heating elements of the smoking article (for example, by coals used in a water pipe), and which is chemically inert (without any catalytic function) at least in the temperature range required for smoking (in particular, for moist tobacco articles, in the range from 80 to

130° C., especially in the range of 100 to 120° C.), and which is admixed to the tobacco and distributed in the tobacco composition in such a way that the heat distribution within the tobacco composition is homogenized during smoking, especially with the heat distribution being more homogenous than in tobacco compositions which do not exhibit any metallic and chemically inert component. In addition to a more efficient utilization of the tobacco, this also provides advantages in particular with regard to the accuracy with which a temperature (or a temperature range) for the tobacco can be specified and maintained during smoking.

[0012] According to prior art, attempts have so far been made at most to optimize the heating effect on the tobacco by means of an optimized design and/or optimized arrangement and/or optimized number of heat sources (for example coals). In contrast, the invention is based on the concept of introducing at least one metallic component into the tobacco mixture in such a way that the temperature distribution can be homogenized in a physical manner and/or that a required heat input can be reduced and/or that the achievable combustion temperature (at a predefined amount of heat energy) can be increased. Although there are already metal additives in tobacco, these metal additives are intended to ensure a chemical effect, i.e. they are not designed in such a way that physical effects (in particular heat conduction) can be ensured.

[0013] In this context, the term "metallic" also refers to elements or components of the transition metals of the periodic table. Preferably, silver and/or gold, each in the purest 24K 999 form, are used as metallic components.

[0014] In particular, the present invention relates to uses of the metallic components in a comparatively low temperature range of up to 150° C., optionally with a safety factor in a range of up to 200° C. Accordingly, all those components with good thermal conductivity can be considered as metallic components which remain food-safe or harmless to health in this temperature range and do not cause any chemical reactions.

[0015] The above-mentioned temperature ranges (in particular the range from 80 to 130° C.) refer in particular to a temperature on the outside of the smoking article, e.g. in the case of a water pipe to the temperature at the bowl of the pipe. Depending on the design and material of the smoking article, the tobacco composition may have a temperature in the range from 200 to 350° C., for example. It has been shown, for example, for relatively moist tobacco for water pipes that a temperature range for the tobacco composition in the range of 150 to 250° C. can be realized, i.e. well below 350° C. or even well below 300° C.

[0016] The beneficial effects of using a tobacco composition according to the invention can also be described as follows: The tobacco heats up much more evenly and homogeneously overall and gives off more aroma and flavor over the entire burn-off due to the higher or more homogeneous temperatures, or at least the amount of tobacco applied is utilized more efficiently. Also, it can be avoided that too high temperature has to be generated in order to be able to completely heat an inhomogeneous tobacco mixture sufficiently. By using only chemically inert metallic additives such as gold leaf (beaten gold) and silver (in particular food additives **174/175**) and thereby avoiding any health risks, the confectioning of the tobacco composition can be optimized in terms of the desired heat conduction effects.

[0017] Also, the heating or smoking of a water pipe can be optimized, and in particular can be carried out significantly faster and more efficiently. By optimizing heat conduction, even a comparatively low maximum temperature can be sufficient to generate the heat within the tobacco, with the effect that the tobacco can be consumed at advantageously moderate temperatures.

[0018] As far as the temperature range required for smoking or a combustion temperature is concerned, a distinction can be made between different applications, in particular roughly between four applications, whereby the preferred temperature for smoking can thereby also depend on the moisture content of the tobacco:

[0019] 1/ Cigarette tobacco: from about 800° C. to 1100° C.;

[0020] 2/ Cigar tobacco: from approx. 580° C. to 660° C.;

[0021] 3/ Pipe tobacco: from about 420° C. to 500° C.;

[0022] 4/ Water pipe tobacco: tending to be well below 200° C.

[0023] The present invention can be applied to dry tobacco articles for cigarettes, cigarillos, cigars, to semi-dry tobacco articles for smoking tobacco pipes, as well as to (relatively) moist tobacco articles for water pipes. In particular, the present invention also provides advantages for low-temperature smoking up to 300° C., or at temperatures lower than 200° C., as is common in water pipes.

[0024] In this context, "heat-conducting tobacco composition" is to be understood in particular also as compositions designed in accordance with the present invention, which are based on or comprise the composition of so-called vapor stones. Vapor stones are used, for example, for reasons of non-smoker protection in some establishments instead of pure tobacco, in particular in water pipes. Vapor stones may be used, for example, in conjunction with molasses or related additives. The present invention can also be applied to such compositions, for example also in the form of a coating.

[0025] In this context, "heat-conducting tobacco composition" is also to be understood in particular as compositions designed according to the invention which are based on or comprise cannabis and/or cannabidiol (CBD). For example, cannabis and/or CBD may be mixed with tobacco.

[0026] The present invention also enables a higher temperature to be achieved with less heat energy. Optionally, a temperature of the tobacco composition in the range of 300° C. can be easily achieved in a commercially available water pipe bowl (hookah bowl), in particular even up to 350° C. (in particular with a comparatively high mass fraction of metallic components).

[0027] According to one embodiment, the at least one metallic component is at least partially provided in the form of a powder or as an admixed bulk (bulk material) in the tobacco composition (metal particles separately from the tobacco), in particular with a particle size in the range of 0.01 μm to 10 mm, preferably 0.1 μm to 1 mm, further preferably 0.1 μm to 100 μm. Particularly in the case of relatively moist tobacco, the powder can adhere to the tobacco. Entrainment of particles into the gas stream can also be avoided by interposing a water container (hookah application). The relatively heavy precious metal particles are bound in the water or they do sink due to the specific weight of the precious metal. In addition, filtering can take place in an upstream molasses trap, i.e. in an attachment

with a curved interior which, due to its design, only allows gases to pass through and traps solids such as tobacco particles.

[0028] According to one embodiment, the at least one metallic component is at least partially designed in the form of flakes and/or fibers, for example at least partially as gold leaf. In particular, this also allows the use of commercially available configurations, if necessary in conjunction with a size adjustment of the sheets or flakes.

[0029] The at least one metallic component can exhibit particles with a size or length of at least 10 μm and/or at most 30 mm, in particular at least 50 μm and/or at most 10 mm, or can also be formed entirely from them.

[0030] The at least one metallic component can exhibit particles with a particle size in the spectrum from 10 μm to 1 mm, preferably 20 μm to 100 μm.

[0031] The at least one metallic component can exhibit at least partially a leaf-like confectioning in the form of beaten gold (gold leaf), in particular with a thickness in the range of 0.001 μm to 100 μm, in particular 0.01 μm to 10 μm, especially 0.01 μm to 1 μm or 0.01 μm to 0.1 μm.

[0032] According to one embodiment, the at least one metallic component is provided at least partially as a coating on the tobacco, at least on a portion of the tobacco. The at least one metallic component can be at least partially vapor deposited onto the tobacco. The coating, in particular a vapor-deposited layer, has in particular a layer thickness in the range from 0.001 μm to 100 μm, in particular 0.01 μm to 10 μm, in particular 0.1 μm to 1 μm. In each case, this also enables particularly good mixing and also metering/dosing. The layer thickness can also be adapted as a function of the smoker application and/or the type of tobacco.

[0033] According to one embodiment, the heat-conducting tobacco composition is designed by means of the at least one metallic component in such a way that in a water pipe bowl (the pipe's head) for receiving the tobacco composition, in particular with a receiving volume in the range from 20 to 50 ml (or for a tobacco quantity in the range from 10 to 30 grams, in particular approx. 15 g or 20 g), at a maximum temperature of 150° C., in particular 120° C. (in particular with respect to the temperature of the pipe bowl), a temperature gradient of at most 50° C., in particular at most 40°, preferably at most 30° is maintained in the tobacco composition, in particular in the radial direction, in particular also in the vertical direction from top to bottom, when the water pipe is operated in the intended use (in conventional manner). Thereby, the temperature can also be set or predefined comparatively precisely. In particular also during active smoking, the heat-conducting tobacco composition can ensure the advantageous heat-conducting effect, be it in the gas flow direction (primarily axial), or be it orthogonally thereto, in particular in the radial direction.

[0034] In this context, the tobacco composition can, for example, exhibit a temperature in the range of 200 to 300° C., depending on the type and quantity of the heating means used (i.e., in the case of water pipes, the quantity of coals or corresponding combustibles arranged on the plate above the tobacco). In other words, the tobacco composition is significantly hotter than the temperature self-adjusting at the bowl of the pipe, in particular 100 to 200 Kelvin or degrees Celsius hotter.

[0035] The receiving quantity of commercially available tobacco sieves in pipes (in particular receiving baskets in the pipe bowl) is in particular in the range of 15 to 30 grams, for example about 20 g. This weight specification optionally refers to the tobacco as such (without inert heat-conducting additive) or to the entire tobacco mixture.

[0036] According to one embodiment, the heat-conducting tobacco composition is designed as a moist tobacco article for water pipes. In this case, the heat-conducting effects are particularly advantageous. A/the temperature distribution in a receiving volume having 20 to 50 ml (or for a tobacco quantity in the range of 10 to 30 grams, in particular approx. 15 g, 18 g or 20 g), in particular within a conical or cylindrical receiving cavity (for example water pipe bowl), can thereby vary by e.g. a maximum of 30 to 40° C. in any direction over the total extension of the volume at a maximum temperature generated externally (in particular by means of heating elements) in the tobacco composition in the range of 120 to 150° C. This ensures that the tobacco is heated and burns as homogeneously as possible.

[0037] According to one embodiment, the at least one metallic component is designed in such a way that the density of the metallic component deviates from the density of the tobacco (or of the tobacco blend without metallic component) by a factor of at most 3 to 10. In this way, good mixing can be ensured and segregation can be effectively avoided over longer transport routes or longer periods, even in the case of comparatively dry tobacco.

[0038] According to one embodiment, the at least one metallic component is provided with a mass fraction of at least 0.5 mass percent and/or at most 5 mass percent in the heat-conducting tobacco composition, in particular in the range of 1 to 2 mass percent. This can also ensure a sufficiently large heat conduction effect.

[0039] With reference to the amounts of tobacco usually provided in water pipe bowls resp. hookah bowls (20 to 50 ml receiving volume), in particular about 20 grams of tobacco, a mass percentage in the range of 0.5 to 5 percent, in particular 0.5 to 3 percent, for example 1% or 2%, can be specified, for example 0.1 to 0.2 grams of silver or gold.

[0040] The tobacco or tobacco article can be a dry tobacco article and have a relative humidity in the usual range of dry sorts of tobacco available on the market, or the tobacco article can be a semi-dry tobacco article and have a relative humidity in the range of semi-dry sorts of tobacco available on the market, or the tobacco or tobacco article can be a moist tobacco article and have a relative humidity in the range of moist sorts of tobacco available on the market. As a range for the (in particular legally) permissible moisture, exemplary 1 to 40% or even up to 60% can be given.

[0041] The (absolute or relative) humidity of the tobacco depends on the type of smoking paraphernalia and also on national legislation. For example, in Germany, the maximum permissible moisture is in the range of about 5%, or 5 to 10%; accordingly, dry tobaccos tend to be consumed in Germany. Sorts of tobacco in other countries, however, can also be significantly more moist, for example in the range of 20 to 40% moisture content. For Switzerland, sorts of tobacco which can have a moisture content of up to a maximum of 60% are also intended specifically for water pipes.

[0042] According to one embodiment, the at least one metallic component consists at least partially of gold, in particular gold in purest form (24K 999), or comprises at least one gold alloy. The at least one metallic component can optionally comprise at least partially silver or comprise at least one silver alloy. The at least one metallic component

can consist at least partially of platinum or comprise at least one platinum alloy. The at least one metallic component can consist at least partially of palladium or comprise at least one palladium alloy. The at least one metallic component can consist at least partially of iridium or comprise at least one iridium alloy. The at least one metallic component can consist at least partially of osmium or comprise at least one osmium alloy. The at least one metallic component can consist at least partially of an alloy of at least two of the aforementioned materials or alloys. The at least one metallic component can comprise at least one thermally conductive food additive. Among these advantageous materials, a selection can be made in each case for an application and for a desired fabrication. Silver has a particularly advantageously high thermal conductivity. Gold is particularly inert. A selection can be made individually for each case.

[0043] For gold alloys, all commercially available alloys that are harmless to health can be considered. For example, 333 gold can also be used as an alloy component.

[0044] The respective metallic component is preferably a noble metal component, in particular based on noble metals with particularly good thermal conductivity properties. The respective metallic component can also be provided, for example, in the form of gold granules. The respective metallic component can also be provided, for example, in leaf/sheet form, for example leaf palladium or leaf platinum.

[0045] The respective metallic component does not necessarily have to be approved as a food-safe material. Although this is advantageous, it is also possible to use (noble) metallic materials that are not approved for food purposes, especially since the metallic material is only intended to perform a heat-conducting function and is not consumed, particularly if it is used in the inert temperature range of especially 120 to 150° C. The temperature range may also be chosen considerably wider, or the maximum temperature can also rise to over 200° C., depending on the application.

[0046] As a precaution, brass should not be used for health reasons.

[0047] According to one embodiment, the at least one metallic component has a thermal conductivity coefficient of at least 250, in particular at least 300, preferably at least 350, particularly preferably at least 375 or 400 W/m K. This ensures particularly effective heat conduction even with comparatively little material. This also favors preservation of other properties of the tobacco blend or favors compatibility with various smoking articles.

[0048] ITEM In particular, at least one of the aforementioned objects is also solved by a heat-conducting tobacco composition comprising at least one sort/type of tobacco in at least one confectioning of the tobacco for smoking tobacco consumption, in particular as a tobacco mixture, wherein the heat-conducting tobacco composition is set up or designed as a tobacco article for at least one smoking article from the following group: dry tobacco article for cigarettes, cigarillos, cigars, semi-dry tobacco article for smoking tobacco pipes, moist tobacco article for water pipes; wherein the heat-conducting tobacco composition further comprises at least one metallic, in particular noble metallic component which performs a physical heat-conducting function during smoking, in particular when exposed to heat by ember/glow or by heating elements of the smoking article, and which is chemically inert at least in the temperature range required for smoking, and which is admixed to the tobacco and distributed in the tobacco composition in such a way that the heat distribution within the tobacco composition is homogenized during smoking; wherein the at least one metallic component is provided at least partially as an under-mixed bulk in the tobacco composition, in particular having a particle size in the spectrum of 1 μm to 100 μm and/or wherein the at least one metallic component is at least partially designed in the form of flakes, for example at least partially as gold leaf, silver leaf or another precious metallic material in leaf form; wherein the heat-conducting tobacco composition is configured as a moist tobacco article for water pipes; wherein the at least one metallic component is provided with a mass fraction of at least 0.5 mass percent and/or at most 5 mass percent in the heat-conducting tobacco composition; wherein the at least one metallic component consists at least partially of gold and/or silver, in particular gold and/or silver in purest form, or comprises at least one gold and/or silver alloy. This provides for numerous advantages mentioned above.

[0049] At least one of the aforementioned objects is in particular also solved by a water pipe exhibiting a receiving volume for tobacco, in particular comprising at least 20 to 50 ml, wherein a heat-conducting tobacco composition as described above is introduced into the receiving volume. This provides for advantages mentioned above.

[0050] At least one of the aforementioned objects is in particular also solved by a heat-conducting multi-component tobacco composition provided by at least two components to be mixed with each other, on the one hand comprising at least a first component in the form of a tobacco composition without heat-conducting additive (in particular comprising at least one sort/type of tobacco in at least one confectioning resp. tailored assembly of the tobacco for smoking tobacco consumption); and further comprising at least a second component in the form of a metallic, in particular noble metallic component which is configured for a physical heat-conducting function during smoking and which is chemically inert at least in the temperature range required for smoking, wherein the first and second components are provided, for example, as a kit for manual or mechanical mixing, and wherein the heat-conducting multicomponent tobacco composition is configured to constitute, in the mixed state, a heat-conducting tobacco composition as described above. This provides for advantages mentioned above.

[0051] At least one of the aforementioned objects is in particular also solved by a heat-conducting tobacco composition, in particular by a heat-conducting tobacco composition described above, processed by mixing at least two components to be mixed with each other and constituting a heat-conducting multi-component tobacco composition, wherein at least a first component in the form of a tobacco composition without heat-conducting additive comprising at least one sort/type of tobacco in at least one confectioning of the tobacco for smoking tobacco consumption and further at least a second component in the form of a metallic, in particular noble-metallic component designed for a physical heat-conducting function during smoking are mixed with each other in such a way that the heat distribution within the tobacco composition during smoking is homogenized, especially with the heat distribution being more homogenous than in tobacco compositions which do not exhibit any metallic component. This provides for advantages mentioned above.

[0052] At least one of the aforementioned objects is in particular also solved by a method according to the corresponding coordinate method claim, namely by a method of producing a heat-conducting tobacco composition comprising at least one sort/type of tobacco in at least one confectioning of the tobacco for providing a tobacco article from the following group, in particular a tobacco mixture, for smoking tobacco consumption by means of at least one smoking article: dry tobacco article for cigarettes, cigarillos, cigars, semi-dry tobacco article for smoking tobacco pipes, moist tobacco article for water pipes; wherein the heat-conducting tobacco composition is constituted by adding and distributing at least one metallic, in particular noble-metal and chemically inert component providing for a physical heat-conducting function in such a way that the heat distribution within the tobacco composition is homogenized during smoking (i.e. when exposed to temperature by ember/glow and/or by heating elements or other artificially generated energy supply), especially with the heat distribution being more homogeneous than in tobacco compositions which do not exhibit any metallic and chemically inert component. This provides for advantages mentioned above.

[0053] According to one embodiment, the at least one metallic component is at least partially added or admixed to the tobacco composition in the form of a powder or as an admixed bulk, in particular with a particle size in the spectrum of 0.01 μm to 10 mm, preferably 0.1 μm to 1 mm, further preferably 0.1 μm to 100 μm. This can also ensure good distribution within the mixture.

[0054] According to one embodiment, the at least one metallic component is at least partially added or admixed in the form of flakes and/or fibers.

[0055] According to one embodiment, the at least one metallic component is added or admixed in the form of particles having a size or length of at least 10 μm and/or at most 10 mm, in particular at least 50 μm and/or at most 5 mm.

[0056] According to one embodiment, the at least one metallic component is added or admixed in the form of particles having a particle size in the spectrum from 10 μm to 1 mm, preferably 20 μm to 100 μm.

[0057] According to one embodiment, the at least one metallic component is added or admixed in leaf-like resp. sheet-like confectioning in the form of gold leaf, in particular with a thickness in the range from 0.001 μm to 100 μm, in particular 0.01 μm to 10 μm, especially 0.01 μm to 1 μm or 0.01 μm to 0.1 μm.

[0058] The particularly advantageous confectioning in each case can be selected for the respective individual case or for the respective application, in particular also as a function of the type of tobacco and the moisture and the associated blending/intermixing properties.

[0059] According to one embodiment, the at least one metallic component is provided at least partially as a coating on the tobacco, at least on a partial amount of the tobacco, in particular before the metallic component is mixed with the tobacco.

[0060] This allows the tobacco composition to be provided in a simple, user-friendly manner also, for example, as a kit of two pre-assembled mixture components. According to one embodiment, the at least one metallic component is at least partially vapor-deposited onto the tobacco, in particular with a layer thickness in the range from 0.001 μm to 100 μm, in particular 0.01 μm to 10 μm, in particular 0.1 μm to 1 μm, in particular before the metallic component is mixed with the tobacco.

[0061] This also favors in each case a particularly homogeneous intermixing, largely irrespective of the care taken by the user.

[0062] According to one embodiment, the distribution or mixing of the metallic component is carried out for an amount in the range of 10 to 10,000 grams, in particular with a mass fraction of the metallic component in the range of 0.5 to 5 mass percent. In particular, this also provides a particularly homogeneous mixing, especially for quantities that are preferred for common smoker applications. For example, the individual batches are provided with a mass in the range of 10 to 100 grams each.

[0063] At least one of the aforementioned objects is also solved, as mentioned above, by use of at least one metallic, in particular noble metallic and chemically inert component in a tobacco composition for smoking tobacco consumption by means of at least one smoking article (in particular by means of water pipes), in particular in a heat-conducting tobacco composition as described above, for providing a physical heat-conducting function within the tobacco composition, so that the heat distribution is/will be homogenized within the tobacco composition during intended use (especially in comparison to tobacco compositions without metallic and chemically inert component). This results in advantages mentioned above.

[0064] At least one of the aforementioned objects is also solved, as mentioned above, by use of at least one metallic and chemically inert component in a tobacco composition for smoking tobacco consumption, in particular in a heat-conducting tobacco composition as described above, for providing a physical heat-conducting function within the tobacco composition, such that the heat distribution is homogenized within the tobacco composition during intended use, wherein the tobacco composition is a tobacco composition intended for cigars, wherein the metallic and chemically inert component is preferably provided in the form of a sheet/leaf or foil and/or as fibers or flakes, in particular such that the metallic and chemically inert component is provided between individual tobacco leafs in rolled form/confectioning within a respective cigar, in particular with its longitudinal extension in alignment with the central longitudinal axis of the cigar. This results in advantages mentioned above.

[0065] Some exemplary experiments on the heat effects of the present invention are described in the following. The height position "pipe bowl top" can also be referred to here as reference position z**1** (cf. description of the figures).

[0066] The following test series I (tobacco mixture containing silver leaf) examines seven different measuring times and exemplarily refers to the pipe bowl of a water pipe.

[0067] Thermal imaging camera Testo 865

[0068] Temperature measurement after five minutes of heating−measurement 0 (time t=5 min.)

[0069] Tobacco temperature 241° C.

[0070] Pipe bowl topmost position 123° C.

[0071] Pipe bowl top (z**1**) 92° C.

[0072] Pipe bowl center 60° C.

[0073] Pipe bowl bottom 38° C.

[0074] Pipe bowl lowermost position 35° C.

[0075] Temperature measurement after seven minutes of heating−measurement 1 (time t=12 min.)

[0076] Tobacco temperature 245° C.
[0077] Pipe bowl topmost position 132° C.
[0078] Pipe bowl top (z**1**) 102° C.
[0079] Pipe bowl center 74° C.
[0080] Pipe bowl bottom 46° C.
[0081] Pipe bowl lowermost position 35° C.
[0082] Temperature measurement after seven minutes of heating—measurement 2 (time t=19 min.)
[0083] Tobacco temperature 214° C.
[0084] Pipe bowl topmost position 130° C.
[0085] Pipe bowl top (z**1**) 98° C.
[0086] Pipe bowl center 78° C.
[0087] Pipe bowl bottom 44° C.
[0088] Pipe bowl lowermost position 36° C.
[0089] Temperature measurement after seven minutes of heating—measurement 3 (time t=26 min.)
[0090] Tobacco temperature 218° C.
[0091] Pipe bowl topmost position 124° C.
[0092] Pipe bowl top (z**1**) 97° C.
[0093] Pipe bowl center 75° C.
[0094] Pipe bowl bottom 50° C.
[0095] Pipe bowl lowermost position 37° C.
[0096] Temperature measurement after seven minutes of heating—measurement 4 (time t=33 min.)
[0097] Tobacco temperature 126° C.
[0098] Pipe bowl topmost position 121° C.
[0099] Pipe bowl top (z**1**) 83° C.
[0100] Pipe bowl center 75° C.
[0101] Pipe bowl bottom 51° C.
[0102] Pipe bowl lowermost position 45° C.
[0103] Temperature measurement after seven minutes of heating—measurement 5 (time t=40 min.)
[0104] Tobacco temperature 119° C.
[0105] Pipe bowl topmost position 127° C.
[0106] Pipe bowl top (z**1**) 83° C.
[0107] Pipe bowl center 72° C.
[0108] Pipe bowl bottom 50° C.
[0109] Pipe bowl lowermost position 46° C.
[0110] Temperature measurement after seven minutes of heating—measurement 6 (time t=47 min.)
[0111] Tobacco temperature 116° C.
[0112] Pipe bowl topmost position 130° C.
[0113] Pipe bowl top (z**1**) 69° C.
[0114] Pipe bowl center 71° C.
[0115] Pipe bowl bottom 42° C.
[0116] Pipe bowl lowermost position 36° C.
[0117] Temperature measurement after seven minutes of heating—measurement 7 (time t=54 min.)
[0118] Tobacco temperature 128° C.
[0119] Pipe bowl topmost position 127° C.
[0120] Pipe bowl top (z**1**) 83° C.
[0121] Pipe bowl center 69° C.
[0122] Pipe bowl bottom 44° C.
[0123] Pipe bowl lowermost position 35° C.
[0124] From test series I it can be seen that, thanks to the metallic component (in this case silver leaf), a good temperature level can be realized not only in the tobacco composition but also along the pipe bowl's extension in height.
[0125] The following test series II (tobacco mixture containing at least one metallic component) concerns a comparison of the temperature values in the tobacco mixture with and without metallic component.

	without metallic component:	with metallic component
t = 5 min.	208° C.	241° C.
t = 12 min.	207° C.	245° C.
t = 19 min.	211° C.	286° C.
t = 26 min.	181° C.	256° C.
t = 33 min.	155° C.	174° C.
t = 40 min.	168° C.	168° C.
t = 47 min.	159° C.	164° C.
t = 54 min.	132° C.	172° C.

[0126] From test series II it can be seen that the temperature in the tobacco composition with metallic component is continuously significantly higher than the temperature in the tobacco composition without metallic component, and that improved heat transfer to the bowl of the pipe also results in an overall optimized heat input. In other words: The heat-conducting tobacco composition according to the invention can also perform a heat-conducting function between a heat source (e.g., coals) and the lower region of the pipe bowl.
[0127] From such tests, in an exemplary water pipe bowl, for example, a radial temperature gradient in the range of 30 to 50° C. is obtained; and/or an axial temperature gradient in the range of 150 to 200° C., depending on the temperature of the tobacco and on the design and length of the pipe bowl.
[0128] For these experiments described above, optionally, e.g., 4 to 8 sheets of silver leaf or gold leaf can be used, in particular with the following volume fractions:
[0129] eight (8) sheets of silver leaf with approx. 11.40 mm^3; six (6) sheets of silver leaf with approx. 8.52 mm^3; four (4) sheets of silver leaf with approx. 5.68 mm^3; and/or eight (8) sheets of gold leaf with approx. 8.48 mm^3; six (6) sheets of gold leaf with approx. 6.36 mm^3; four (4) sheets of gold leaf with approx. 4.24 mm^3;
[0130] For example, the following mass/volume ratios can also be given: approx. 12 to 15 mm^3 of gold leaf or silver for a tobacco quantity in the range of 25 to 30 grams. Optionally, for example, only 8 to 11 mm^3 or even only 6 to 8 mm^3, especially about 7 mm^3 (corresponding to four leaves) may be used.

BRIEF DESCRIPTION OF THE DRAWINGS

[0131] In the following figures, the invention is described in even greater detail, with reference being made to the other figures for any reference signs which are not explicitly described in a respective figure. It is shown:
[0132] FIG. **1** in a partially sectional side view and in schematic exploded view a pipe bowl of a water pipe for applying a heat-conducting tobacco composition according to one embodiment;
[0133] FIGS. **2**, **3**, **4** each in schematic representation in a side view a heat-conducting tobacco composition in specific confectioning/configuration each according to one embodiment; and
[0134] FIGS. **5**A, **5**B, **5**C, **5**D exemplary experiments illustrating heat conduction effects of a heat-conducting tobacco composition according to one embodiment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0135] FIG. **1** illustrates an exemplary application. Coal **1** or other combustible is arranged on a retainer **21** of a pipe bowl **20**. A chimney cap **22** can be used to close a base body **24** in which a sieve **23** is provided for accommodating

tobacco. By means of the sieve or the base body, a receiving volume is defined in which the tobacco resp. a heat-conducting tobacco composition **10** according to the invention can be accommodated, for example a quantity in the range from 10 to 40 grams. Gas, in particular air, can flow through via passages **25**, in particular air holes. The extensions Δr, Δz of the receiving volume in radial (r) and vertical (z) direction are indicated by two arrows. It is worth mentioning that a heat-conducting tobacco composition **10** according to the invention can optionally be accommodated within the receiving volume defined by the base body **24** also without a sieve, depending on the size of the passages **25**. This also allows a larger quantity of tobacco to be accommodated.

[0136] Gas flow during smoking is drawn through the base body from top to bottom and continues flowing at the lower end of the base body, in particular towards the tank (so-called bowl) of a water pipe.

[0137] FIG. **1** also shows a height position z**1**, which can be referred to as reference position "pipe bowl top" for temperature measurements described in more detail below.

[0138] FIGS. **2**, **3** and **4** show examples of embodiments of a heat-conducting tobacco composition **10** comprising at least one sort/type of tobacco **11** and at least one metallic component **13** in at least one confectioning. FIG. **2** illustrates a confectioning of the metallic component **13** in the form of fibers. FIG. **3** illustrates a confectioning of the metallic component **13** in the form of flakes, for example gold leaf or silver leaf. FIG. **4** illustrates a confectioning of the metallic component **13** in the form of a coating and/or powder or comparatively small particles (admixed bulk). Reasonably, the particles are larger than the meshes of the sieve.

[0139] In FIGS. **5**A, **5**B, **5**C, **5**D, three experiments are illustrated, which were carried out with tobacco having a moisture content of about 5%, wherein the thermal energy has been generated by means of two to three applied thoroughly glowed coals in a standard water pipe bowl (FIG. **1**). In each chart, the temperature in [° C.] is plotted against time (first measurement after five minutes of heating, then seven minutes later in each case). It has been shown that under comparable experimental conditions using conventional tobacco (without heat-conducting additives), a temperature range of only about 99 to 107° C. is obtained (FIG. **5**A; especially measured outside at the top of the tobacco sieve; reference position z**1**). However, if a heat-conducting inert metallic component is used (for example gold leaf, silver leaf), a temperature range of approx. 109 to 121° C. can be ensured with a comparable experimental setup. FIG. **5**B illustrates the effect of a heat-conducting tobacco composition in which six silver leaves were used, and in the heat-conducting tobacco composition shown in FIG. **5**C, eight silver leaves were used. From about 35 to 40 minutes, the temperature level levels off again. In this respect, the advantages of the heat-conducting tobacco composition are particularly noticeable in the heating-up phase and the first 30 minutes. FIG. **5**D summarizes the test results in a chart.

LIST OF REFERENCE NUMERALS

[0140] **1** coal or other combustible
[0141] **10** heat-conducting tobacco composition
[0142] **11** sort/type of tobacco
[0143] **13** metallic component
[0144] **20** pipe bowl
[0145] **21** retainer
[0146] **22** chimney cap
[0147] **23** sieve resp. receiving volume for tobacco composition
[0148] **24** base body with cavity (receiving volume) for sieve
[0149] **25** passages, especially air holes
[0150] r radial direction
[0151] Δr radial extension of the sieve or receiving volume
[0152] z vertical direction resp. height direction orthogonal to radial direction
[0153] z**1** reference position for temperature measurement
[0154] Δz height extension of the sieve resp. of the receiving volume

1. Heat-conducting tobacco composition (**10**) comprising at least one sort of tobacco (**11**) or type of tobacco in at least one confectioning of the tobacco for smoking tobacco consumption, wherein the heat-conducting tobacco composition is configured or designed as a tobacco article for at least one smoking article from the following group: dry tobacco article for cigarettes, cigarillos, cigars, semi-dry tobacco article for smoking tobacco pipes, moist tobacco article for water pipes;

characterized in that the heat-conducting tobacco composition (**10**) further comprises at least one metallic, in particular noble metallic component (**13**) which performs a physical heat-conducting function during smoking, in particular when exposed to heat by ember/glow or by heating elements of the smoking article, and which is chemically inert at least in the temperature range required for smoking, and which is admixed to the tobacco and distributed in the tobacco composition (**10**) in such a way that the heat distribution within the tobacco composition is homogenized during smoking.

2. Heat-conducting tobacco composition (**10**) according to claim **1**, wherein the at least one metallic component is provided at least partly in the form of a powder or as an admixed bulk in the tobacco composition, in particular with a particle size in the spectrum of 0.01 μm to 10 mm, preferably 0.1 μm to 1 mm, further preferably 0.1 μm to 100 μm.

3. Heat-conducting tobacco composition (**10**) according to claim **1**, wherein the at least one metallic component (**13**) is at least partially designed in the form of flakes and/or fibers, for example at least partially as gold leaf; and/or wherein the at least one metallic component exhibits particles with a size or length of at least 10 μm and/or at most 30 mm, in particular at least 50 μm and/or at most 10 mm, or is formed entirely therefrom; and/or wherein the at least one metallic component exhibits particles having a particle size in the range of 10 μm to 1 mm, preferably 20 μm to 100 μm; and/or wherein the at least one metallic component comprises a sheet-like confectioning in the form of gold leaf, in particular having a thickness in the range of 0.001 μm to 100 μm, in particular 0.01 μm to 10 μm, especially 0.01 μm to 1 μm or 0.01 μm to 0.1 μm.

4. Heat-conducting tobacco composition (**10**) according to claim **1**, wherein the at least one metallic component (**13**) is provided at least partially as a coating on the tobacco, at least on a partial amount of the tobacco; and/or wherein the at least one metallic component (**13**) is at least partially vapor-deposited onto the tobacco, in particular with a layer thickness in the range of 0.001 μm to 100 μm, in particular 0.01 μm to 10 μm, especially 0.1 μm to 1 μm.

5. Heat-conducting tobacco composition (**10**) according to claim **1**, wherein the heat-conducting tobacco composition is designed by means of the at least one metallic component (**13**) in such a way that in a water pipe bowl (**20**) for receiving the tobacco composition, in particular with a receiving volume in the range from 20 to 50 ml, at a maximum temperature of 150° C., in particular 120° C., a temperature gradient of at most 50° C., in particular at most 40°, preferably at most 30° is maintained in the tobacco composition, in particular in the radial direction, in particular also in the vertical direction from top to bottom, when the water pipe is operated in the intended use; and/or wherein the heat-conducting tobacco composition is designed as a moist tobacco article for water pipes; and/or wherein a/the temperature distribution in a receiving volume having 20 to 50 ml, in particular within a conical or cylindrical receiving cavity, varies by a maximum of 30 to 40° C. in any direction over the total extension of the volume, when a maximum temperature in the tobacco composition in the range of 120 to 150° C. is generated externally.

6. Heat-conducting tobacco composition (**10**) according to claim **1**, wherein the at least one metallic component is provided with a mass fraction of at least 0.5 mass percent and/or at most 5 mass percent in the heat-conducting tobacco composition, in particular in the range of 1 to 2 mass percent, for example 0.1 to 0.2 grams of noble metallic component such as silver and/or gold.

7. Heat-conducting tobacco composition (**10**) according to claim **1**, wherein the at least one metallic component (**13**) consists at least partly of gold, in particular gold in purest form, or comprises at least one gold alloy; and/or wherein the at least one metallic component (**13**) consists at least partly of silver, or comprises at least one silver alloy; and/or wherein the at least one metallic component (**13**) consists at least partly of platinum, or comprises at least one platinum alloy; and/or wherein the at least one metallic component (**13**) consists at least partly of palladium, or comprises at least one palladium alloy; and/or wherein the at least one metallic component (**13**) consists at least partially of iridium or comprises at least one iridium alloy; and/or wherein the at least one metallic component (**13**) consists at least partially of osmium or comprises at least one osmium alloy; and/or wherein the at least one metallic component consists at least partially of an alloy of at least two of the aforementioned materials or alloys; and/or wherein the at least one metallic component comprises at least one thermally conductive food additive.

8. Heat-conducting tobacco composition (**10**) according to claim **1**, wherein the at least one metallic component has a coefficient of thermal conductivity of at least 250, in particular at least 300, preferably at least 350, more preferably at least 375 or 400 W/mK.

9. (canceled)

10. Multicomponent heat-conducting tobacco composition provided by at least two components to be mixed together, comprising on the one hand at least a first component in the form of a tobacco composition without heat-conducting additive; and further comprising at least a second component in the form of a metallic, in particular noble-metallic component (**13**) which is configured for a physical heat-conducting function during smoking and which is chemically inert at least in the temperature range required for smoking, wherein the first and second components are provided, for example, as a kit for manual or mechanical mixing, and wherein the heat-conducting multicomponent tobacco composition is configured to constitute, in the mixed state, a heat-conducting tobacco composition (**10**) according to claim **1**.

11. Heat-conducting tobacco composition (**10**), in particular a heat-conducting tobacco composition according to claim **1**, processed by mixing at least two components to be mixed with each other and constituting a heat-conducting multicomponent tobacco composition, wherein at least a first component in the form of a tobacco composition without heat-conducting additive comprising at least one sort of tobacco (**11**) or type of tobacco in at least one confectioning of the tobacco for smoking tobacco consumption and further at least a second component in the form of a metallic, in particular noble metallic component (**13**) configured for a physical heat-conducting function during smoking are mixed with each other in such a way that the heat distribution within the tobacco composition is homogenized during smoking.

12. Method of producing a heat-conducting tobacco composition (**10**) comprising at least one sort of tobacco (**11**) or type of tobacco in at least one confectioning of the tobacco for providing a tobacco article selected from the following group, for smoking tobacco consumption by means of at least one smoking article: dry tobacco article for cigarettes, cigarillos, cigars, semi-dry tobacco article for smoking tobacco pipes, moist tobacco article for water pipes;

characterized in that the heat-conducting tobacco composition (**10**) is constituted by adding and distributing at least one metallic, in particular noble-metal and chemically inert component (**13**) providing for a physical heat-conducting function in such a way that the heat distribution within the tobacco composition (**10**) is homogenized during smoking.

13. Method according to claim **12**, wherein the at least one metallic component (**13**) is added or admixed at least partially in the form of a powder or as a bulk to the tobacco composition, in particular with a particle size in the spectrum of 0.01 μm to 10 mm, preferably 0.1 μm to 1 mm, further preferably 0.1 μm to 100 μm; and/or wherein the at least one metallic component (**13**) is added or admixed at least partially in the form of flakes and/or fibers; and/or wherein the at least one metallic component is added or admixed in the form of particles having a size or length of at least 10 μm and/or at most 10 mm, in particular at least 50 μm and/or at most 5 mm; and/or wherein the at least one metallic component is added or admixed in the form of particles having a particle size in the spectrum of 10 μm to 1 mm, preferably 20 μm to 100 μm; and/or wherein the at least one metallic component is added or admixed in sheet-like confectioning in the form of gold leaf, in particular with a thickness in the range of 0.001 μm to 100 μm, in particular 0.01 μm to 10 μm, especially 0.01 μm to 1 μm or 0.01 μm to 0.1 μm.

14. Method according to claim **12**, wherein the distribution or mixing of the metallic component is carried out for an amount in the range from 10 to 10,000 grams, in particular with a mass fraction of the metallic component in the range from 0.5 to 5 mass percent.

15. Method according to claim **12**, wherein the at least one metallic component (**13**) is provided at least partially as a coating on the tobacco, at least on a partial amount of the tobacco, in particular before the metallic component is mixed with the tobacco; and/or wherein the at least one

metallic component (**13**) is at least partially vapor-deposited onto the tobacco, in particular with a layer thickness in the range of 0.001 μm to 100 μm, in particular 0.01 μm to 10 μm, in particular 0.1 μm to 1 μm, in particular before the metallic component is mixed with the tobacco.

16. (canceled)

17. (canceled)

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