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**Datasheet for the decision  
of 20 November 2025**

**Case Number:** T 1341/23 - 3.3.09

**Application Number:** 14794206.4

**Publication Number:** 2993999

**IPC:** A24F1/10, A24B15/16, A24F47/00,  
A61K31/465

**Language of the proceedings:** EN

**Title of invention:**

NICOTINE SALT FORMULATIONS FOR ELECTRONIC CIGARETTES AND  
METHOD OF DELIVERING NICOTINE

**Patent Proprietor:**

Juul Labs, Inc.

**Opponents:**

Nicoventures Trading Limited  
JT International S.A.  
Philip Morris Products S.A.

**Headword:**

Nicotine salt formulations/JUUL LABS

**Relevant legal provisions:**

EPC Art. 56, 100(a), 100(b), 123(2)  
RPBA 2020 Art. 12(4)

**Keyword:**

Inventive step - (yes)

Sufficiency of disclosure - (yes)

Amendments - added subject-matter (no)

Amendment to case - amendment admitted (no)

**Decisions cited:**

G 0007/93

**Catchword:**



**Beschwerdekammern**

**Boards of Appeal**

**Chambres de recours**

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Case Number: T 1341/23 - 3.3.09

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.09**  
**of 20 November 2025**

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**Decision under appeal:** Interlocutory decision of the Opposition  
Division of the European Patent Office posted on  
19 May 2023 concerning maintenance of the  
European Patent No. 2993999 in amended form.

**Composition of the Board:**

**Chairman** A. Haderlein  
**Members:** M. Ansorge  
R. Romandini

## **Summary of Facts and Submissions**

- I. Opponent 3 (appellant) lodged an appeal against the opposition division's interlocutory decision holding what was then auxiliary request 6 allowable. The proprietor also lodged an appeal but withdrew it at the oral proceedings before the board.
- II. With their notices of opposition, the opponents had requested that the patent be revoked on the grounds for opposition under Article 100(a) EPC (lack of novelty and lack of inventive step), Article 100(b) EPC and Article 100(c) EPC.
- III. The opposition division decided that what was then auxiliary request 6 (identical to auxiliary request 24 on appeal) was allowable and met the requirements of Article 123(2) EPC, sufficiency of disclosure, novelty and inventive step over D10 as the closest prior art.
- IV. With its grounds of appeal, the proprietor filed a main request and 23 auxiliary requests, which were withdrawn at the oral proceedings before the board. With its letter dated 7 February 2024, the proprietor filed auxiliary requests 24 to 26.
- V. Independent claims 1 and 4 of auxiliary request 24 read as follows:

"1. An electronic cigarette for generating an inhalable aerosol upon heating comprising:

a nicotine salt liquid formulation consisting of a nicotine salt of nicotine and benzoic acid in a biologically acceptable liquid carrier, wherein the

liquid carrier consists of a solution of 3:7 ratio by weight of propylene glycol / vegetable glycerin, and wherein the nicotine salt in the nicotine salt liquid formulation is present in an amount that forms from 0.5% (w/w) to 20% (w/w) nicotine in the inhalable aerosol; and the molar ratio of benzoic acid to nicotine in the nicotine salt liquid formulation is 1:1."

"4. A method of delivering nicotine to a user of an electronic cigarette, the method comprising:

heating a nicotine salt liquid formulation in an electronic cigarette to produce an inhalable aerosol, wherein the nicotine salt liquid formulation consists of a nicotine salt of nicotine and benzoic acid in a biologically acceptable liquid carrier, wherein the liquid carrier consists of a solution of 3:7 ratio by weight of propylene glycol / vegetable glycerin, and wherein the nicotine salt in the nicotine salt liquid formulation is present in an amount that forms from 0.5% (w/w) to 20% (w/w) nicotine in the inhalable aerosol; and the molar ratio of benzoic acid to nicotine in the nicotine salt liquid formulation is 1:1."

Claims 2, 3, 5 and 6 are dependent claims.

VI. The following documents were cited in the case in hand:

D10: US 2006/0196518 A1  
D11: WO 2009/001085 A2  
D13: US 2011/0226236 A1  
D14: WO 2013/013808 A1  
D19: US 2013/0255702 A1  
D32: EP 3 251 531 A1

- D33: US 2016/0295913 A1
- D34: WO 2012/173322 A1
- D36a: Blog published on 31 August 2012  
<https://www.e-cigarette-forum.com/threads/30-70-pg-vg-liquid.328620/>
- D36b: Blog published on 30 October 2012  
<https://www.e-cigarette-forum.com/threads/name-your-pg-vg-ratio-and-why.346066/>
- D36c: Blog published on 30 April 2012  
<https://www.e-cigarette-forum.com/threads/using-vg-or-pg-as-nicotine-base.292197/>
- D36d: Blog published on 17 January 2013  
<https://www.e-cigarette-forum.com/threads/jugheads-review-bonanza.370816/>
- D36e: Forum entry published on 21 September 2013  
[https://www.reddit.com/r/electronic\\_cigarette/comments/lmtotl/does\\_anyone\\_else\\_feel\\_like\\_vaping\\_restricts\\_there/](https://www.reddit.com/r/electronic_cigarette/comments/lmtotl/does_anyone_else_feel_like_vaping_restricts_there/)

VII. The parties' relevant arguments, submitted in writing and during the oral proceedings before the board, are reflected in the reasons for the decision below.

VIII. Requests

Opponent 3 (appellant) requested that the decision be set aside and that the patent be revoked.

The proprietor (respondent) requested that the appeal be dismissed (auxiliary request 24). As an auxiliary measure, the proprietor requested that the patent be maintained on the basis of one of auxiliary requests 25 and 26, filed by letter of 7 February 2024.

## **Reasons for the Decision**

1. Admittance of auxiliary request 24
  - 1.1 Opponent 1 requested that auxiliary request 24 not be admitted into the appeal proceedings, arguing that the opposition division had not applied the correct principles when considering and admitting this claim request. This claim request had been filed "extremely" late during the first-instance opposition proceedings, namely less than two weeks before the oral proceedings. According to opponent 1, it was clear that this claim request diverged from the claim requests filed earlier. In its view, the proprietor had failed to provide sufficient substantive submissions concerning the compliance of auxiliary request 24 with the EPC, particularly with respect to added matter, sufficiency, novelty and inventive step.
  - 1.2 As outlined below, the board comes to a different conclusion.
    - 1.2.1 First of all, it is noted that the opposition division admitted the claim request in question into the opposition proceedings. Thus, it needs to be assessed whether the opposition division correctly exercised its discretion or whether it exceeded the limits of its discretion.
    - 1.2.2 A board should overrule the way in which a department of first instance exercised its discretion in reaching a decision in a particular case only if it concludes that the division did so in accordance with the wrong principles, without taking the right principles into

account or in an arbitrary or unreasonable way, thereby exceeding the proper limits of its discretion (see Case Law of the Boards of Appeal V.A.3.4.1(a), 11th edition, 2025, and G 7/93).

- 1.2.3 Under the circumstances in this case, the board cannot see how the opposition division, when exercising its discretion in admitting what was then auxiliary request 6 (i.e. auxiliary request 24 on appeal) into the proceedings, did so in accordance with the wrong principles, without taking the right principles into account or in an arbitrary or unreasonable way.
- 1.2.4 Opponent 1 criticised that this claim request had been filed "extremely" late and that it diverged from the claim requests filed earlier. However, this in itself does not support the assertion that the opposition division applied the wrong principles in its discretionary decision.
- 1.2.5 Opponent 1 further submitted that, on appeal, the proprietor had failed to provide sufficient substantive submissions concerning the compliance of auxiliary request 24 with respect to added matter, sufficiency, novelty and inventive step.
- 1.2.6 The board is not convinced by this line of argument either. Firstly, auxiliary request 24 is identical to what was then auxiliary request 6 before the opposition division, which was admitted into the first-instance opposition proceedings and held allowable by the opposition division. Secondly, the respondent provided arguments why the subject-matter claimed in this claim request met the requirements of the EPC.

In view of the above, the board takes auxiliary request 24 into consideration in the case in hand.

2. Admittance of documents D32 to D34 and D36a to D36e
  - 2.1 The respondent argued that these documents should not be admitted into the appeal proceedings.
  - 2.2 As outlined below, the board agrees.
    - 2.2.1 None of the parties explicitly relied on documents D32 to D34 in the context of auxiliary request 24. Nor is it apparent to the board why these documents would be relevant for this request. Thus, the board does not need to decide on their admittance into the appeal proceedings.
    - 2.2.2 Furthermore, the board concludes that documents D36a to D36e cannot be admitted into the appeal proceedings.
    - 2.2.3 Opponent 1, a party as of right, filed D36a to D36e by letter dated 12 February 2024. In this submission, opponent 1 addressed the technical effect acknowledged by the opposition division over the closest prior art and used D36a to D36e in an inventive-step objection against a request (auxiliary request 19) which the proprietor withdrew at the oral proceedings. These documents were not relied upon when objecting to auxiliary request 24. Opponent 1 argued that these documents could not have been filed in the opposition proceedings because the auxiliary requests having the limitation "wherein the liquid carrier consists of a solution of 3:7 ratio by weight of propylene glycol / vegetable glycerin" had been filed shortly before the oral proceedings before the opposition division. It further mentioned that the proprietor had not provided

any substantive comments with respect to the alleged effect of the carrier consisting of a solution of 3:7 ratio by weight of propylene glycol / vegetable glycerin. Therefore, opponent 1 could not have filed any counter-evidence earlier in the proceedings.

2.2.4 For the following reasons, the board is not convinced. The opposition division acknowledged an effect over D10 as the closest prior art in view of experimental evidence on file and concluded as follows:

"In view of the disclosure in D27 and the collection of results shown in Fig. 1, Table 3 and par. 49 of the patent, the technical problem to be solved in view of D10 is seen in the provision of a cigarette/method, causing an increased and faster rise in heart rate. It may also be taken into account that citric acid is less stable at operating temperatures (par. 49 of the patent) and that avoiding the use of this acid gives a further advantage. It was argued by opponents that no improvement has been shown over the teachings of D10, for lack of (statistically significant) evidence and for lack of comparison (different types of carrier). However, the OD finds that the examples on file specifically relate to compositions containing the combination of features, especially the 3:7 ratio of solvents and 1:1 molar ratio nicotine benzoate and that the test results of these composition have to be taken into account."

Accordingly, the opposition division acknowledged an effect over D10 which, in its view, originated from the use of benzoic acid in claim 1 as opposed to citric acid disclosed in D10. There is, however, no indication that the alleged improvement resulted from the specific

type of carrier liquid, and yet D36a to D36e only address the specific type of carrier liquid.

Under these circumstances, D36a to D36e cannot be admitted into the appeal proceedings.

3. Article 123(2) EPC

3.1 The opponents argued that the subject-matter of claims 1 and 4 did not meet the requirements of Article 123(2) EPC. In particular, they were of the opinion that different embodiments of the application as filed had been combined to arrive at the claimed subject-matter. In their view, there was no clear and unambiguous disclosure in the application as filed for the combination of the numbered embodiments 122, 137, 151 and 152 or any pointer towards this feature combination. The specific examples given in paragraphs [0085] to [0090] were the only potential basis for the claimed subject-matter, in particular for the feature "the molar ratio of benzoic acid to nicotine in the nicotine salt liquid formulation is 1:1" in claim 1 (or claim 4). However, these examples did not mention any molar ratio. The claimed molar ratio could only be derived from these examples by being back-calculated from the amount of nicotine and benzoic acid. However, even when back-calculating the molar ratio, the result is a ratio of 1.0:1.0 - not the more general ratio of 1:1 (this in itself being an inadmissible generalisation). In addition, the examples in paragraphs [0085] to [0090] are only disclosed for a final nicotine free-base equivalent concentration of 2% (w/w), 3% (w/w), 4% (w/w) and 5% (w/w). It is not only the specific nicotine benzoate but also this free-base nicotine concentration that is inextricably linked to the specific solvent mixture in the examples. As can be

taken from paragraph [0070] of the application as filed, the degree of protonation of the nicotine molecule depended on the solvent. This confirmed that the type of solvent and the nicotine salt were inextricably linked. The same applied to the concentration of nicotine. The specific amount of nicotine benzoate in the formulation of the examples also influenced the pH value, with the pH value also affecting the protonation of nicotine.

3.2 As outlined below, the board agrees with the opposition division's conclusion that there is no added-matter problem in claims 1 and 4.

3.2.1 There is a basis in the application as filed for the combination of the "numbered embodiments" 122, 137, 151 and 152 (see paragraph [0130]). The board regards these "numbered embodiments" not as different embodiments in the ordinary meaning of the term, i.e. as representing a set of features disclosed in this particular combination only, e.g. specific embodiments in the field of mechanics or specific examples in the field of chemistry, but as claim-like clauses which are to be interpreted in the same way as disclosures provided in the claims with appropriate back-references to each other. In addition, the disclosure in claims 57, 72, 86 and 87 of the application as filed is identical to the set of above-mentioned "numbered embodiments". Due to the back-reference in these "numbered embodiments" and these claims, the resulting set of features is disclosed in this combination.

3.2.2 When considering the combination of the "numbered embodiments" 122, 137, 151 and 152 or claims 57, 72, 86 and 87 of the application as filed, the only differences by comparison with claim 1 of auxiliary

request 24 are that the nicotine salt liquid formulation is formulated in a closed manner using the terms "consisting of" and "consists of" and that the feature "the molar ratio of benzoic acid to nicotine in the nicotine salt liquid formulation is 1:1" has been added.

- 3.2.3 The board considers the examples given in paragraphs [0085] to [0087] of the application as filed to be a pointer towards a liquid formulation consisting solely of nicotine benzoate and a liquid carrier consisting solely of a solution of 3:7 ratio by weight of propylene glycol / vegetable glycerin. Thus, changing the open wording of the liquid formulation into a closed one is in line with Article 123(2) EPC.
- 3.2.4 The fact that these examples only mention specific final nicotine free-base equivalent concentrations is not a problem. The examples of the application as filed are not the sole basis for the feature in question and the claimed combination of features. Rather, they are pointers towards this combination of features. Thus, the opponent's line of argument directed to an inadmissible intermediate generalisation from these examples fails.
- 3.2.5 As regards the feature "the molar ratio of benzoic acid to nicotine in the nicotine salt liquid formulation is 1:1", the board is of the opinion that a skilled person in this technical field would consider nicotine benzoate to implicitly have a stoichiometric ratio of 1:1. When considering the salt as such, there is no difference between the stoichiometric ratio and the molar ratio of benzoic acid to nicotine. This interpretation is also supported by paragraph [0090] of the application as filed, which explicitly mentions a

molar ratio of 1:1 for nicotine benzoate. In the examples of paragraphs [0085] to [0087] of the application as filed, a stoichiometric ratio or molar ratio of nicotine to benzoic acid of 1:1 can be calculated for the salt. In addition, paragraph [0063] of the application as filed discloses a stoichiometric ratio of nicotine to acid of 1:1 in a list of further ratios. In view of the above, it is not necessary to back-calculate a particular molar ratio from the examples given in paragraphs [0085] to [0087] of the application as filed.

- 3.2.6 Thus, even if the molar ratio or stoichiometric ratio of nicotine benzoate of 1:1 is only disclosed in the application as filed for the salt as such (which is how the board sees it), it is noted that claim 1 rules out the presence of further components in the liquid formulation by its closed formulation ("consisting of"). Accordingly, the molar ratio defined in claim 1 applies equally to the salt and to the total liquid formulation. In addition, when considering that nicotine benzoate implicitly has a molar ratio of 1:1, the feature "the molar ratio of benzoic acid to nicotine in the nicotine salt liquid formulation is 1:1" does not confer any further limitation on the scope of claim 1 and is redundant.

Thus, the subject-matter of claim 1 of auxiliary request 24 meets the requirement of Article 123(2) EPC. The same applies to independent method claim 4 (which has the same limitations as claim 1) and the dependent claims.

4. Sufficiency

4.1 The opponents argued that the patent was insufficient because it did not describe the feature "the at least one nicotine salt in the nicotine salt liquid formulation is present in an amount that forms 0.5% (w/w) to 20% (w/w) nicotine in the inhalable aerosol" in a manner sufficiently clear and complete for it to be carried out. In their view, the patent did not provide any information on how to determine the amount of nicotine salt in the inhalable aerosol.

4.2 For the following reasons, the invention can be carried out by a skilled person.

4.2.1 The board agrees with the opposition division's conclusion that the opponents had merely alleged that the feature in question was insufficient without providing any evidence that this was indeed the case.

4.2.2 While it is true that the nicotine content in the inhalable aerosol was not measured in the examples of the patent, the patent contains specific examples in paragraphs [0085] to [0087] exemplifying the liquid formulation in detail. The opponents failed to raise serious doubts, based on verifiable facts that these liquid formulations of the examples would not satisfy the required nicotine content in the inhalable aerosol.

In view of the above, the invention can be carried out by a skilled person.

5. Inventive step

5.1 The opponents argued that the claimed subject-matter did not involve an inventive step in view of D10, D11, D13, D14 and D19 as the closest prior art.

5.2 As outlined below, the board concludes that the claimed subject-matter involves an inventive step.

5.2.1 The board agrees with the opponents that not only D10 but also D13, D14 and D19 are all suitable starting points for the assessment of inventive step. All these documents relate to a similar purpose to the patent, namely providing an electronic cigarette for generating an inhalable aerosol upon heating. It is not necessary for the board to determine which of these documents represents the closest or most suitable starting point. According to the case law, if the skilled person has a choice of several workable routes, i.e. routes starting from different documents which might lead to the invention, the rationale of the problem-solution approach requires that the invention be assessed relative to all these possible routes (Case Law of the Boards of Appeal, 11th edition, 2025, I.D.3.3). Hence, documents D10, D13, D14 and D19 are each considered and will serve as the basis for a separate problem-solution approach analysis.

5.2.2 However, the board agrees with the opposition division's conclusion that D11 relates to another type of cigarette applying a pressurised container rather than to an electronic cigarette in its conventional meaning (generating an inhalable aerosol upon heating). The claimed electronic cigarette is one which generates an inhalable aerosol upon heating, and so D11 is not an

appropriate starting point for the assessment of inventive step in the case in hand.

### 5.2.3 D10 as the starting point

D10 contains the following relevant disclosure as far as the liquid formulation to be vaporised is concerned:

Paragraph [0020], last sentence:

"Nicotine solution used in the atomization process comprises nicotine, propylene glycol, glycerol, organic acids, anti-oxidation agents, essence, water and alcohol, in which the nicotine content is 0.1%-6%, propylene glycol content 80%-90%, organic acids 0.2%-20%, the rest is glycerol, essence, anti-oxidation agents, water and alcohol."

Paragraphs [0028] to [0032]:

"[0028] The recipes of nicotine solution used for the electronic spray cigarette in accordance with the present invention are as follows:

[0029] 1. 6% nicotine, 85% propylene glycol, 2% glycerol, 2% essence, 1% organic acid and 1% anti-oxidation agent;

[0030] 2. 4% nicotine, 80% propylene glycol, 5% glycerol, 1% butyl valerate, 1% isopentyl hexonate, 0-6% lauryl laurate, 0.4% benzyl benzoate, 0.5% methyl octynicate, 0.2% ethyl heptylate, 0.3% hexyl hexanoate, 2% geranyl butyrate, 0.5% menthol, 0.5% citric acid and 4% tobacco essence;

[0031] 3. 2% nicotine, 90% propylene glycol, 2.5% citric acid, 1% essence and 4.5% tobacco essence;

[0032] 4. 0.1% nicotine, 80% propylene glycol, 5% glycerol, 8% alcohol, 2.9% water, 1% essence, 1% tobacco essence and 2% organic acid."

The subject-matter of claim 1 of auxiliary request 24 differs from D10 in that D10 does not disclose using benzoic acid as the acid of the nicotine salt, or a liquid carrier consisting of a solution of 3:7 ratio by weight of propylene glycol / vegetable glycerin.

Even if the problem to be solved is taken to be providing an alternative, the claimed subject-matter still involves an inventive step over D10. The reasons are as follows.

D10 mentions that both glycerol and propylene glycol may be used (see paragraphs [0029], [0030] and [0032]). However, D10 teaches a completely different ratio of these two solvents, with propylene glycol being used as the predominant solvent and glycerol only being present in small amounts in the examples (see paragraphs [0020], [0029], [0030] and [0032]). By contrast, in claim 1 glycerol is present in an amount of 70% and propylene glycol only in an amount of 30%. Furthermore, D10 requires further components in the liquid in addition to the nicotine salt, propylene glycol and glycerin, e.g. (tobacco) essence, anti-oxidation agent, water and alcohol (see paragraphs [0020] and [0029] to [0032]). However, all of these further components are excluded by the closed wording of the liquid formulation in claim 1.

A skilled person having knowledge of D10 would not contemplate using a liquid carrier consisting of a 3:7 ratio by weight of propylene glycol / glycerin as the only component besides nicotine benzoate. A skilled person would not remove all the further components of the liquid formulation disclosed in paragraphs [0020] and [0029] to [0032] of D10.

The board is of the opinion that no different conclusion could be reached even if further combination documents were considered. The nicotine solution used in D10 requires a completely different solvent system as well as the presence of further components which are excluded by the closed formulation of claim 1. It would go against the teaching of D10 to significantly change the solvent system and to remove the further components such as (tobacco) essence, anti-oxidation agents, water and alcohol.

Accordingly, the claimed subject-matter is a non-obvious alternative to D10.

In view of the above, the subject-matter of claim 1 of auxiliary request 24 involves an inventive step in view of D10 as the starting point. The same applies to the subject-matter of independent method claim 4 and the dependent claims.

#### 5.2.4 D13 or D14 as the starting point(s)

D13 and D14 have similar relevant disclosure and teaching and are thus discussed together. D13 (Table 2) and D14 (Table 1) disclose example drug preparations comprising ethanol, water and glycerol as well as nicotine and a number of organic acids.

The subject-matter of claim 1 differs from D13 and D14 in that these documents do not disclose the claimed molar ratio of benzoic acid to nicotine or a liquid carrier consisting of a solution of 3:7 ratio by weight of propylene glycol / vegetable glycerin.

For similar reasons to those outlined above for D10 as the starting point, even if the objective technical problem to be solved is considered merely to be providing an alternative, the claimed subject-matter also involves an inventive step in view of D13 or D14 as the starting point. The reasons are as follows.

D13 and D14 mention that glycerol may be used as part of the solvent (see in particular Table 2 of D13 and Table 1 of D14). However, neither document discloses propylene glycol as a co-solvent. D13 and D14 disclose other co-solvents in significant amounts, with both documents requiring ethanol and water as co-solvents. In addition, as can be taken from Table 2 of D13 and Table 1 of D14, a significant number of further components are required in the liquid formulations disclosed in D13 and D14. However, all these further components are excluded by the closed wording of the liquid formulation in claim 1.

A skilled person having knowledge of D13 or D14 would not contemplate using a liquid carrier consisting of a 3:7 ratio by weight of propylene glycol / glycerin as the only component besides nicotine benzoate. A skilled person would not remove all the further components of the liquid formulation disclosed in Table 2 of D13 and Table 1 of D14.

The board is of the opinion that other combination documents cannot lead to a different conclusion. Even

though combination documents may disclose the claimed molar ratio of nicotine benzoate or a mixture of propylene glycol and glycerin, they do not teach using only nicotine benzoate and the specific claimed binary solvent mixture of claim 1 as the only components of the liquid formulation. In the board's opinion, this would go against the teaching of D13 and D14.

Accordingly, the claimed subject-matter is a non-obvious alternative to D13 or D14 as the starting point.

In view of the above, the claimed subject-matter involves an inventive step over D13 or D14 as the starting point. The same applies to the subject-matter of independent method claim 4 and the dependent claims.

#### 5.2.5 D19 as the starting point

The opponents cited the following relevant passages of D19 concerning the aerosol precursor.

The relevant parts of paragraphs [0086] to [0088] are as follows:

"[0086] A wide variety of types of flavoring agents, or materials that alter the sensory or organoleptic character or nature of the mainstream aerosol of the smoking article, can be employed. Such flavoring agents can be provided from sources other than tobacco, can be natural or artificial in nature, and can be employed as concentrates or flavor packages.

(...)

Flavoring agents also can include acidic or basic characteristics (e.g., organic acids, such as levulinic acid, succinic acid, and pyruvic acid).

(...)

Organic acids particularly may [sic] incorporated into the aerosol precursor to affect the flavor, sensation, or organoleptic properties of medicaments, such as nicotine, that may be combined with the aerosol precursor. For example, organic acids, such as levulinic acid, lactic acid, and pyruvic acid, may be included in the aerosol precursor with nicotine in amounts up to being equimolar (based on total organic acid content) with the nicotine. Any combination of organic acids can be used."

"[0087] The aerosol precursor material may take on a variety of conformations based upon the various amounts of materials utilized therein. For example, a useful aerosol precursor material may comprise up to about 98% by weight up to about 95% by weight, or up to about 90% by weight of a polyol. This total amount can be split in any combination between two or more different polyols."

"[0088] As a non-limiting example, an aerosol precursor according to the invention can comprise glycerol, propylene glycol, water, nicotine, and one or more flavors. Specifically, the glycerol can be present in an amount of about 70% to about 90% by weight, about 70% to about 85% by weight, or about 75% to about 85% by weight, the propylene glycol can be present in an amount of about 1% to about 10% by weight, about 1% to about 8% by weight, or about 2% to about 6% by weight, the water can be present in an

amount of about 10% to about 20% by weight, about 10% to about 18% by weight, or about 12% to about 16% by weight, the nicotine can be present in an amount of about 0.1% to about 5% by weight, about 0.5% to about 4% by weight, or about 1% to about 3% by weight, and the flavors can be present in an amount of up to about 5% by weight, up to about 3% by weight, or up to about 1% by weight, all amounts being based on the total weight of the aerosol precursor. One specific, non-limiting example of an aerosol precursor comprises about 75% to about 80% by weight glycerol, about 13% to about 15% by weight water, about 4% to about 6% by weight propylene glycol, about 2% to about 3% by weight nicotine, and about 0.1% to about 0.5% by weight flavors. The nicotine, for example, can be a high nicotine content tobacco extract."

The subject-matter of claim 1 differs from D19 on account of the use of benzoic acid as the acid of the nicotine salt and on account of the liquid carrier consisting of a solution of 3:7 ratio by weight of propylene glycol / vegetable glycerin.

Even if the objective technical problem were defined merely as providing an alternative, the claimed subject-matter would still involve an inventive step when starting from D19 for the following reasons.

D19 mentions that glycerol and propylene glycol may be used. However, it fails to disclose or suggest the claimed 3:7 ratio by weight of these solvents, let alone that these solvents are the only components besides a nicotine salt. D19 teaches a different ratio of these two solvents (see paragraph [0088]). The aerosol precursor mentioned in paragraph [0088] of D19 requires a water content of about 10 to 20% by weight,

but the presence of water is excluded in the liquid formulation defined in claim 1.

A skilled person having knowledge of D19 would not contemplate using a liquid carrier consisting of a 3:7 ratio by weight of propylene glycol / glycerin as the only component besides nicotine benzoate. The aerosol precursor disclosed in D19 requires the presence of further components in addition to propylene glycol, glycerin and nicotine benzoate, such as water and flavours. There is no teaching in D19 to remove all these further components of the aerosol precursor. Moreover, the examples of D19 (see paragraphs [0168] to [0185]), which deal with the preparation of conductive substrates, the effect of a conductive material concentration on the electrical resistance of the conductive substrate and the effect of calcination on the electrical resistance of the conductive substrate, teach the use of tobacco as the nicotine source rather than a nicotine salt or an organic acid. Keeping in mind that the objective of D19 is to provide a smoking article that can provide the sensations of cigarette, cigar or pipe smoking without combusting tobacco, without needing a combustion heat source and without necessarily delivering considerable quantities of incomplete combustion and pyrolysis products (see paragraph [0008] of D19), the board finds that D19 is not able to teach the claimed liquid formulation consisting solely of nicotine benzoate and the claimed solvent mixture.

The board is of the opinion that further combination documents cannot lead to a different conclusion. Even if a skilled person were to consider any, they would not arrive at the claimed liquid formulation in an obvious manner.

Accordingly, the claimed subject-matter is a non-obvious alternative to D19 as the starting point.

In view of the above, the subject-matter of claim 1 of auxiliary request 24 involves an inventive step in view of D19 as the starting point. The same applies to the subject-matter of independent method claim 4 and the dependent claims.

**Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar:

The Chairman:



D. Grundner

A. Haderlein

Decision electronically authenticated