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Datasheet for the decision of 27 May 2021

Case Number: T 0025/18 - 3.3.06

Application Number: 11826131.2

Publication Number: 2643443

IPC: C11B13/00, B01D3/14, C10L1/18, C10G3/00

Language of the proceedings: EN

Title of invention:
PROCESS AND APPARATUS FOR PURIFYING MATERIAL OF BIOLOGICAL ORIGIN

Patent Proprietor:
UPM-Kymmene Corporation

Opponents:
Sunpine AB
Neste Oyj

Headword:
Process for purifying biological materials/UPM-KYMMENE

Relevant legal provisions:
EPC Art. 123(2), 54, 56, 84
EPC R. 80

Keyword:
Amendment occasioned by ground for opposition - (yes)
Amendments - allowable (yes)
Claims - clarity - (yes)
Novelty - (yes)
Inventive step - non-obvious alternative

Decisions cited:
T 0002/81

Catchword:

Europäisches Patentamt
European Patent Office
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Beschwerdekammern

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Case Number: T 0025/18 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 27 May 2021

Appellant: (Opponent 2)	Neste Oyj P.O. Box 95 Keilaranta 00095 Neste (FI)
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Party as of right: (Opponent 1)	Sunpine AB P.O. Box 76 941 22 Pitea (SE)
Representative:	AWA Sweden AB P.O. Box 5117 200 71 Malmö (SE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 24 October 2017 concerning maintenance of the European Patent No. 2643443 in amended form.**

Composition of the Board:

Chairman	J.-M. Schwaller
Members:	P. Ammendola
	C. Almberg

Summary of Facts and Submissions

I. This appeal was filed by opponent 2 against the interlocutory decision of the opposition division to maintain European patent no. 2 643 443 in the amended form according to the then pending main request (hereinafter the **maintained patent**).

II. In its grounds of appeal the appellant raised objections against the maintained patent, *inter alia*, in view of Articles 84, 123(2), 54 and 56 EPC and referred to, *inter alia*, the documents:

D2 (*Tall Oil*, Ullmann's Encyclopedia of Industrial Chemistry, 2005);

D3 (US 3,644,719 A);

D9 (EP 1 291 355 A);

D11 (US 2,894,880 A);

D17 (WO 2010/097519 A2) and

D26 (EP 2 643 442 B1).

III. Opponent 1 replied and argued that the grounds of appeal clearly showed that the decision of the opposition division "was wrong and should be set aside, and the patent should be revoked".

IV. With its reply to the grounds of appeal the patent proprietor (the respondent) filed seven sets of claims as main request and auxiliary requests 1 to 6. With letter of 13 May 2020 it then filed clean copies of

these requests as well as a further set of amended claims labelled auxiliary request 7.

V. Auxiliary request 2 of 13 May 2020 comprises nineteen claims, with claim 1 reading as follows:

"*1. A process for purifying a mixture of terpene material and tall oil material, wherein the mixture of terpene material and tall oil material is obtained by adding terpene material to the tall oil material, said mixture contains terpene material in an amount ranging from 15 to 80%, the rest being tall oil material, whereby the terpene material comprises* C_5 *to* C_{10} *hydrocarbons and mixtures thereof, and wherein the process comprises the following steps*

(a) evaporating the mixture of terpene material and tall oil material in a first evaporation step (E) to produce a first fraction comprising hydrocarbons having a boiling point of up to 250°C (NTP) and water and a second fraction comprising fatty acids, resin acids, neutral substances and residue components, wherein the evaporation is performed at a temperature of 50 to 250°C and at a pressure of 5 to 100 mbar,

(b) evaporating said second fraction in at least on further evaporation step (G; F,G) to produce a third fraction comprising fatty acids, resin acids and neutral substances having a boiling point under 500°C (NTP), and a residue fraction, and

(c) recovering said first fraction, third fraction and residue fraction."

The remaining claims 2 to 19 define preferred embodiments of the process of claim 1. In particular claims 8 and 11 read:

"*8. The process according to claim 1, characterized in that the terpene material is selected from the group consisting of contaminated turpentine, such as turpentine distillation residues and turpentine distillation bottoms, crude turpentine, crude sulphate turpentine (CST), wood turpentine and mixtures thereof.*"

"*11. The process according to claim 1, characterized in that the neutral substances having a boiling point under 500°C (NTP) of said third fraction comprise C20-C27-hydrocarbons.*"

VI. During the oral proceedings held before the board on 27 May 2021, the respondent withdrew the main request and auxiliary request 1 and upgraded auxiliary request 2 to its highest ranking request. The appellant, also referring to its submissions in writing, disputed the admissibility into the appeal proceedings of said auxiliary request 2 and raised objections in view of Rule 80 and Articles 84, 123(2), 54 and 56 EPC against this request.

The parties' final request were the following:

The appellant requested that the appealed decision be set aside and the patent be revoked.

The respondent requested that the patent be maintained on the basis of the claims of auxiliary request 2 (now **main request**) or, alternatively, of one of the auxiliary requests 3 to 7, all requests as filed on 13 May 2020.

Reasons for the Decision

Main request

1. Admittance into the appeal proceedings.

The appellant objected to the admission of this request because it would suffer from severe deficiencies under at least Articles 84 and 123 EPC and/or Rule 80 EPC and, thus, would be clearly unallowable.

The board notes that the present main request had been filed as auxiliary request 2 with the reply to appeal, i.e. in accordance with Article 12(1)(c) RPBA 2020 and well before the entry into force of RPBA 2020, and thus could only be disregarded under the provisions of Article 12(4) RPBA 2007 (see also Article 25(2) RPBA 2020). Since this request is the same as auxiliary request 1 already on file during the opposition proceedings the board sees no reason for disregarding it.

2. Objection to claim 8 in view of Rule 80 EPC

The appellant stressed that the wording of this claim, *per se* identical to claim 8 as granted, now implicitly also requires (through the reference to claim 1) that "*the terpene material comprises C_5 to C_{10} hydrocarbons and mixtures thereof*", and so renders claim 8 of the main request contrary to Rule 80 EPC.

The board notes that Rule 80 EPC merely specifies that any amendments must be occasioned by a ground for opposition. In the board's view the feature "*the terpene material comprises C_5 to C_{10} hydrocarbons and mixtures thereof*" in claim 1 introduces a definition of

the term "*terpene material*" which renders the claimed subject-matter possibly narrower than that of claim 8 as granted. Incidentally, the board notes that this is in line with the appellant's own submissions in point 4.4.3 of the grounds of appeal (see in particular the sentence bridging pages 9 and 10). Since the amendment in claim 1 was occasioned by the novelty objections (cf. reply to appeal, page 34, first paragraph) and is apt also at producing a restriction of the subject-matter of claim 8 the board finds that the latter does not contravene Rule 80 EPC.

3. Objections of added subject-matter (Article 123(2) EPC)

3.1 Claim 1

3.1.1 The appellant argued that the range "*from 15 to 80%*" introduced in claim 1 as the amount of terpene material in the mixture to be purified, would lack a basis in the application as filed. The values "*15%*" and "*80%*" were only respectively disclosed in the sentence bridging pages 8 and 9 of the original application, as upper limits, namely of the narrower range "*from 1% to 15%*" and of the broader range "*from 1% to 80%*". This would be contrary to the jurisprudence in e.g. T 2/81 (OJ 1982, 394). Moreover, this restriction would render the examples in the patent in suit (wherein the mixture comprises 10% of terpene-containing "*Glid fuel*") no longer representative of the claimed subject-matter.

The board notes that T 2/81 (reason 3) acknowledges that the disclosure of a quantitative broadest range together with an included preferred range renders the two "part-ranges" of the general range lying outside the preferred range "unequivocally and immediately apparent to the person skilled in the art".

This applies all the more to the present case, where the lower values of the broader and narrower ranges originally disclosed in the sentence bridging pages 8 and 9 of the application coincide. Hence their combination implicitly also discloses to the skilled person the single "part-range" extending from the upper limit of the narrower range to the upper limit of the broader range (i.e. from "*15%*" to "*80%*"). It is true that the patent examples do not constitute a pointer to this "part-range", but this has no bearings on the above conclusion, since the amount ranges of "*terpene material*" in the sentence bridging pages 8 and 9 of the original application are disclosed without any connection to other features only possibly present in some specific embodiments of the invention. In other words, this teaching is presented as having general validity. Accordingly, the range "*from 15 to 80%*" introduced in claim 1 as the amount of terpene material in the mixture to be purified is found by the board to comply with Article 123(2) EPC.

3.1.2 The appellant further argued that the wording "*whereby the terpene material comprises C_5 to C_{10} hydrocarbons and mixtures thereof*" added in claim 1 would lack a basis in the application as filed, which described the "*terpene material*" by using different wordings. In the appellant's opinion, on the one hand, the original disclosure in page 6, lines 21 to 22 (which states that "*the terpene material refers to C_5-C_{10} hydrocarbons or mixtures thereof*", emphasis added) meant that the terpene material should consist of these hydrocarbons. On the other hand, original claim 8 recites that "*the terpene material comprises C_5-C_{10} hydrocarbons*", and so would not disclose the possible presence in this material of mixtures of such hydrocarbons.

Finally, the above-identified wording added to claim 1 would also contravene Article 123(2) EPC because the claim failed to also recite the definition of "*C_5-C_{10} hydrocarbons*" (as possibly comprising heteroatoms) given in page 6, lines 23 to 25, and because the application as filed would not disclose in combination the feature expressed by such wording and the amount ranges (discussed above) now also recited in claim 1.

The board finds however that the wording of claim 1 "*whereby the terpene material comprises C_5 to C_{10} hydrocarbons and mixtures thereof*" has a basis in the already cited passage in page 6, lines 21 to 22, and claim 8 of the application as filed (the board stresses also in this latter the plural of "*comprises C_5 to C_{10} hydrocarbons*", which certainly also allow for the presence of more than one, i.e. of mixtures, of these ingredients). Nor is it relevant for the issue of added subject-matter that the term "*C_5 to C_{10} hydrocarbons*" is further defined in the original application, since the same definition is also present in the description of the patent as granted (and even in the amended description as maintained). Finally, the board notes that, similarly to the original disclosure of the range "*from 15 to 80%*" discussed above, also the disclosure in page 6, lines 21 to 22, and in claim 8 of the original application as to the chemical composition of the "*terpene material*" is given without any connection to other features only possibly present in some specific embodiments of the invention. In other words, also this teaching is presented as having general validity and, thus, can be combined with any other generally applicable feature of the invention, including the range of "*from 15 to 80%*" also introduced in claim 1.

Accordingly, the wording "*whereby the terpene material comprises C_5 to C_{10} hydrocarbons and mixtures thereof*" introduced in claim 1 is found to comply with Article 123(2) EPC.

3.1.3 In the appellant's view claim 1 at issue also introduced subject-matter extending beyond the content of the application as filed in the following respects:

(a) the wording "*hydrocarbons having a boiling point of up to 250°C (NTP)*" that replaces the term "*light hydrocarbons*" present in claim 1 as filed, corresponded to just a part of the definition provided for such term in page 11, lines 21 to 24 as filed, and

(b) the wording "*neutral substances having a boiling point under 500°C (NTP)*" that replaces the term "*light neutral substances*" originally present in claim 1, corresponded to just a part of the definition provided for such term in page 11, lines 25 to 28 as filed.

(c) the wording "*wherein the evaporation is performed at a temperature of 50 to 250°C and at a pressure of 5 to 100 mbar*" in claim 1, wherein the term "*step*" does not follow "*evaporation*", would not necessarily describe the parameter of the (whole) first evaporation step (E) and, thus, would not find a basis in page 12, lines 2 to 4, of the original application. Moreover, such original disclosure would imply the combinations of these parameters with the other features of the specific embodiments of Figures 1 and 2.

3.1.4 The board notes that according to above objection (a), the disclosure provided by the complete sentence on page 11, lines 21 to 23, of the original application, reading: "*In connection with the present invention, the light hydrocarbons recovered from the first evaporation step E refer to hydrocarbons having a boiling point of up to 250°C (NTP).*" would be (implicitly) further limited by the teaching in the immediately subsequent sentence, reading: "*These hydrocarbons mainly comprise terpenes, of which most is turpentine*".

The board finds instead that the latter sentence only provides additional information (as to the chemical species comprised in the "*light hydrocarbons*"). Hence, it does not change the fact that the former sentence provides a definition of the term "*light hydrocarbons*" as used in the patent application in terms of their boiling points.

Thus, in the board view, no subject-matter extending beyond the content of the application as filed results from the presence in claim 1 under consideration of the wording "*hydrocarbons having a boiling point of up to 250°C (NTP)*", as this manifestly results from the replacement of the term "*light hydrocarbons*" originally present in claim 1 by the corresponding definition in page 11, lines 21 to 23, as filed.

3.1.5 The same considerations apply *mutatis mutandis* to the objection (b) above. Also in this case the presence in a distinct sentence (on page 11, lines 25 to 27 of the application as filed) of further information as to the chemical species comprised among the "*light neutral substances*" recovered from the "*at least one further evaporation step (G; F,G)*" does not change the fact that the original application on page 11, lines 27 to

28, in the immediately subsequent sentence recites: "*The light neutral substances typically have a boiling point under 500°C (NTP)*", which amounts to a definition of the "*light neutral substances*" as used in the patent application in terms of their boiling points.

Thus, the board finds that the presence in claim 1 at issue of the wording "*neutral substances having a boiling point under 500°C (NTP)*" does not result in an extension beyond the content of the application as filed, as this manifestly results from the replacement of the term "*light neutral substances*" present in claim 1 as filed by a definition thereof that only differs from that in page 11, lines 27 to 28, of the application as filed (reported above) for the omission of the adverb "*typically*", omission which does not add new subject-matter to such definition.

3.1.6 As to the objection (c) above, the appellant stressed that the original disclosure in page 12, lines 3 to 5, was part of the description of the evaporation step and, in particular that such description was given in connection with the specific embodiments originally described with reference to Figures 1 and 2.

The board finds that any skilled reader of claim 1 would immediately understand that the wording "*wherein the evaporation*" at the end of the first purification stage "*(a)*", must necessarily refer to the "*first evaporation step E*" previously mentioned in the same stage "*(a)*". Hence, the identically worded original disclosure in page 12, lines 3 to 5, which, when considered in its context, also relates to the first evaporation step E and certainly provides a basis for the wording added in claim 1.

Moreover, the board notes that the relevant process parameters of the evaporation step E are described in this passage of the original application without making any reference to one or the other of the two flow charts.

Finally, the board considers relevant that the preceding sentence in page 8, lines 31 to 33, of the original application explicitly states: "*In the following, the process of the invention will be explained by referring to Figures 1 and 2, which are here to be contemplated as a flowchart of the process. Figure 1 discloses a process comprising two-step evaporation. Figure 2 discloses a process comprising three step evaporation.*"

In the board's view this passage renders apparent to the skilled reader of the original application that, in the subsequent portion of the description, the reference to Figures 1 and 2, has essentially the function of presenting in a clear way the description relating to the process of the invention with "*two-step evaporation*" (in which, there is just one "*further evaporation step*" G) and that relating to the process of the invention with "*three-step evaporation*" (in which, there are two "*further evaporation step*"s F and G). This certainly does not imply that each feature disclosed in that portion of the description (inclusive of the relevant ones recited at the beginning of page 12) must be considered as only disclosed in combination with all the other features described by making reference to such figures.

Accordingly, the process parameters "*at a temperature of 50 to 250°C and at a pressure of 5 to 100 mbar*" have

a basis in page 12, lines 2 to 4 of the application as filed.

3.2 Claim 8

3.2.1 The appellant argued that claim 8 of this request would contravene Article 123(2) EPC essentially because, when considered in combination with claim 1 to which it refers, on the one hand, it allows the terpene material to be e.g. "*turpentine distillation residues*", which would necessarily be free of any C_5 to C_{10} hydrocarbons, but on the other hand, imposes the presence therein of C_5 to C_{10} hydrocarbons. This new sort of "*turpentine distillation residues*" was not disclosed in the application as filed.

3.2.2 The board stresses that, as convincingly argued by the respondent, already in the original disclosure the term "*turpentine distillation residues*" is (only) disclosed as an example of "*contaminated turpentine*" (emphasis added). Hence also in the original disclosure the "*turpentine distillation residues*" were implicitly described as necessarily comprising e.g. the C_{10} terpene hydrocarbons of turpentine. Hence, the appellant's construction of the term "*turpentine distillation residues*" as being necessarily free of any light hydrocarbons is found manifestly not applicable in the context of the present patent and original patent application. Thus, the appellant's objection is found unconvincing.

3.3 Claim 11

The appellant argued that claim 11 of this request would contravene Article 123(2) EPC essentially because it differed from the original claim 14 and from the

original description in page 11, lines 25 to 27 (see the passage reading: "*[s]aid light neutral substances recovered in the distillate from said at least one further evaporation step (G; F,G) comprise C_{20}-C_{27}-hydrocarbons*") in that the neutral substances are no longer identified as "*light*".

In the board's view the referred original disclosure does provide a basis for the wording of present claim 11 and the differences in wording are clearly an adaptation to the wording now present in claim 1. Similarly to the amendment of claim 1 already discussed at 3.1.5 above, also in claim 11 the deletion of the term "*light*" (originally used in claim 14 and in the page 11, lines 25 to 27 to qualify the relevant "*neutral substances*") is justified by the presence therein of the definition of these substances in terms of boiling points.

3.4 For these reasons, it is concluded that the claims of the main request do not contain added subject-matter and are found to comply with Article 123(2) EPC.

4. Clarity (Article 84 EPC)

4.1 Claim 1

4.1.1 The appellant argued that the range "*from 15 to 80%*" introduced in claim 1 would render unclear this latter because it fails to indicate the nature of the "%" which, therefore, could refer to a percent by weight, or by volume, or molar.

The board finds it however self-evident, as also stressed by the respondent, that in the relevant technical field the unit conventionally used for

describing relative amounts of compounds/fractions in mixtures is the % by weight. Paragraphs [0018] and [0031] of the opposed patent are also explicitly consistent with such use. Finally, paragraphs [0098] and [0101] of the patent (wherein the feed rate is defined in terms of "*kg*" per hour) also indirectly confirm that the relevant parameters relate to the weight of materials (used as feed). Hence, the claim is not rendered unclear by the omission of the indication that the defined "%" range of "*terpene material*" of the mixture (the rest being "*tall oil material*") should refer to a % by weight.

4.1.2 The boards finds also not convincing the argument that claim 1 would not comply with Article 84 EPC because the addition of the wording "*whereby the terpene material comprises C_5 to C_{10} hydrocarbons and mixtures thereof*" is not accompanied by the definition of the "*C_5 to C_{10} hydrocarbons*" (as possibly comprising heteroatoms) given in page 6, lines 23 to 25, of the application as filed, identically recited in paragraph [0028] of the description of the patent as granted and as maintained. Since the wording added in claim 1 is equivalent to that present in granted claim 8 (reciting "*comprises C_5 to C_{10} hydrocarbons*" and dependent on granted claim 1), the disputed amendments result from the mere combination of granted claims 1 and 8 without creating any new lack of clarity, objectionable in opposition proceedings.

4.1.3 The appellant argued that the parameters "*at a temperature of 50 to 250°C and at a pressure of 5 to 100 mbar*" were only recited in claim 1 as conditions of "*evaporation*" and thus would not express clearly whether they were the conditions to be applied in the

"*evaporation step E*" previously mentioned in claim 1 or not.

The board finds instead, as already discussed in 3.1.6 above, that the skilled reader of claim 1 would immediately understand that the wording "*wherein the evaporation is performed*", that introduces the above parameters at the end of step "(a)", can only plausibly refer to the "*first evaporation step E*" previously mentioned in the same step "(a)". Hence, this objection under Article 84 EPC is found based on a manifestly artificial construction of the amended wording and thus unconvincing.

4.1.4 The appellant also considered claim 1 to lack of clarity because the added wording "*said mixture contains terpene material in an amount of 15 to 80% the rest being tall oil material*" was ambiguous as to whether the term "*terpene material*" mentioned therein referred or not to the "*terpene material*" used to obtain the mixture (as required by the immediately preceding claim wording "*wherein the mixture of terpene material and tall oil material is obtained by adding terpene material to the tall oil material*").

The board finds however that the skilled reader of claim 1 would reasonably assume that the wording "*terpene material*" is consistently used in this claim with the aim of identifying one and the same composition of matter, namely the composition which can be used to obtain the mixture to be purified and, therefore, which is comprised in the mixture to be purified. Indeed, there is no reason apparent from the wording of the claim *per se* that could possibly be suggestive that the same wording "*terpene material*" may have different meanings. Nor is any such teaching

contained in the reminder of the patent. Hence, this objection of the under Article 84 EPC is found to be based on a manifestly artificial construction of the amended wording and thus unconvincing.

4.1.5 Finally, the appellant argued that the presence in respectively paragraphs [0056] and [0057] of the patent specifications of the terms "*light hydrocarbons*" and "*light neutral substances*" would render unclear the definitions of the "*hydrocarbons*" and "*neutral substances*" - not accompanied by the adjective "*light*" - in stages "*(a)*" and "*(b)*" of claim 1.

The board finds that the absence of the adjective "*light*" in claim 1 does not produce any contradiction with paragraphs [0056] and [0057] of the patent, because a skilled person would immediately conclude that the "*hydrocarbons*" and "*neutral substances*" with specified boiling points and comprised in the specified fractions defined in claim 1 are necessarily the same as the "*light hydrocarbons*" and "*light neutral substances*" that are defined in paragraphs [0056] and [0057], as respectively comprised in the same fractions and having the same boiling points.

4.2 Claim 8

The appellant argued that the wording "*turpentine distillation residues*" in claim 8 would describe a composition necessarily free of any hydrocarbon with up to 10 carbon atoms. This would be in contradiction with the requirement now recited in claim 1 (to which claim 8 refers) that the terpene material must comprise C_5 to C_{10} hydrocarbons. Such new contradiction would be objectionable under Article 84 EPC.

The board finds however that this objection is based on a manifestly erroneous construction of "*turpentine distillation residues*" already found in point 3.2 above to be manifestly not applicable in the context of the present patent. Hence, the fact that claim 1 now requires the presence in the terpene material of C_5-C_{10} hydrocarbons does not appear necessarily in contradiction with the feature of claim 8 that the same material can be a "*contaminated turpentine, such as turpentine distillation residues*". Accordingly, no new lack of clarity, objectionable under Article 84 EPC, is found present in claim 8 of the main request.

4.3 For the above reasons it is concluded that the amendments in claims 1 and 8 of the main request do not cause any new ambiguities objectionable in view of Article 84 EPC.

5. Novelty objections (Article 54 EPC)

5.1 The objections in view of Article 54 EPC to the present request were directed against claim 1 and based on the previous disclosure in D3 and D11 of processes for the purification of crude tall oil (hereinafter **CTO**).

5.2 As to D3, the appellant argued that in this prior art a mixture of terpene material and tall oil material would be formed in the first evaporator, because every evaporation procedure in a closed vessel inevitably resulted in at least reflux. Hence, at least a tiny amount of "heads" (i.e. terpene material) would reflux in the top of the first evaporator (from the connection line between the evaporator 50 and the rectifier 51 shown in Figure 1 of D3), thus forming a mixture within the evaporator. In the appellant's view also claim 1 would encompass the possibility of feeding one of the

two materials as feed and the other as reflux to the opposite ends of the first evaporator, since this was explicitly allowed by paragraph [0068] of the patent. Moreover, since the "%" of terpene material in the mixture was undefined in claim 1, this feature could not represent a distinguishing feature. Hence, claim 1 at issue was anticipated by the CTO purification process disclosed in D3.

5.2.1 The board finds this objection unconvincing, if only for the reason that, as discussed in 4.1.1 above, the "%" of terpene material in the mixture defined in claim 1 is clearly by weight and, thus, this feature of claim 1 is sufficient at rendering novel the claimed process vis-à-vis that disclosed in D3.

5.2.2 The board further stresses that neither the wording of claim 1 *per se* nor its combination with paragraph [0068] of the patent specification, justifies the appellant's construction of such claim as encompassing the possibility of feeding one of the two materials as feed and the other as reflux to the opposite ends of the evaporator. Indeed, even assuming for the sake of an argument in favour to the appellant that heads of distillation of CTO might be considered as a "*terpene material*" in the sense of claim 1, already the fact that the claim defines a "*process for purifying a mixture*" that requires in stage "*(a) evaporating the mixture*", renders it apparent to the skilled person that the relevant mixture (of the CTO and of the refluxed heads in this hypothetical case) must already exist before any evaporation starts. Similarly, a skilled person reading paragraph [0068] in the context of the whole patent application, would conclude that the two separate streams of materials described in this paragraph are necessarily fed to the same portion

(normally the bottom) of the evaporator, so that the mixture is formed at latest immediately before that the first components start actually evaporating from it. Hence, the above novelty objection in view of D3 is also unconvincing because it is based on a construction of claim 1 and paragraph [0068] of the patent description that is manifestly erroneous.

5.3 In the appellant's opinion also the process for purifying CTO disclosed in D11 anticipates the subject-matter of claim 1 at issue because in this prior art, heads of the first evaporation are refluxed at the top of the evaporator (in which only CTO is introduced at the bottom). As D11 discloses subjecting a tall oil feedstock (see column 3, lines 3-7) to deodorisation in the tower 35 of Figure 1, wherein light ends (including turpentine) are withdrawn via line 25, condensed in condenser 44 and re-introduced into tower 35 as "REFLUX HEADS" via line 26 and pump 40 (see Figure 1; from column 4, line 14 to column 5, line 40), it already disclosed the formation in the first evaporator of a mixture of terpene material and tall oil material. The same would also be allowed in the process of claim 1, as apparent from paragraph [0068] of the patent. Moreover, it was possible to derive from the data in D11 as to the amounts of CTO and reflux heads, that in such mixture the reflux heads/terpene material could form 38% by weight of the mixture.

It is immediately apparent to the board that also this novelty objection is based on the same construction of claim 1 and paragraph [0068] of the patent that the board finds erroneous for the reasons given in 5.2.2 above. Hence, also this novelty objection is found unconvincing.

5.4 It follows from the above considerations that the subject-matter of claim 1 (and by the same token that of claims 2 to 19 which depend thereon) of the main request is not anticipated by the cited prior art and thus, this request is found to comply with Article 54 EPC.

6. Inventive step (Article 56 EPC)

6.1 The closest prior art

It is common grounds among the parties that the upgrading by distillation of CTO disclosed in D2 (see in particular points 3.2.1 to 3.2.3 above) may be considered as closest prior art. It is undisputed that in this prior art the tall oil purified is no composition of matter possibly falling under the definition of the "*mixture of terpene material and tall oil material*" used in the process of claim 1.

6.2 The technical problem solved

6.2.1 The appellant stressed that the decision under appeal identifies the advantage of the claimed process in a more efficient separation of water from the tall oil material, due to viscosity reduction caused by adding the terpene material (see paragraphs [0021] and [0022] of the patent).

6.2.2 In a first line of attack, the appellant disputed the existence of such advantage by comparing the examples in the patent in suit with those described in D26, and concluded therefrom that the additional presence of "*Glid fuel*" (as terpene material) in the examples of the patent in suit resulted in loss of useful material, thus increasing the amount of pitch (i.e. the final

residue). Hence, the claimed process was likely to result in a worse separation efficiency in comparison to the prior art and would not even qualify as an "alternative" purification process but only as an arbitrary (and allegedly necessarily non-inventive) modification of the prior art.

6.2.3 The boards however notes that it is undisputed that the examples in D26 do not use the same evaporation conditions as those of the examples of the patent in suit. Moreover, the fact underlined by the appellant that D26 is a patent application filed by the respondent on the same day as the patent in suit which also claims priority from some of the priorities of the patent in suit, is found insufficient at rendering plausible the appellant's allegation that the CTO used in the examples of D26 must necessarily be identical to that used in the examples of the patent in suit. Hence, the board finds that no sound conclusion can be derived from the comparison with D26. Thus, the above appellant's conclusion on the technical problem solved vis-à-vis the prior art (based on such comparison) is found unconvincing.

6.2.4 The appellant, in a second line of attack, stressed that the examples in the patent (which comprise only 10% of "*terpene-containing Glid fuel*") are no longer representative of the claimed process and considered them in any case too limited to render plausible across the whole ambit of claim 1 the advantage found plausible by the opposition division (see 6.2.1 above). The appellant stressed that the claim does not impose any direct or indirect restriction to the relative viscosities of the terpene material and of the tall oil material. Hence, the only problem plausibly solved across the whole scope of claim 1 could be the

provision of a further method for purifying tall oil, i.e. an alternative to the prior art.

6.2.5 Although the respondent disputed this definition of the technical problem solved, it is not necessary for the board to come to a conclusion as to this issue because, as explained below, the prior art cited by the appellant appears manifestly insufficient at rendering plausible that the process of claim 1 represents an obvious alternative to the prior art. Hence, in the following it is assumed, for the sake of an argument in favour of the appellant, that the technical problem solved is the provision of an alternative to the prior art.

6.3 Non-obviousness of the claimed subject-matter in view of the prior art cited

The appellant argued that the solution to such problem would have been obvious in view of the combination of D2 with D9 or with D17, because each of these two latter citations suggested the possibility of adding e.g. turpentine to CTO to be purified.

6.3.1 The alleged pointer in D2

The appellant argued that D2 itself would have pointed to the importance of reducing the viscosity of the tall oil to be purified, by referring to the passage on page 3, right column, reading:"*The crude is normally transported and stored at 50-80 °C to avoid crystallization and settling of rosin acids. The viscosity of the crude is variable; it is mainly a function of the rosin content. Viscosity must be measured on a clear, noncrystallized product.*"

For the board this passage would at most have suggested the importance of preventing crystallisation and settling of rosin prior to the actual purification process, and possibly also of removal of any such crystallised rosin. The viscosity of the CTO is only disclosed therein as a parameter that depends on the amount of rosin. This teaching does not even indirectly imply that a low viscosity of the CTO is required for or would be beneficial to such process.

6.3.2 The combination of D2 with D9

In the appellant's opinion, a skilled person searching for an alternative to the process for purifying CTO disclosed in D2, would have taken into consideration the teaching in paragraph [0011] of D9, which reads: "*EP 952 208 discloses a process for the separation of unsaponifiables from black-liquor soaps or tall oil by dehydrating the raw material, melting and distillation in a short path evaporation column . This publication also suggests the addition of unsaponifiables to soap or neutralised tall oil before the drying step in order to reduce the necessary temperature to maintain the mixture at a state of adequate fluidity during the drying process. These added unsaponifiables comprise recirculated unsaponifiables from the process which unsaponifiables are low boiling substances. These recirculated unsaponifiables have a favourable effect on the drying but are believed to have a disadvantageous effect on the subsequent distillation step as the low boiling unsaponifiables are evaporated together with the sterol fraction resulting in a dilution of the sterol fraction and because they do not remain in the residue fraction they cannot facilitate handling of the residue through viscosity reducing*

effect as in the case if they were present in the residue" (emphasis added by the Board).

In the appellant's opinion, this teaching would have rendered obvious adjusting the viscosity of e.g. a CTO to be purified by recirculating "unsaponifiables [which] are low-boiling substances" such as e.g. turpentine.

The board notes however that this paragraph refers to teachings present in another patent and not to the invention described in D9, thus its content must be considered *per se*. Furthermore it only refers to a (not further specified) process for removing (not further specified) unsaponifiables from tall oil, via dewatering, melting and distillation. It also teaches that this other patent discloses advantages and disadvantages observed when a neutralised tall oil is added with (not further specified) unsaponifiables, which can comprise low boiling unsaponifiables that are "recirculated from the process". In the absence of any further details as to the process actually disclosed in the patent to which paragraph [0011] refers, this disclosure is found too vague to necessarily suggest the addition to the tall oil material (to be purified) of a turpentine or of another material comprising "*terpenes*" and "*C_5 to C_{10} hydrocarbons and mixtures thereof*", as required in claim 1 at stake. For instance, it is apparent to the board that C_5 to C_{10} terpenes may not necessarily be comprised in the "low boiling unsaponifiables from the process" that have been recirculated in the process used in the patent, to which paragraph [0011] of D9 refers, and which depends on the starting tall oil, on the conditions actually used in this other patent for dewatering and distillation and on the point of the process in which

the "low boiling unsaponifiables" have been collected prior of their "recirculation".
Finally, the amount of terpene material now required in claim 1 is of least 15%. Thus, it would also have been relevant for a sound conclusion on the obviousness of the claimed subject-matter (in addition to further information on the nature of the "low boiling unsaponifiables from the process" that have been recirculated) the knowledge of the total amount of "unsaponifiables" that is actually added to the neutralised tall oil in this prior art process (to which paragraph [0011] of D9 refers). In particular, it would also have been relevant to know if such amount is of an order of magnitude at least comparable to that required in claim 1 under consideration of the "*terpene material*". However, no conclusion in this respect can be drawn from the cited passage of D9.

The board finds therefore that the disclosure provided in D9 referred to by the appellant would not have rendered obvious for a skilled person to modify the disclosure of D2 by adding to the CTO to be purified by distillation, a material falling under the definition of the "*terpene material*" in claim 1 under consideration, let alone an amount of such "*terpene material*" sufficient at constituting at least 15% by weight of the resulting mixture.

6.3.3 The combination of D2 with D17

The appellant argued that also the combination of D2 with D17 would have rendered obvious to add turpentine to a tall oil to be purified (in particular to the extent sufficient at a further conversion of the tall oil into fuels by hydroprocessing). It referred in

particular to the disclosure in D17 page 5, lines 27 to 30; page 7, lines 18 to 22 and claims 1, 13 and 14.

The board notes however that the purification steps used in the process of D17 consist of washing and separation (e.g. by centrifugation) stages and are clearly presented as allowing to omit the "expensive" purification processes via distillation of the prior art (see in D17 e.g. the prior art described in page 3, lines 10 to 14, in combination with page 6, lines 25 to 28).

Hence, it is apparent to the board that this prior art would not have rendered obvious for a skilled person to add turpentine to a CTO to be subsequently purified by means of distillation. Thus, the combination of D2 with D17 also would not have rendered obvious the modification of the prior art of departure required to arrive at the subject-matter of claim 1 under consideration.

6.4 For these reasons, it is concluded that the subject-matter of claim 1 (and by the same token that of claims 2 to 19 which depend thereon) of the main request is not rendered obvious by the cited prior art and, thus, this request is found to comply with Article 56 EPC as well.

6.5 With no valid objection against the claims of the main request, the patent shall be maintained on that base.

Order

For these reasons it is decided that:

1. The appealed decision is set aside.

2. The case is remitted to the opposition division with the order to maintain the patent on the basis of claims 1 to 19 according to the main request (filed as auxiliary request 2 with letter dated 13 May 2020), and to adapt the description accordingly.

The Registrar: The Chairman:

A. Pinna J.-M. Schwaller

Decision electronically authenticated