Internal distribution code:

(A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 9 April 2025

Case Number: T 0566/23 - 3.3.03

Application Number: 17712026.8

Publication Number: 3426502

IPC: C08L9/00, C08G8/00, B60C1/00, C08L61/00, C08K3/22, C08K3/36, C08G8/10, C08G8/12, C08G8/24, C08K5/09, C08K5/18, C08K5/548, C08L9/06, C08L61/06, C08L91/00

Language of the proceedings: EN

Title of invention:
PROCESS FOR THE PREPARATION OF NOVOLAC ALKYLPHENOL RESINS

Patent Proprietor:
Sumitomo Bakelite Europe N.V.

Opponent:
SI Group, Inc

Relevant legal provisions:
RPBA 2020 Art. 13(2)
EPC Art. 56

Keyword:
Amendment after summons - cogent reasons (yes)
Inventive step - (no: all requests)

Decisions cited:
T 0939/92

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

Boards of Appeal

Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0

Case Number: T 0566/23 - 3.3.03

D E C I S I O N
of Technical Board of Appeal 3.3.03
of 9 April 2025

Appellant: (Opponent)	SI Group, Inc 2750 Balltown Road Schenectady NY New York 12301 (US)
Representative:	Dehns 10 Old Bailey London EC4M 7NG (GB)
Respondent: (Patent Proprietor)	Sumitomo Bakelite Europe N.V. Henry Fordlaan 80 3600 Genk (BE)
Representative:	Müller-Boré & Partner Patentanwälte PartG mbB Friedenheimer Brücke 21 80639 München (DE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 23 December 2022 concerning maintenance of the European Patent No. 3426502 in amended form.**

Composition of the Board:

Chairman	D. Marquis
Members:	O. Dury
	A. Bacchin

Summary of Facts and Submissions

I. The appeal of the opponent lies from the interlocutory decision of the opposition division regarding maintenance of European Patent No. 3 426 502 in amended form on the basis of the claims of the first auxiliary request filed during the oral proceedings held on 11 October 2022 and a description (including some figures) adapted thereto.

II. The following documents were, among others, cited in the decision under appeal:

D1: CN 104031220 A
D1a: English translation of D1
D5: US 9 133 294
D8: Phenolic Resins: A Century of Progress, L. Pilato (Ed.), Springer, 2010, Chapter 7, Novolak Production, H. Aiba, pages 147-151
D11: Declaration of Dr. Louis Pilato, dated 28 April 2021
D12: Experimental data filed by the patent proprietor with letter of 26 January 2021, concerning example 4 of D1 as well as own experiments 1 to 4
D13: Experimental data filed by the patent proprietor with letter of 10 August 2022, concerning example 4 of D1 as well as own experiments 1 to 10

III. The decision under appeal was based on a main request and on a first auxiliary request filed during the oral proceedings. As far as relevant to the present case, the following conclusions were reached in this

decision:

- Document D13 was admitted into the proceedings.

- The main request was not allowable.

- The subject-matter of claim 1 of the first auxiliary request involved an inventive step when document D1 was taken as the closest prior art.

Further taking into account that the objections pursuant to Article 100(b) EPC raised by the opponent did not succeed, the patent amended on the basis of the first auxiliary request was held to meet the requirements of the EPC.

IV. The opponent (appellant) lodged an appeal against this decision.

V. Together with the rejoinder to the statements of grounds of appeal the patent proprietor (respondent) filed three sets of claims as main request and auxiliary requests 1 and 2.

VI. The parties were summoned to oral proceedings and a communication pursuant to Article 15(1) RPBA indicating specific issues to be discussed at the oral proceedings was then sent to the parties.

VII. With letter of 28 February 2025, the respondent filed the following document:

D14: Additional experimental report
(own experiments 11-13)

VIII. The oral proceedings took place on 9 April 2025 in the presence of both parties.

IX. The **final requests** of the parties were as follows:

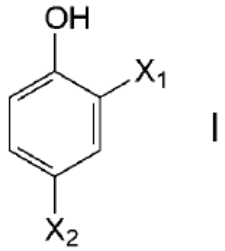
The appellant requested that the decision under appeal be set aside and the patent be revoked. The appellant also requested that the report D14 not be admitted into the proceedings.

The respondent requested that the appeal be dismissed (main request) or, in the alternative, that the patent be maintained in amended form according to the claims of any of auxiliary requests 1 or 2 filed with the rejoinder to the statement of grounds of appeal.

X. Claim 1 of the **main request** read as follows

"1. A process for the preparation of a novolac alkylphenol resin that comprises the following steps:

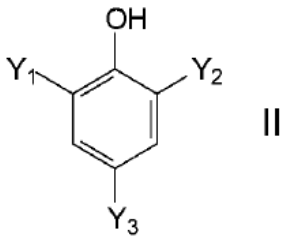
(a) Providing a mixture of phenolic monomers comprising 20 to 70 mol%, based on the total amount of phenolic monomers, of chemical substances having the structural formula I



I

in which one of the groups X_1 or X_2 is a proton, and the remaining group X is a linear or branched alkyl group having 1 to 18 carbon atoms, and 30 to 80 mol%, based on the total amount of phenolic monomers, of

chemical substances having the structural formula II

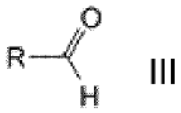


II

in which one of the groups Y_1, Y_2 and Y_3 is a proton, and the two remaining groups Y are, independent of each other, linear or branched alkyl groups having 1 to 18 carbon atoms;

(b) Adding an acid;

(c) Adding an aldehyde which is formaldehyde with the structural formula III



III

in which R is a proton, and which is used as an aqueous solution thereof; wherein the molar ratio of the aldehyde with the structural formula III to the total amount of the chemical substances having the formula I and II is greater than or equal to 1,

and wherein the method further comprises the following steps for processing the mixture after completion of a condensation reaction:

a step of distilling the mixture at atmospheric pressure until a temperature of about 120°C to 145°C is reached, without neutralizing the acid beforehand;

after that, an optional step of neutralizing the acid; and

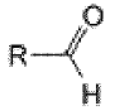
after that, a step of carrying out a distillation under a reduced pressure of 100 mm Hg or less until a temperature of about 150°C to 170°C is reached."

XI. Claim 1 of **auxiliary request 1** differed from claim 1 of the main request in that the following amendment was made therein in relation to the feature directed to the neutralization step (deletions in ~~strikethrough~~):

"after that, a~~n optional~~ step of neutralizing the acid;".

XII. Claim 1 of **auxiliary request 2** differed from claim 1 of auxiliary request 1 in that the following amendment was made in the definition of step (c) (addition in **bold**):

"(c) Adding an aldehyde which is formaldehyde with the structural formula III



III

in which R is a proton, and which is **only** used as an aqueous solution thereof; wherein the molar ratio of the aldehyde with the structural formula III to the total amount of the chemical substances having the formula I and II is greater than or equal to 1,".

XIII. The appellant's arguments, in so far as they are pertinent for the present decision, may be derived from the reasons for the decision below. They are essentially as follows:

(a) Document D14 should be not admitted into the proceedings.

(b) The subject-matter of claim 1 of the main request did not involve an inventive step when document D1/D1a was taken as the closest prior art.

(c) The same conclusion was valid for the subject-matter of claim 1 of each of auxiliary requests 1 and 2.

XIV. The respondent's arguments, in so far as they are pertinent for the present decision, may be derived from the reasons for the decision below. They are essentially as follows:

(a) Document D14 should be admitted into the proceedings.

(b) The subject-matter of claim 1 of the main request involved an inventive step when document D1/D1a was taken as the closest prior art.

(c) The same conclusion was valid for the subject-matter of claim 1 of each of auxiliary requests 1 and 2.

Reasons for the Decision

1. Admittance of D14

1.1 The appellant requested that D14, which was filed by the respondent with letter of 28 February 2025, be not admitted into the proceedings (letter of 14 March 2025:

points 2-9).

1.2 Considering that D14 was submitted after receipt of the Board's communication, its admittance is governed by Article 13(2) RPBA, according to which any amendment to a party's appeal case is, in principle, not taken into account unless there are exceptional circumstances, which have been justified with cogent reasons by the party concerned.

1.3 D14 is an experimental report containing three new experiments 11 to 13 carried out by the respondent. It is derivable from the respondent's submissions that D14 was filed in respect of the issue of inventive step, in particular in order to support their line of defence that a technical effect was achieved over the closest prior art (letter of 28 February 2025, pages 5 and 6). According to the respondent, D14 was filed in reaction to the Board's communication and because they were taken by surprise that the Board considered, contrary to the conclusion reached by the opposition division, that the evidence then on file, in particular experiment 9 of D13, was not suitable to demonstrate that the distinguishing feature (I) identified on page 8 of the decision under appeal resulted in a reduction of the content of free alkylphenol monomers. In addition, the respondent considered that the data contained in D14 did not add anything new to the present case because they were in accordance with the line of defence already put forward during the opposition proceedings regarding the effect related to feature (I) (letter of 28 February 2025: page 6, first full paragraph). Moreover the data was immediately prepared and submitted, so that the appellant had sufficient time to assess it before the oral

proceedings.

1.4 The Board agrees with the respondent that D14 was filed in reaction to an issue which was first addressed in paragraph 8.3.3.d of the Board's communication. In this paragraph, it was indicated that since the ratio of dialkylphenol on total phenolic monomers used in experiment 9 of D13 (38.0 mol%) was different from the one used in all the other examples of D13 (50.0 mol%), the question arose if experiment 9 of D13 was effectively suitable to show that an effect could be attributed to distinguishing feature (I) that was considered by the opposition division. Although this issue remains within the framework of the appellant's objection that the evidence on file did not allow a fair comparison between a process according to claim 1 of the main request and the one of the closest prior art considered in the decision under appeal (embodiment 7 of D1/D1a), the Board agrees with the respondent that the specific point mentioned in paragraph 8.3.3.d of the communication was neither addressed in the decision under appeal, nor was it explicitly put forward by the appellant in their written submissions. It is correct that, as pointed out by the appellant during the oral proceedings before the Board, the appellant noted that different amounts of mono- and dialkylphenol monomers had been used in experiments 7 and 9 of D9 (statement of grounds of appeal: point 34). However, the appellant did not argue specifically that due to this difference, no fair comparison could be made between these examples.

1.4.1 In addition, it is agreed with the respondent that the sole difference between the processes carried out in experiments 11 to 13 of D14 with the one of experiment 9 of D13 resides in the above mentioned

distinguishing feature (I). Therefore, the Board is satisfied that the additional experiments 11 to 13 contained in D14 constitute at first sight a *bona fide* and timely reaction of the respondent to address the concerns indicated in paragraph 8.3.3.d of the Board's communication.

1.4.2 In points 10-13 of their letter of 14 March 2025, the appellant argued that D14 should not be admitted into the proceedings because the new experiments 11 to 13 of D14 contained therein did not establish the presence of an effect and also failed to remedy the deficiencies associated with feature (I) indicated in the Board's communication.

However, the Board considers that these concerns are rather related to the probative value of D14 than to the question of the admittance of this document. Therefore, these arguments are not pertinent to the question of admittance.

1.4.3 In view of the above, the Board considers that in the case in hand there are exceptional circumstances which have been justified with cogent reasons by the respondent to justify the filing of D14 in reaction to the Board's communication. Therefore, the Board decided to make use of its discretion by admitting document D14 into the proceedings (Article 13(2) RPBA).

Main request (first auxiliary request allowed by the opposition division)

2. It was undisputed that the main request filed by the respondent with the rejoinder to the statement of grounds of appeal is identical to the first auxiliary request dealt with in the decision under appeal, which

was held by the opposition division to involve an inventive step in view of D1 as the closest prior art.

3. Interpretation of claim 1 of the main request

3.1 When reaching their decision, the opposition division adopted a specific reading of two features present in claim 1 of the main request.

3.2 First, regarding the feature "the molar ratio of the aldehyde with the structural formula III to the total amount of the chemical substances having the formula I and II" (feature (c) of claim 1), the opposition division considered that the calculation of the molar ratio was to be made as specified in said claim 1 and not as indicated in paragraph 29 of the patent in suit (reasons: point 1.1).

That reading was common ground between the parties during the opposition proceedings and remained undisputed in appeal. Also the Board sees no reason to have a different view.

3.3 Second, the opposition division considered that for that same feature, only the amount of formaldehyde (aldehyde with the structural formula III in which R is a proton) that was added in aqueous solution was to be taken into account and not any possible sources of formaldehyde, as held by the opponent in view of paragraph 43 of the patent in suit.

3.3.1 That reading of claim 1 of the main request was still in dispute between the parties in appeal. In particular, while the respondent shared the view of the opposition division, the appellant considered that for the feature related to the amount of the aldehyde with

the structural formula III, any sources of formaldehyde should be taken into account (statement of grounds of appeal: points 5-14).

3.3.2 The appellant's arguments are not convincing for the following reasons.

a) Claim 1 of the main request is directed to a process characterised by various steps. Among others, said process comprises a step (c) which is an addition of formaldehyde "used as an aqueous solution", whereby "the molar ratio of the aldehyde with the structural formula III to the total amount of the chemical substances having the formula I and II is greater than or equal to 1".

b) In that respect, the appellant stated that the patent in suit did not explicitly define what "used" meant in the context of claim 1 (statement of grounds of appeal: end of point 8).

However, it is not clear to the Board what other meaning that term could have apart from imposing, in view of the literal meaning of the term "used as an aqueous solution", that in step (c) formaldehyde must be added in the form of an aqueous solution.

c) In that regard, it is pointed out that this reading does not impose that all formaldehyde in the claimed process must be added in the form of an aqueous solution, as mentioned by the appellant (statement of grounds of appeal: end of point 8, points 9 and 11). Rather, this only means that the amount of formaldehyde that is added in step (c) as an aqueous solution must be in the prescribed amount. Indeed, since the wording of claim 1 of the main request is open ("A process ...

that **comprises** the following steps", emphasis by the Board), other steps different from the ones specifically mentioned in claim 1 of the main request are not excluded, including e.g. a - further - step of addition of paraformaldehyde which, as indicated in paragraph 44 of the patent in suit, is known to possibly depolymerise into formaldehyde and can, therefore, act *in situ* as a source of formaldehyde. However, a process step in which only paraformaldehyde (which is solid, and whose chemical formula does not appear to be according to formula III) is added would not be according to the definition of step (c) of claim 1 of the main request, even if paraformaldehyde were to depolymerise in the subsequent course of the process. Indeed, since claim 1 of the main request is a process claim defined by specific steps, in particular step (c), what is relevant here is not the chemistry involved in said process but the definition of the measures effectively specified in each of these steps.

3.3.3 In their line of argument, the appellant made reference to paragraph 43 of the patent in suit, which was also the basis of an argument put forward during the opposition but that was rebutted by the opposition division (statement of grounds of appeal: point 10; reasons: top of page 5).

a) In that regard, paragraph 43 of the patent in suit merely indicates that formaldehyde can be used either as an aqueous solution or as paraformaldehyde (i.e. in solid form), whereby the use of an aqueous solution is preferred. However, in view of its literal wording, step (c) of claim 1 is limited to only one of the two alternatives indicated in paragraph 43, namely the addition of formaldehyde as an aqueous solution (as

already concluded by the opposition division). In the present case, the Board cannot recognise any inconsistency or ambiguity between the wording of step (c) of claim 1 of the main request and the one of paragraph 43 of the patent in suit. Also, the Board considers that paragraph 43 provides no cause to read the term "which is used as an aqueous solution thereof" in a manner that is different from its literal meaning, in particular such as to include the addition of paraformaldehyde.

b) In view of the above considerations, the Board had informed the parties (Board's communication: point 6.3.3.b) that the questions posed to the Enlarged Board of Appeal in referral G 1/24 were of no relevance to the present case. This view remained undisputed (respondent's letter of 28 February 2025; oral proceedings before the Board).

3.3.4 In addition, even if the patent proprietor were to have adopted at an earlier stage of the proceedings a reading of step (c) according to claim 1 of the main request that is different from what is indicated above, this would not be sufficient for the Board to deviate from the above considerations, which are based on the wording of the claims itself and taking into account the content of the patent specification. Therefore, the appellant's argument in that regard is rejected (point 13 of the statement of grounds of appeal).

3.3.5 In view of the above, the appellant's arguments do not justify that the Board deviates from the reading of feature (c) of claim 1 adopted by the opposition division. In particular, there is no reason to consider that an amount of formaldehyde that is added in the form of paraformaldehyde in a subsequent stage of the

reaction process, e.g. as in embodiment 7 of D1, should be considered when calculating the molar ratio referred to in step (c) of claim 1 of the main request (statement of grounds of appeal: point 14).

4. Article 56 EPC

4.1 Closest prior art

4.1.1 It was common ground that D1 was a suitable document to be taken as the closest prior art, whereby embodiment 7 thereof was particularly relevant and could be taken as starting point for the assessment of inventive step. The Board has no reason to be of a different opinion.

4.1.2 Considering that both parties and the opposition division read the content of D1, which is in Chinese, on the basis of its English translation D1a, the passages of D1 indicated in the following refer to the corresponding passages of D1a.

4.1.3 In this regard, embodiment 7 of D1 (paragraph 55) reads as follows:

"[0055] Using cation-exchange resin as the catalyst and an excessive amount of diisobutylene alkylated phenol to obtain the alkylation solution. The composition of the analytical alkylation solution: it contains 43% p-tertoctylphenol, 7% p-tert-butylphenol, 38% 2,4-di-tert-octylphenol and 12% 2-tert-butyl-4-tert-octylphenol. The molar ratio of alkylphenol to dialkylphenol in the alkylation solution is around 0.6:0.4. Install a stirrer, thermometer, reflux condenser and addition funnel on a 1,000 mL four-neck reaction flask. Add 400 g of the aforementioned alkylation solution mixture, 0.8 g of p-toluenesulfonic

acid, 1 g of oxalic acid and 91 g of 37% formaldehyde aqueous solution. Heat to 100°C and perform reflux reaction at 100°C for 2 hours. Remove water at normal pressure. After the temperature has risen to 140°C, gradually add 19 g of paraformaldehyde. Heat to 160°C to remove residual water, add 1.2 g of 20% sodium hydroxide aqueous solution to neutralize and maintain at this temperature for 2 hours. Discharge the resin melt into a stainless steel plate and cool to room temperature. The product is transparent, its softening point is 95°C and it is brownish-yellow."

4.1.4 In view of the above, the process according to embodiment 7 of D1 comprises the following steps:

a) A first reaction step in which phenolic monomers of formula I (p-tertoctylphenol, p-tert-butylphenol) and formula II (2,4-di-tert-octylphenol and 2-tert-butyl-4-tert-octylphenol) are provided, whereby an acid (p-toluenesulfonic acid, oxalic acid) and then a formaldehyde according to formula III (formulae I to III as defined in claim 1 of the main request) in the form of an aqueous solution are added thereto. Heat to 100°C and perform reflux reaction at 100°C for 2 hours.

b) Remove water at normal pressure. After the temperature has risen to 140°C, gradually add paraformaldehyde (i.e. formaldehyde in solid form). The latter stage of the process is hereinafter referred to as the second reaction step.

c) Heat to 160°C to remove residual water and neutralize with sodium hydroxide;

d) Collect the resin.

In addition, it was common ground between the parties that while the molar ratio of formaldehyde to alkylated phenol monomers (I) and (II) in the first reaction step a) was substoichiometric (i.e. smaller than 1:1), it was of 1.04:1 if both the formaldehyde added as an aqueous solution in the first reaction step and the one generated *in situ* from decomposition of the paraformaldehyde added in the second reaction step were considered (statement of grounds of appeal: point 14).

4.2 Distinguishing feature(s)

4.2.1 In the decision under appeal (first half of page 8), the opposition division held that the subject-matter of claim 1 of the then pending main request, which is identical to claim 1 of the present main request, differed from the process according to embodiment 7 of D1 in the three following features:

Feature (I): the molar ratio of the formaldehyde as defined in step (c) of claim 1 being greater than or equal to 1.

Feature (II): the step of distilling the mixture at atmospheric pressure until a temperature of about 120°C to 145°C is reached, without neutralizing the acid beforehand.

Feature (III): the subsequent step of carrying out a distillation under a reduced pressure of 100 mm Hg or less until a temperature of about 150°C to 170°C is reached.

4.2.2 During the oral proceedings before the Board, the respondent argued that the subject-matter of claim 1 of the main request further differed from the disclosure

of the process according to embodiment 7 of D1 in view of the following feature:

Feature (IV): "wherein the method further comprises the following steps for processing the mixture ***after completion of a condensation reaction***" (emphasis by the Board).

4.2.3 These four features are dealt with hereinafter, starting with feature (IV), which could have some incidence on the definition of the sequence in which the steps mentioned in claim 1 of the main request should take place.

Feature (IV)

4.2.4 During the oral proceedings before the Board, the respondent argued that above feature (IV) defined that the last three steps of the process (the distillation step at atmospheric pressure; the optional neutralization step; the distillation step under reduced pressure) had to be carried out after that the condensation reaction between the phenolic monomers (I), (II) and the formaldehyde (III) was completed. By contrast, the condensation reaction in embodiment 7 of D1 was completed only after the addition of paraformaldehyde, i.e. after removal of water at normal pressure corresponding to the distillation of the mixture at atmospheric pressure in claim 1.

a) However, neither the wording of operative claim 1 itself, nor the patent in suit, nor any additional evidence on file - including information relating to common general knowledge in this regard -, establishes a reliable meaning of the wording "after completion of a condensation reaction". Under these circumstances,

according to established case law, the normal rule of claim construction is that the terms used in a claim should be given their broadest technically sensible meaning. In addition, in doing so, the question to be answered is if above feature (IV) may be held to constitute an objective distinguishing feature over the condensation reaction step of the process according to embodiment 7 of D1 as indicated in above point 4.1.4.a.

b) In view of the arguments put forward by the parties at the oral proceedings, the Board arrived at the conclusion that all the process steps of embodiment 7 of D1 that were carried out after the first reaction step of the process according to embodiment 7 of D1 (see point 4.1.4.a above) are steps that take place "after completion of a condensation reaction" as defined in claim 1 of the main request. The reasons are as follows:

b1) As pointed out by the appellant, the respondent could not provide a clear and reliable meaning of the term "after completion of a condensation reaction", even using different definitions of the term during the oral proceedings before the Board, namely that the condensation should be finished (i.e. that it did not continue any more), that the phenolic monomers of formulae (I) and (II) should be completely depleted, that these monomers should be almost completely depleted or that all starting reactants had to be depleted (in the present case: all phenolic monomers of formulae (I) and (II) and formaldehyde). Since the elements on file and the arguments of the respondent do not show a reliable definition of the completion of a condensation reaction, the Board agrees with the appellant that feature (IV) read in its broadest sense encompasses processes in which some condensation

reaction between the alkylated phenol monomers (I) and (II) and the formaldehyde of formula (III) used as an aqueous solution has taken place.

b2) With this in mind, the first reaction step of the process according to embodiment 7 of D1 can be seen as having been carried out so that the condensation reaction was finished at that stage, which is a wording that was acknowledged by the respondent to be encompassed by the term "after completion of a condensation reaction". As indicated by the respondent themselves, it is derivable e.g. from paragraph 31 and the abstract of D1 that a further addition of paraformaldehyde was necessary to pursue the reaction. In these circumstances, it has to be concluded that all the steps that take place after the first reaction step of embodiment 7 of D1 occur "after completion of a polycondensation reaction", whereby said condensation reaction takes place between the phenolic monomers of formulae (I) and (II) and formaldehyde of formula (III) used in aqueous solution.

b3) In addition, the Board agrees with the appellant (statement of grounds of appeal: page 17, last full bullet point and bullet point bridging pages 17 and 18), that it is derivable from paragraph 53 of the patent in suit that the distillation step carried out at atmospheric pressure reduces the amount of unreacted alkyl-, or dialkylphenols still present in the reaction medium (see in particular the last sentence of paragraph 53).The Board sees no contradiction between paragraph 53 and the interpretation of claim 1 of the main request indicated in the precedent paragraph. Therefore, even if paragraph 53 were to be considered when interpreting claim 1 of the main request, this would not lead to a different conclusion.

b4) In this respect, it is noted that the above conclusion is in line with the finding of the opposition division that the subject-matter of claim 1 of the main request differed from the disclosure of embodiment 7 of D1 only in the three features (I) to (III), taking into consideration that a discussion regarding the meaning of the term "after completion of a condensation reaction" also took place during the oral proceedings before the opposition division (minutes: points 3.5.3.3 and 3.5.3.4). Also, it is conspicuous that said conclusion had not been contested by the respondent in their written submissions in appeal (rejoinder: page 7, see the identification of the distinguishing features in the third paragraph; see also letter of 28 February 2025: point 3.2) and that some concerns were only raised in this regard at the oral proceedings before the Board.

c) In view of the above, the Board is satisfied that the steps of embodiment 7 of D1 that are carried out after step a) according to above point 4.1.4.a are all further process steps that take place "after completion of a condensation reaction" as stipulated in claim 1 of the main request. In other words, above feature (IV) does not distinguish the subject-matter of claim 1 of the main request from the process according to embodiment 7 of D1.

d) In view of the above conclusion, the Board adopts the broad reading of the term "after completion of a condensation reaction" contemplated by the appellant (see the above cited passages on pages 17 and 18 of the statement of grounds of appeal; oral proceedings before the Board). In these circumstances, there is no need for the Board to address the question of the admittance

of the respondent's arguments in this regard, which was incidentally mentioned by the appellant during the oral proceedings before the Board but only after an intensive discussion of the issue had taken place between the parties and the Board (see minutes of the oral proceedings, top of page 4).

Feature (I)

4.2.5 Regarding feature (I), the Board notes that the process according to embodiment 7 of D1 (paragraph 55) comprises a first step of addition of a formaldehyde aqueous solution, followed by further process steps, which include a subsequent, separate, addition step of paraformaldehyde. As outlined in section 3.3.2 above, the Board considers that only the addition of the formaldehyde aqueous solution disclosed in paragraph 55 of D1 corresponds to an addition step of formaldehyde "used as an aqueous solution" according to step (c) of claim 1 of the main request. Since it was not in dispute between the parties that in said step of D1 the molar ratio of formaldehyde added as an aqueous solution to the total amount of the chemical substances of formula (I) and (II) as defined in claim 1 of the main request is not greater than or equal to 1 (the appellant's calculations reported in point 23 of the notice of opposition were not contested by the respondent and the Board has no reason to deviate from that view), the Board is satisfied that feature (I) distinguishes the subject-matter of claim 1 of the main request from the disclosure of embodiment 7 of D1.

Feature (II)

4.2.6 Regarding feature (II), it has to be assessed if the disclosure of paragraph 55 of D1 "Remove water at

normal pressure. After the temperature has risen to 140°C, ..." (see point 4.1.4.b above as well as the underlined passage in point 38 of the statement of grounds of appeal) amounts to a direct and unambiguous disclosure of "a step of distilling the mixture at atmospheric pressure until a temperature of about 120°C to 145°C is reached" as specified in claim 1 of the main request.

a) In that regard, the Board shares the view of the opposition division (top of page 10 of the decision under appeal) that the above indicated passage of paragraph 55 of D1 at least does not amount to an explicit disclosure of an atmospheric distillation step according to feature (II). In particular, embodiment 7 of D1 does not explain how water is removed under normal pressure and does not mention that a distillation at atmospheric pressure is carried out. In addition, the fact that the removal of water at normal pressure and the temperature rise to 140°C are disclosed in two separate sentences in paragraph 55 of D1 renders it at least questionable that both operations can only take place in a single step in embodiment 7 of D1, which appears to be imposed by the wording of above feature (II) "a step of distilling the mixture ... until a temperature of about 120°C to 145°C is reached", contrary to the appellant's view (statement of grounds of appeal: point 40).

b) The appellant put forward that the only reasonable reading of the passage of paragraph 55 of D1 indicated in point 4.2.6, first paragraph, above was that the temperature was raised to 140°C during a distillation step under normal pressure to remove residual water and any other volatile components, i.e. the appellant argued that said passage of D1 amounted to an implicit

disclosure of feature (II).

b1) In that respect, regarding the issue of implicit disclosure, it is established case law that an alleged disclosure can only be considered "implicit" if it is immediately apparent to the skilled person that nothing other than the alleged implicit feature forms part of the subject matter disclosed (Case Law of the Boards of Appeal of the EPO, 10th edition, 2022, I.C.4, I.C.4.1 and I.C.4.3).

b2) In the present case, it is considered that, for the reasons indicated in the preceding point 4.2.6.a), there are at least some doubts that the disclosure of paragraph 55 of D1 amounts to an implicit, but direct and unambiguous, disclosure of an atmospheric distillation step according to feature (II). However, the question arose how water was effectively removed in embodiment 7 of D1 if not by atmospheric distillation.

b3) In that regard, it is noted that Experiment 5 of D13 was filed by the respondent as an identical rework of example 4 of D1 (see table on page 5 of D1), which comprises the same wording as embodiment 7 of D1 that is mentioned in point 4.2.6, first paragraph, above (see paragraph 49 thereof). In reply to a question posed in the Board's communication (point 8.2.4.b2, last sentence), the respondent indicated that "in the reproduction Experiment 7 of document D13, feature (II) of claim 1 of the Main Request was employed to show that even in case feature (II) is used in embodiment 7 of document D1, said embodiment 7 does not lead to the claimed technical effects of the present invention", i.e. the respondent acknowledged that they reworked the example of D7 by using a distillation under atmospheric pressure as defined in claim 1 of the main request.

However, such a statement merely shows that the disclosure of embodiment 7 of D1 "Remove water at normal pressure. After the temperature has risen to 140°C, ..." is compatible with a distillation step according to feature (II) of claim 1 of the main request, i.e. said process step of embodiment 7 of D1 may have been carried out according to said feature (II). However, this statement of the respondent is not sufficient to establish that said process step of embodiment 7 of D1 could only have been carried out in this manner.

b4) In view of the above, it is agreed with the respondent that considering the evidence on file, it cannot be concluded that feature (II) is directly and unambiguously disclosed by the process according to embodiment 7 of D1 (respondent's letter of 28 February 2025: point 3.2).

c) During the oral proceedings before the Board, the respondent additionally argued that the process according to embodiment 7 of D1 did not disclose a distillation at atmospheric pressure "after completion of a condensation reaction" (i.e. after completion of the step indicated in above point 4.1.4.b) as required in claim 1 of the main request. In particular, the moment in time when the step of removal of water at normal pressure disclosed in paragraph 55 of D1 did not occur "after completion of a condensation reaction".

However, for the reasons outlined in section 4.2.4 above, the Board does not share the interpretation of the respondent during the oral proceedings before the Board but rather considers that "after completion of a condensation" does not distinguish the process being

claimed from the one according to embodiment 7 of D1. Therefore, the respondent's argument is rejected.

Feature (III)

4.2.7 It was common ground between the parties that feature (III) was not disclosed in embodiment 7 of Dl and the Board sees no reason to deviate from that view.

Conclusion

4.2.8 In view of the above, the subject-matter of claim 1 of the main request differs from the disclosure of embodiment 7 of D1 only in each of features (I), (II) and (III) as defined in point 4.2.1 above.

4.3 Problem objectively solved over the closest prior art

4.3.1 a) The respondent argued that the problem resided in the provision of a process for the preparation of a novolac alkylphenol resin which reduced the amount of free phenol in the resin (rejoinder: page 7, fourth full paragraph). In addition, according to the respondent, the examples of the patent in suit and the experimental evidence D13 and D14 showed that features (I) to (III) as identified in above point 4.2.1 effectively resulted in the preparation of a novolac alkylphenol resin in which the amount of free phenol in the resin was low.

b) The appellant considered that features (I) and (II) as identified in above point 4.2.1 were not shown to be related to any technical effect (statement of grounds of appeal: point 34, last two lines and point 41, sentence starting with "However, ..."). However, the appellant did not contest that at least feature (III)

led to reduced contents of free alkyl phenol and other impurities from the resin end-product (statement of grounds of appeal: point 48).

c) In view of the above, it was common ground between the parties that the problem solved over the closest prior art could be formulated as the provision of a process for the preparation of a novolac alkylphenol resin which reduces the amount of free phenols in the resin, as proposed by the respondent. However, the parties disagreed if features (I) and (II) effectively contributed to the achievement of this effect.

4.3.2 In that regard, in view of the arguments put forward by the parties, there is no reason to consider that the three distinguishing features (I) to (III) identified above depend from one another. Therefore, their respective inventive contributions can be analysed separately.

Feature (I)

4.3.3 In the decision under appeal, the conclusion that feature (I) led to a reduction of free phenols was reached considering experiment 9 of D13 (reasons: bottom of page 110).

a) However, it is not clear to the Board with which other example(s) at that time on file experiment 9 of D13 was compared with by the opposition division in order to draw this conclusion.

b) In that respect, the respondent relied in appeal on the comparison of experiment 9 of D13 with other experiments carried out in D13 or D14.

b1) However, the other experiments carried out in D13 or D14 are all related to reworks or modified reworks of example 4 of D1 and not of embodiment 7 of D1, which constitutes the closest prior art.

In addition, it was acknowledged by the respondent during the opposition proceedings that experiments 1 to 4 of D12 did not constitute an accurate rework of example 4 of D1 and, for that reason, experiments 5 to 10 were additionally filed, whereby all experiments 1 to 10 were compiled in a single document D13 (patent proprietor's letter of 10 August 2022, paragraph bridging pages 3 and 4). In these circumstances, the Board considers that experiments 1 to 4 of D1 cannot be relied upon to assess if feature (I) contributes to the effect claimed by the respondent to be achieved in the context of the closest prior art.

b2) Regarding experiments 5-8 and 10 of D13, it is further noted that experiment 5 was filed as an identical rework of example 4 of D1 (D13: table on page 5) and was probably intended to serve as a reference example. However, the resin prepared therein exhibits significantly different properties than the one prepared in example 4 of D1 (compare table on page 5 of D13 with table 2 in paragraph 67 of D1, column "Embodiment 4", the latter being also acknowledged as Example 4 of D1 in the second column of the table on page 5 of D13). Also, in experiment 5 of D13 the process disclosed in D1 for the preparation of Embodiment 4 had to be modified (D13: page 2, Experiment 5, fifth and sixth lines). Despite these deficiencies, the Board will hereinafter consider, to the respondent's benefit, that the reworks of D1 carried out by the respondent can be relied upon and constitute a *bona fide* rework of the disclosure of D1

as best as it was possible in view of the information provided therein (as argued by the respondent during the oral proceedings before the Board).

b3) The respondent argued that in view of the disclosure of paragraph 31 of the patent in suit, the comparison of experiments 7 and 9 of D13 rendered credible that feature (I) led to reduced amounts of unreacted alkylated phenol monomers (letter of 28 February 2025: page 5, five first full paragraphs; oral proceedings). The respondent first pointed out that experiments 7 and 9 of D13 differed one from the other only in two features, namely the above identified distinguishing feature (I) and the molar ratio dialkylphenol monomers (formula II) on total mono- and dialkylphenol monomers (formulae I and II): whereas the ratio is 50.0 mol% in experiment 7, it is 38.0 mol% in experiment 9. With this in mind, the respondent's line of argument was based on the disclosure in paragraph 31 of the patent in suit that a preferred amount of 50-70 mol% dialkylated phenol monomers according to formula II of claim 1 of the main request led to the lowest possible free monomer contents. On this account, experiment 7 (in which the dialkylphenol content is within the preferred range) would be expected to result in a lower free monomer content than experiment 9 (in which the dialkylphenol content is considerably lower than the preferred range) if feature (I) had no influence on the free monomer content, so the respondent. However, since it was reported in the table of D13 that the total alkylphenol monomer contents were very similar in experiments 9 and 7, the respondent considered that it had to be concluded that the reduced advantageous effects from working outside the most preferred monomer mixture (see paragraph 31 of the patent in suit) were compensated in experiment 9 of D13

by the advantageous effects associated with feature (I).

However, experiments 7 and 9 of D13 are both directed to modified reworks of embodiments 4 of D1. Considering that embodiment 4 of D1 differs significantly from embodiment 7 of D1 (single phenolic monomers (I) and (II) vs. mixture of phenolic monomers (I) and mixture of phenolic monomers (II); different monomers ratios (I):(II); different acid catalyst system; substoichiometric amount of formaldehyde vs. slightly above stoichiometric amount), it is first highly questionable that it may be concluded that any effect shown on a modified rework of embodiment 4 of D1 would necessarily be also valid for embodiment 7 of D1.

In addition, as pointed out by the appellant during the oral proceedings before the Board, the statement made in paragraph 31 of the patent in suit is not supported by any evidence. To the contrary, examples 3 and 4 of the patent in suit rather show that a higher ratio of dialkylated phenol monomer of formula II on mono- and dialkylated phenol monomers of formulae I and II leads to higher amounts of unreacted phenol monomers in the resin (examples 3 and 4 in tables 1 and 2 of the patent in suit: ratio II:(I+II) of 50:50 vs. 60:40; free monomers amount of 0.30 + <0.1 vs. 0.22 + <0.1). Therefore, it appears highly questionable that the disclosure of the patent in suit can be held to mandatorily apply to the process of D1.

Finally, the comparison of experiment 7 and 9 of D1 also does not show any improvement associated with a molar amount of formaldehyde used as an aqueous formaldehyde of one or greater than one, as compared to a process as in embodiment 7 of D1 in which a molar

excess of formaldehyde (as in embodiment 7 of D1) is provided using a substoichiometric amount of aqueous formaldehyde and the rest being added as paraformaldehyde (appellant's letter of 14 March 2025: point 11; oral proceedings before the Board).

In these circumstances, the respondent's argument based on the comparison of experiments 7 and 9 of D13 did not convince.

b4) The respondent further argued that the comparison of experiment 9 of document D13 with experiments 11 to 13 of D14, which differed one from the other only in the distinguishing feature (I) (the same molar ratio dialkylphenol monomers (formula II) on total mono- and dialkylphenol monomers (formulae I and II) as in experiment 9 was used) showed that the lower the molar ratio according to feature (I), the higher the content of free residual monomer (letter of 28 February 2025: page 6, second and third full paragraphs).

However, the Board shares the view of the appellant that all what experiments 9 to 13 of D13 and D14 show is that increasing the amount of a limiting reagent (i.e. the formaldehyde in these experiments) drives the reaction towards completion and so reduces the amount of residual mono- and di-alkylphenol starting materials. However, experiments 9 to 13 of D13 and D14 do not show that in the process according to embodiment 7 of D1, using a molar amount of formaldehyde added as an aqueous solution of one or greater than one as defined by distinguishing feature (I) leads to any technical effect as compared to a process in which the molar excess of formaldehyde (as in embodiment 7 of D1) is provided using a substoichiometric amount of aqueous formaldehyde and

the rest being added as paraformaldehyde (appellant's letter of 14 March 2025: points 10-11; oral proceedings before the Board).

Also, the Board cannot recognise from experiments 9 to 13 of D13 and D14 that the amount of formaldehyde of "greater than or equal to 1" specified in claim 1 of the main request is related to any surprising effect: the data merely show that increasing gradually the amount of formaldehyde (only used as an aqueous solution) leads to a gradual decrease of total amount of unreacted alkylated phenol monomers.

For these reasons, the respondent's argument based on the comparison of experiments 9 to 13 of D13 and D14 did not persuade.

c) In the rejoinder, the respondent also made reference to "the experimental evidence in D13" in a very general manner but did not explain in any further details how the data of D13 could show that feature (I) effectively led to the claimed reduction of free phenols. Therefore, this argument did not succeed.

4.3.4 The respondent further indicated in a general statement that also the examples of the patent in suit showed that the claimed technical effect was achieved (rejoinder: page 7, third paragraph).

However, it is not clear to the Board on the basis of which evidence that conclusion was reached. In particular, the patent in suit contains no data which allow to fairly compare a process according to claim 1 with another process only differing therefrom in above feature (I). This view, which was part of the preliminary considerations indicated in the Board's

communication, remained undisputed (respondent's letter of 28 February 2025; oral proceedings).

4.3.5 In view of the above, it is concluded that feature (I) was not shown to lead to a reduction of free phenols in the context of the process of the closest prior art, contrary to the respondent's view. In the absence of any effect related to that feature, the partial problem solved by feature (I) can only reside in the provision of another process for the preparation of a novolac alkylphenol resin.

Feature (II)

4.3.6 Regarding feature (II), independently of whether or not any evidence on file shows that it contributes to a reduction of free phenols, the Board considers it credible - on the basis of the appellant's arguments put forward in points 43 and 44 of the statement of grounds of appeal regarding the obviousness of feature (II) in view of the disclosure of e.g. D8 and paragraphs 24-25 of D11 - that the reduction of the amount of free phenols relied upon by the respondent would be achieved by carrying out (in the context of embodiment 7 of D1) an atmospheric distillation according to feature (II). In particular, the Board agrees with the appellant that these prior art documents indicate that an atmospheric distillation step as defined in feature (II) would encourage further reaction between residual aldehyde and phenolic monomers and drive off water of reaction (i.e. water produced during the condensation reaction between the aldehyde and the alkylated phenolic monomers) and other volatile components.

Feature (III)

4.3.7 As indicated above, it was not contested by the appellant that feature (III) would be expected to contribute to a reduction of the amount of free phenols. The Board has no reason to be of a different opinion, in particular for the same reasons as the ones indicated in point 4.3.6 above.

Conclusion

4.3.8 In view of the above, the problem effectively solved over D1 resides in the provision of a process for the preparation of a novolac alkylphenol resin which reduces the amount of free phenol in the resin, which problem is credibly shown to be solved by features (II) and (III) as defined in point 4.2.1 above. However, since feature (I) was not shown to credibly solve any problem, its contribution can only reside in the provision of another process, in alternative to the one of the closest prior art.

4.4 Obviousness

4.4.1 The question remains to be answered if the skilled person, desiring to solve the problem(s) identified as indicated above, would, in view of the closest prior art, possibly in combination with other prior art or with common general knowledge, have modified the disclosure of the closest prior art in such a way as to arrive at the claimed subject matter.

4.4.2 Feature (I)

a) Considering that the contribution of feature (I) resides in the provision of an alternative process, it

was obvious to solve that problem following the teaching of D1 alone, e.g. by using the same total amount of formaldehyde as used in both addition steps of embodiment 7 of D1 in a single addition step in aqueous solution. Indeed, such an embodiment is within the ambit of D1 and constitutes a common measure in the art (statement of grounds of appeal: points 21-27; see also paragraphs 7, 20 and embodiments 1, 3 of D1). Therefore, the respondent's consideration that D1 (sentence in the middle of paragraph 31 and abstract) taught away from using a single addition step of formaldehyde (as was put forward during the oral proceedings before the Board) is not convincing. In addition, it is noted that, alternatively, it would also be obvious, in view of the teaching of D1, to use a slight excess of formaldehyde in aqueous solution in the first reaction step and add a small amount of paraformaldehyde in the second step (so that the total amount of formaldehyde is at most 1.2 mol as disclosed in paragraph 7 of D1).

b) During the oral proceedings before the Board, the respondent further argued that it was known in the art that the polycondensation reaction involved in the process according to claim 1 of the main request was generally carried out using a molar ratio of formaldehyde to phenolic monomers below 0.9. Although the use of a higher ratio was not to be excluded, it was usually not preferred. This was in particular confirmed by the fact that the examples of D5 were all carried out using a substoichiometric ratio of formaldehyde to phenolic monomers. In these circumstances, according to the respondent, feature (I), which imposed to use a molar ratio of formaldehyde to phenolic monomers of greater than or equal to one was *per se* not obvious.

However, although the respondent's argument is in accordance with the statements made in paragraphs 3, 4, 8, 12 and 13 of the patent in suit related to the prior art, it remains that embodiment 7 of D1 is already carried out using a molar ratio of total formaldehyde (added as an aqueous solution or formed *in situ* by decomposition of paraformaldehyde) to phenolic monomers of greater than one (see point 4.1.4, last paragraph, above). In these circumstances, the arguments of the respondent fail to convince since they are not related to a feature that distinguishes the subject-matter of claim 1 of the main request from the disclosure of the closest prior art according to embodiment 7 of D1. This is all the more true since even the use of a higher molar ratio of these components of up to 1.2:1 is still within the ambit of D1 (paragraph 7).

b) In addition, it was neither shown, nor argued by the respondent that the skilled person would have excluded such modification of the process of embodiment 7 of D1 for technical reasons. To the contrary, the modified reworks of embodiment 4 of D1 carried out by the respondent in D13 rather show that this would not be the case. Also, the counter-arguments put forward by the respondent (rejoinder: paragraph bridging pages 7 and 8; letter of 28 February 2025: page 7, third full paragraph) could only have been relevant if feature (I) had been found to contribute to a reduction of free phenols, which is not the case for the reasons indicated above.

c) During the oral proceedings before the Board the respondent put forward that there was no pointer in D1 to modify the process according to embodiment 7 thereof by using an excess of formaldehyde in aqueous solution

in the first reaction step (see also the mention of the absence of a pointer in the respondent's letter of 28 February 2025: page 7, third paragraph).

However, since the (partial) problem solved by feature (I) is to provide a mere alternative to the process of embodiment 7 of D1, no suggestion, nor motivation in the prior art is needed in order to render the subject-matter claimed obvious. Rather, it is sufficient to show that the missing (distinguishing) feature (I) constitutes an arbitrary selection within a host of available alternatives. Indeed, the established decisive principle governing the answer to the question as to what a person skilled in the art would have done depends on the result they wished to obtain (T 939/92: point 2.5.3 of the reasons). In the present case, the problem posed can be obviously solved by using in the first reaction step of the process according to embodiment 7 of D1 an amount greater than or equal to 1 of formaldehyde in aqueous solution (see D1: paragraphs 7 and 20; embodiments 1 and 3).

d) For these reasons, it was obvious to provide a mere alternative to the process according to embodiment 7 of D1 by using a molar ratio of the formaldehyde as defined in step (c) of claim 1 being greater than or equal to 1 according to feature (I).

4.4.3 Feature (II)

a) Regarding feature (II), it was considered in section 4.3.6 above that the skilled person would expect that this feature would lead to a reduction of free phenols in the resin being prepared. That conclusion was in particular reached taking into account that it was credible that feature (II)

effectively contributed to solving the technical problem proposed by the respondent. Therefore, for the same reasons, it can only be concluded that it was obvious to solve the problem posed by carrying out an atmospheric distillation according to feature (II).

b) In this respect, it is noted that the feature "until a temperature of about 120°C to 145°C is reached" was not shown to be related to any effect and can only be held to be arbitrary.

c) During the oral proceedings before the Board, the respondent argued that the disclosure of D8 (page 150, third paragraph) relied upon by the appellant was very general and would not have been considered in the specific framework of embodiment 7 of D1.

c1) In that respect, the Board considers that the disclosure of D8 mentioned by the appellant is very general and would have been considered to apply to the first reaction step of the process according to embodiment 7 of D1. In particular, it is disclosed in said passage of D8 that a distillation step under atmospheric pressure can be used to remove water generated by the condensation of phenol and formaldehyde. Also, the indication in the first sentence of the following paragraph on page 150 of D8 that after such a dehydration step, phenol monomers is still present provides no cause to disregard the disclosure of D8 in the context of the process according to embodiment 7 of D1, contrary to the respondent's view.

c2) In this regard, the Board points out that although the disclosure of D1 was found not to disclose feature (II) according to claim 1 of the main request,

the disclosure of a removal of water at normal pressure in a chemical reaction such as the one involved in embodiment 7 of D1 renders obvious the use of a distillation under atmospheric pressure until a temperature of about 120°C to 145°C. Indeed, the Board is convinced that such a distillation step would be one of the most obvious manners, if not the most obvious one, for the skilled person to remove water at atmospheric pressure.

c3) In addition, the respondent's concerns that the skilled person would have encountered technical difficulties to implement a distillation step according to feature (II) within the process according to embodiment 7 of D1 (respondent's letter of 28 February 2025: page 7, fourth paragraph) was not supported by any evidence. To the contrary, D13 shows that the respondent had no difficulty to implement such a distillation step within a process according to embodiment 4 of D1, which is similar to the one according to embodiment 7 of D1. For that reason, the respondent's argument did not succeed.

d) During the oral proceedings before the Board, the respondent argued that the disclosure of paragraphs 24 and 25 of D11 mentioned by the appellant were very general and did not provide any motivation to apply such a distillation step after the first reaction step according to embodiment 7 of D1.

However, for the same reasons as the ones indicated in point 4.4.3.c above, the respondent's argument did not succeed.

e) For these reasons, it was obvious to provide a process for the preparation of a novolac alkylphenol

resin which reduces the amount of free phenols in the resin by using as the removal step of water identified in point 4.1.4.b above a distillation step according to feature (II).

4.4.4 Feature (III)

a) In the decision under appeal, the opposition division reached the conclusion that it would be obvious to solve the problem posed by carrying out an atmospheric distillation according to feature (III). That view, which was further shared by the appellant (statement of grounds of appeal: points 48-50), was not contested by the respondent in writing (rejoinder: bottom of page 7 and page 8). The Board has no reason to be of a different opinion, in particular in view of the reasons indicated in section 4.4.3 above.

b) During the oral proceedings before the Board, the respondent put forward that D1 (paragraphs 23 and 24) taught away from using a distillation step according to feature (III).

However, all what paragraphs 23 and 24 of D1 disclose is that once the novolac alkylphenol resin is prepared, additional processing steps such as vacuuming, washing and other post-processing processes are not required for the content of free phenol to be lower than 1%, which is favourable in terms of energy consumption, working hours and environmental concerns. In these circumstances, the Board concurs with the appellant that D1 neither forbids, nor teaches away from using postprocessing steps if, for instance, it is desired to further reduce the content of free phenols in the final product, independently of other consequences in terms of energy consumption, working hours and environmental

concerns. For that reason, the respondent's argument did not succeed.

c) For these reasons, it was obvious to provide a process for the preparation of a novolac alkylphenol resin which reduces the amount of free phenols in the resin by using a distillation step according to feature (III) e.g. after having neutralized the acid (point 4.1.4.c above).

4.4.5 In view of the above, the subject-matter of claim 1 of the main request does not involve an inventive step when embodiment 7 of D1 is taken as the closest prior art. For that reason, the main request is not allowable.

Auxiliary requests

5. Claim 1 of **auxiliary request 1** only differs from claim 1 of the main request in that the optional neutralisation step of the acid in-between both distillation steps was made mandatory.

5.1 However, as pointed out by the appellant (statement of grounds of appeal: point 58, whereby auxiliary request 2 referred to therein is present auxiliary request 1), since such a neutralisation step is carried out towards the end of the process according to embodiment 7 of D1 (see point 4.1.4.c above), the amendment made does not constitute an additional distinguishing feature of claim 1 of auxiliary request 1 over the disclosure of the closest prior art (as compared to the main request). In addition, the respondent did not argue that the amendment made in claim 1 of auxiliary request 1 contributed in any manner to inventive step (rejoinder: bottom of page 8

to top of page 9). In these circumstances, this amendment is not suitable to overcome the objection of lack of inventive step in view of D1 as the closest prior art that was retained against the main request.

5.2 That view was provided to the parties in the Board's communication and remained undisputed, in particular at the oral proceedings before the Board.

5.3 Therefore, claim 1 of auxiliary request 1 does not involve an inventive step when embodiment 7 of D1 is taken as the closest prior art.

6. Claim 1 of **auxiliary request 2** differs from claim 1 of auxiliary request 1 in that in step (c) the word "only" was added before "used".

6.1 However, it was not shown by the respondent how said amendment could overcome the objection of lack of inventive step over D1 that was retained against claim 1 of auxiliary request 1. In particular, the arguments of the respondent on page 9 of the rejoinder do not justify that a different conclusion regarding the obviousness of the solution be reached.

6.2 That view was provided to the parties in the Board's communication and remained undisputed, in particular at the oral proceedings before the Board.

6.3 Therefore, claim 1 of auxiliary request 2 does not involve an inventive step when embodiment 7 of D1 is taken as the closest prior art.

7. In view of the above, none of the respondent's requests is allowable. Therefore, the patent is to be revoked.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chairman:

D. Hampe D. Marquis

Decision electronically authenticated