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Datasheet for the decision of 27 May 2025

Case Number: T 1439/23 - 3.3.03

Application Number: 11006092.8

Publication Number: 2551294

IPC: C08K5/13, C08K5/52, C08L23/02, C08L23/04

Language of the proceedings: EN

Title of invention:
Use of a polyolefin composition for pipes and fittings with increased resistance to chlorine dioxide

Patent Proprietor:
Borealis AG

Opponents:
Basell Poliolefine Italia S.r.l.
The Dow Chemical Company

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

Keyword:
Inventive step - (all requests: no)
Amendment after communication - exceptional circumstances (no)

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Case Number: T 1439/23 - 3.3.03

D E C I S I O N
of Technical Board of Appeal 3.3.03
of 27 May 2025

Appellant 1: (Patent Proprietor)	Borealis AG Trabrennstrasse 6-8 1020 Vienna (AT)
Representative:	Kador & Partner Part mbB Corneliusstraße 15 80469 München (DE)
Appellant 2: (Opponent 1)	Basell Poliolefine Italia S.r.l. Via Pontaccio 10 20121 Milano (IT)
Representative:	LyondellBasell c/o Basell Poliolefine Italia Intellectual Property P.le Donegani 12 44122 Ferrara (IT)
Appellant 3: (Opponent 2)	The Dow Chemical Company 2030 Dow Center Midland, MI 48674 (US)
Representative:	Boult Wade Tennant LLP Salisbury Square House 8 Salisbury Square London EC4Y 8AP (GB)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 29 June 2023 concerning maintenance of the European Patent No. 2551294 in amended form.**

Composition of the Board:

Chairman	D. Semino
Members:	O. Dury
	W. Ungler

Summary of Facts and Submissions

I. The appeals of the patent proprietor and of opponents 1 and 2 lie from the interlocutory decision of the opposition division concerning maintenance of European patent No 2 551 294 in amended form according to the claims of auxiliary request 2 filed with letter of 9 December 2021 and an adapted description.

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

D1: WO 2010/149607 A1
D12: EP 2 199 330 A1
D26: Technical Information, Irganox® 1330, BASF, September 2010.

III. The decision under appeal was based on the patent in suit as main request, on auxiliary request 1 filed with letter of 2 March 2020 and on auxiliary request 2 filed with letter of 9 December 2021. As far as relevant to the present case, the following conclusions were reached by the opposition division in that decision:

- Claim 1 of the main request did not meet the requirements of Article 123(2) EPC.

- The subject-matter of claim 1 of auxiliary request 1 was not novel over the disclosure of example 4 of D1.

- The subject-matter of the claims of auxiliary request 2 involved an inventive step, among others when document D12 was taken as the closest prior

art.

- None of the other objections raised by the opponents against auxiliary request 2 was successful.

IV. The patent proprietor (appellant 1) as well as opponents 1 and 2 (appellants 2 and 3) lodged an appeal against this decision.

V. With their statement of grounds of appeal and with their letter of 11 March 2024, appellant 1 filed several sets of claims as auxiliary requests.

VI. The parties were summoned to oral proceedings and a communication dated 10 January 2025 indicating specific issues to be discussed at the oral proceedings was then sent to the parties.

VII. With letter of 6 May 2025 appellant 1 further filed the following document:

D27: Declaration by M. Anker, dated 2 May 2025

VIII. Oral proceedings were held on 27 May 2025 in the presence of all parties.

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

(a) Appellant 1 requested that the decision of the opposition division be set aside and the opposition be rejected (main request) or, in the alternative, that the patent be maintained in amended form on the basis of any of the following auxiliary requests, in that order:

- Auxiliary requests 1 to 3 filed with their statement of grounds of appeal;

- Auxiliary request 4 filed with their letter of 11 March 2024;

- Auxiliary requests 5 and 6 filed as auxiliary requests 4 and 5 with their statement of grounds of appeal;

- Auxiliary request 7 filed with their letter of 11 March 2024;

- Auxiliary requests 8 and 9 filed as auxiliary requests 6 and 7 with their statement of grounds of appeal;

- Auxiliary request 10 filed with their letter of 11 March 2024;

- Auxiliary requests 11 and 12 filed as auxiliary requests 8 and 9 with their statement of grounds of appeal;

- Auxiliary request 13 filed with their letter of 11 March 2024;

- Auxiliary requests 14 and 15 filed as auxiliary requests 10 and 11 with their statement of grounds of appeal;

- Auxiliary request 16 filed with their letter of 11 March 2024.

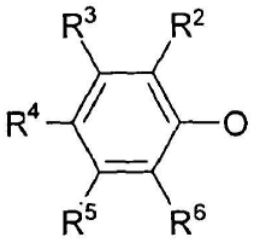
(b) Appellants 2 and 3 both requested that the appeal of appellant 1 be dismissed, the decision of the

opposition division be set aside and the patent be revoked.

X. Claim 1 of the **main request** (patent in suit) read as follows:

"1. Use of a combination of two antioxidants (B) and (C) in a polyolefin composition, produced in a sequential multistage process utilizing reactors coupled in series for increasing the lifetime of a pipe or a fitting made of said polyolefin composition which pipe or fitting is in permanent contact with chlorine dioxide-containing water, wherein said antioxidants are the following:

- antioxidant (B) with general formula R^1-P$(OAr)_2$, wherein OAr is according to formula (I):



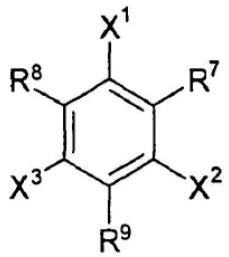
wherein

- R^1 is a non-substituted or substituted aliphatic or aromatic hydrocarbyl radicals which may comprise heteroatoms,

- R^2, R^3, R^4, R^5 and R^6 independently are a hydrogen atom or non-substituted or substituted aliphatic or aromatic hydrocarbyl radicals which may comprise heteroatoms,

and

- antioxidant (C) according to formula (II):



wherein

- R^7, R^8 and R^9 independently are non-substituted or substituted aliphatic or aromatic hydrocarbyl radicals which may comprise OH-groups,

- X^1, X^2, and X^3 independently are H or OH, with the proviso that at least one of X^1, X^2 and X^3 is OH,

- the entire molecule does not comprise an ester group."

XI. Claim 1 of **auxiliary request 1** differed from claim 1 of the main request in that the definition of the sequential multistage process was amended as follows (additions as compared to claim 1 of the main request in **bold**):

"produced in a sequential multistage process utilizing reactors coupled in series **and using different conditions in each reactor, the polymer fractions produced in the different reactors each having their own molecular weight distribution and weight average molecular weight,**"

XII. Claim 1 of **auxiliary request 2** differed from claim 1 of auxiliary request 1 in that the following feature was added at the end of the claim:

"wherein the base resin (A) of the polyolefin composition consists of an ethylene homo- or copolymer, wherein the comonomer is selected from 1-butene, 1-hexene, 4-methyl-1-pentene and 1-octene".

XIII. Claim 1 of **auxiliary request 3** differed from claim 1 of auxiliary request 2 in that the following feature was added at the end of the claim:

"wherein the sum of concentration of antioxidants (B) and (C) is between 1500 and 6000 ppm".

XIV. Claim 1 of **auxiliary request 4** differed from claim 1 of auxiliary request 3 in that the definition of the substituents of antioxidants (B) and (C) were modified to read as follows, respectively:

- for antioxidant (B): "wherein

  - R^1 is OAr,

  - R^3 and R^5 are hydrogen atoms and R^2, R^4 and R^6 independently are a hydrogen atom or non-substituted or substituted aliphatic or aromatic hydrocarbyl radicals which may comprise heteroatoms, wherein at least one of R^2, R^4 and R^6 is an alkyl radical,"

- for antioxidant (C): "wherein

  - R^7 and R^8 are alkyl radicals with 3 to 10 carbon atoms and R^9 is a non-substituted or

substituted aliphatic or aromatic hydrocarbyl radical which may comprise OH-groups, wherein R^9 has from 30 to 70 carbon atoms and includes one or more phenyl residues,

- X^1, X^2, and X^3 independently are H or OH, with the proviso that at least one of X^1, X^2 and X^3 is OH,

- the entire molecule does not comprise an ester group,"

XV. Claim 1 of **auxiliary request 5** differed from claim 1 of auxiliary request 2 in that the following feature was added at the end of the claim:

"wherein the base resin (A) has an MFR_5 (190 °C, 5 kg) of from 0.1 to 2.0 g/10 min."

XVI. Claim 1 of **auxiliary request 6** differed from claim 1 of auxiliary request 3 in that it additionally contained the amendment made in claim 1 of auxiliary request 5 regarding MFR_5 indicated in section XV above.

XVII. Claim 1 of **auxiliary request 7** differed from claim 1 of auxiliary request 4 in that it additionally contained the amendment made in claim 1 of auxiliary request 5 regarding MFR_5 indicated in section XV above.

XVIII. Claim 1 of **auxiliary request 8** differed from claim 1 of auxiliary request 1 in that the base resin was further defined as follows:

"wherein the base resin of the polyolefin composition consists of two polyethylene fractions, fraction (A)

having a lower weight average molecular weight and being an ethylene homopolymer and fraction (B) being an ethylene copolymer".

XIX. Claim 1 of **auxiliary request 9** differed from claim 1 of auxiliary request 8 in that it additionally contained the amendment made in claim 1 of auxiliary request 3 regarding the amount of antioxidants (B) and (C) indicated in section XIII above.

XX. Claim 1 of **auxiliary request 10** differed from claim 1 of auxiliary request 9 in that it additionally contained the amendments made in claim 1 of auxiliary request 4 regarding the structure of antioxidants (B) and (C) indicated in section XIV above.

XXI. Claim 1 of **auxiliary request 11** differed from claim 1 of auxiliary request 8 in that it additionally contained the amendment made in claim 1 of auxiliary request 5 regarding MFR_5 indicated in section XV above.

XXII. Claim 1 of **auxiliary request 12** differed from claim 1 of auxiliary request 9 in that it additionally contained the amendment made in claim 1 of auxiliary request 5 regarding MFR_5 indicated in section XV above.

XXIII. Claim 1 of **auxiliary request 13** differed from claim 1 of auxiliary request 12 in that it additionally contained the amendments made in claim 1 of auxiliary request 4 regarding the structure of antioxidants (B) and (C) indicated in section XIV above.

XXIV. Claim 1 of **auxiliary request 14** differed from claim 1 of auxiliary request 1 in that it additionally contained the amendment made in claim 1 of auxiliary request 5 regarding MFR_5 indicated in section XV above

and in that the base resin was further defined as follows:

"wherein the base resin of the polyolefin composition consists of two polyethylene fractions, fraction (A) having a lower weight average molecular weight and being an ethylene homopolymer and fraction (B) being an ethylene copolymer, wherein an alpha-olefin comonomer selected from 1-butene, 1-hexene, 4-methly[sic]-1-pentene and 1-octene is used".

XXV. Claim 1 of **auxiliary request 15** differed from claim 1 of auxiliary request 14 in that it additionally contained the amendment made in claim 1 of auxiliary request 3 regarding the amount of antioxidants (B) and (C) indicated in section XIII above.

XXVI. Claim 1 of **auxiliary request 16** differed from claim 1 of auxiliary request 15 in that it additionally contained the amendments made in claim 1 of auxiliary request 4 regarding the structure of antioxidants (B) and (C) indicated in section XIV above.

XXVII. The parties' submissions, in so far as they are pertinent, may be derived from the reasons for the decision below. The points of dispute that are relevant for the present decision are the following ones:

- The admittance into the proceedings of document D27.

- The question of inventive step of the subject-matter of claim 1 of the main request and of claim 1 of each of auxiliary requests 1 to 16 when document D12 is taken as the closest prior art.

Reasons for the Decision

Main request (patent in suit)

1. It was undisputed that the operative main request (patent as granted) and auxiliary requests 1 and 2 defended in appeal by appellant 1 were identical to the main request and auxiliary requests 1 and 2 dealt with in the decision under appeal. Although the question of inventive step of this main request and auxiliary request 1 was not dealt with by the opposition division (while claim 1 as granted was held to contain added-matter, claim 1 of auxiliary request 1 was considered to lack novelty), it was agreed by appellant 1 during the oral proceedings before the Board that the assessment of inventive step when taking D12 as the closest prior art would be the same for claim 1 of these requests as for claim 1 of auxiliary request 2. In addition, the Board's view that all parties involved in the present appeal proceedings had taken position in their written submissions in this respect remained uncontested (Board's communication: point 13). Furthermore, the request of appellant 2 that had been put forward in writing to remit the case to the opposition division to deal with the question of inventive step of the main request and of auxiliary request 1 (letter of appellant 2 dated 7 March 2024: bottom of page 6) was not pursued at the oral proceedings before the Board. In view of this, the question of inventive step of the subject-matter of claim 1 of the main request when document D12 is taken as the closest prior art was dealt first during the oral proceedings. As the Board came to the conclusion that none of the operative requests involves an

inventive step, it is also the sole issue that needs to be addressed in substance in the present decision.

2. Admittance of document D27

2.1 With their letter of 6 May 2025 appellant 1 filed the additional document D27, whose admittance into the proceedings was contested by appellant 2 (letter of 14 May 2025).

2.2 D27 is a declaration by one of the inventors of the patent in suit, in which it is in particular stated that "in the examples of the opposed patent and of EP 2 199 330 A1 (D12), equivalent batches of the same type of base resin, referred to as Borstar ME3440, have been used" (point 3 of D27). Appellant 1 argued that D27 was filed in support of their argumentation related to inventive step, in particular regarding the formulation of the technical problem effectively solved over D12. According to appellant 1, the statement made in D27 demonstrated that the examples of D12 could be fairly compared to the ones of the patent in suit.

2.3 Appellant 1 argued that D27 was not an amendment of their case but only a refinement/confirmation of their previous submissions (letter of 6 May 2025: point 1.4; oral proceedings). Therefore, appellant 1 considered that there was no reason that D27 be disregarded.

However, although it is correct that appellant 1 pursued with D27 the same line of argument as the one put forward during the whole opposition and appeal proceedings, the Board considers that D27 contains new information regarding the nature of the resin used in the examples of D27 that was not present in the file before: in particular, whereas appellant 1 had clearly

stated that the polyolefin used in the examples of the patent in suit was commercial grade Borstar® ME3440 in their statement of grounds of appeal (paragraph bridging pages 3 and 4), the sole arguments put forward by appellant 1 regarding the polyolefin used in the examples of D12 before filing D27 was that, in view of the information provided in D12 and in the patent in suit regarding these polyolefins and their processing, these components were "highly similar, if not the same" (letter of appellant 1 dated 11 March 2024: point 6.9, see in particular the penultimate paragraph). Therefore, the fact that the resins used in D12 and in the patent in suit were effectively the same (and not merely similar) was first put forward when D27 was filed. On this basis, the Board considers that the filing of D27 is not a fact or evidence on which the decision under appeal was based as specified in Article 12(2) RPBA and, therefore, constitutes an amendment to the case of appellant 1 in the sense of Article 12(4), first sentence, RPBA, whose admittance is subject to the Board's discretion (Article 12(4), second sentence, RPBA).

2.4 Considering that D27 was filed after the Board's communication had been notified to the parties, its admittance into the proceedings is subject to the stipulations of Article 13(2) RPBA, according to which such an amendment to a party's case shall, in principle, not be taken into account unless there are exceptional circumstances, which have been justified with cogent reasons by the party concerned.

2.4.1 In this respect, the objection that no fair comparison could be made between the examples of the patent in suit and the ones of D12 in view of the lack of information regarding the nature of the base resin used

in the two documents was put forward by appellant 2 at the outset of the appeal proceedings (statement of grounds of appeal: point 5.2, passage between pages 6 and 7) and thereafter maintained (rejoinder to the statement of grounds of appeal of appellant 1: page 7, last paragraph, with reference to the statement of grounds of appeal; oral proceedings). Therefore, the Board shares the view of appellant 2 that appellant 1 could and would even have had good reasons to file D27 earlier in the proceedings (letter of appellant 2 dated 14 May 2025: page 2, second and third paragraphs), e.g. with their rejoinder to the statement of grounds of appeal of appellant 2 (letter of appellant 1 dated 11 March 2024), in reaction to the rejoinder of appellant 2 to the statement of grounds of appeal of appellant 1 (dated 7 March 2024), or even later (a period of time of about ten months elapsed between the letter of appellant 1 dated 11 March 2024 and the notification of the Board's communication in January 2025). Therefore, contrary to the view of appellant 1 (letter of 6 May 2025: point 1.4, second paragraph) the fact that the Board indicated in section 15.2.2 of its communication that the concerns of appellant 2 regarding the apparent lack of a fair comparison between the examples of the patent in suit and the ones of D12 appeared relevant cannot justify the filing of D27 only with letter of 6 May 2025. This is particularly true since, in the present case, all the information regarding D12 were in the hands of appellant 1 (D12 is in the name of appellant 1 and has common inventors with the patent in suit). For these reasons, the Board cannot recognise any exceptional circumstances, such as a new or unforeseen development of the case, that may justify the filing of D27 at such a late stage of the proceedings.

2.4.2 Appellant 1 put forward that D27 should be admitted into the proceedings because it was a short and comprehensive document. Also, according to appellant 1, its admittance would not be detrimental to procedural economy, nor adversely affect the other parties (letter of 6 May 2025: page 4, first full paragraph; oral proceedings).

a) However, the length or complexity of a document constitutes in the Board's view no exceptional circumstances in the sense of Article 13(2) RPBA.

b) In addition, the Board does not share the view of appellant 1 that the admittance of D27 would not be detrimental to procedural economy because, for instance, the question of the exact meaning of the statement made in point 3 of D27 indicated in point 2.2 above (which was in dispute between the parties at the oral proceedings) would have had to be discussed for the first time at the oral proceedings. Also, admitting D27 into the proceedings would have been against the stipulations of Article 12(3) RPBA that the statement of grounds of appeal and the reply thereto shall contain a party's complete appeal case.

c) Furthermore, the Board shares the view of appellant 2 that admitting D27 into the proceedings at such a late stage of the proceedings could have been detrimental to appellants 2 and 3, which would have been against the principle of fair proceedings (letter of appellant 2 dated 14 May 2025: page 1, last paragraph). Due to the short time available, these parties would hardly have had the opportunity to react appropriately, e.g. to obtain further information or carry out further tests.

d) For these reasons, the arguments of appellant 1 are rejected.

2.5 In view of the above, the Board found it appropriate to exercise its discretion by not admitting document D27 into the proceedings (Article 13(2) RPBA).

3. Reading of claim 1 as granted

3.1 Claim 1 as granted is directed to the use of a combination of two antioxidants (B) and (C) in a polyolefin composition for increasing the lifetime of a pipe or a fitting made of said polyolefin composition which pipe or fitting is in permanent contact with chlorine dioxide-containing water, whereby said use is further defined, in respect of the polyolefin composition, by the feature "produced in a sequential multistage process utilizing reactors coupled in series". Whereas appellant 1 considered that the latter feature implied that claim 1 as granted was a process claim, whose definition imposed that the polyolefin composition must be prepared using such a process (statement of grounds of appeal: paragraph bridging pages 8 and 9, in respect of novelty), appellant 3 considered that said feature was a product-by-process feature that only defined that the polyolefin composition should be "obtainable by" such a process (letter of appellant 3 dated 8 February 2024: page 3, third paragraph, also in respect of novelty). Considering these divergent views of the parties, the reading of this feature needs to be established first before assessing if the subject-matter of claim 1 as granted involves an inventive step.

3.2 In that regard, the Board considers that the wording of claim 1 as granted is drafted in a hybrid manner, in

which both aspects of a use claim and a process claim are combined:

- Claim 1 as granted is on one hand directed to the use of a combination of two antioxidants (B) and (C) for increasing the lifetime of a pipe/fitting that is in permanent contact with chlorine dioxide-containing water, i.e. to the use of a product to achieve an effect;

- On the other hand, claim 1 as granted defines a polyolefin composition of which the pipe or fitting is made, whereby said composition is "produced in a sequential multistage process utilizing reactors coupled in series", i.e. claim 1 defines a composition defined as being produced using specific process conditions and as comprising the combination of antioxidants (B) and (C) used for making a pipe/fitting.

However, considering the wording of claim 1 as granted "use of ..." and "for increasing ..." and the fact that the process steps are only mentioned in a manner that defines the polyolefin being used (i.e. the claim is not directed to the use of antioxidants (B) and (C) in a process for making a polyolefin), the Board considers that said claim is effectively directed to the use of a particular physical entity (namely the combination of antioxidants (B) and (C)) to achieve an effect and not to the use of said entity to produce a product, i.e. claim 1 is a use claim and not a process claim.

3.3 Under these circumstances, the feature "produced in a sequential multistage process utilizing reactors coupled in series" is not related to the use of the combination of antioxidants (B) and (C) and is to be

read as a feature defining the polyolefin composition only, i.e. it is to be read as a product-by-process feature defining that the polyolefin composition is obtainable by such a process. For this reason, although it is correct that said feature cannot be disregarded as indicated by appellant 1 (statement of grounds of appeal: page 9, first full paragraph), claim 1 is not to be construed as a process claim including process steps necessary to produce the polyolefin composition and its wording does not impose that the polyolefin composition must be "produced in a sequential multistage process utilizing reactors coupled in series" contrary to the view of appellant 1 (statement of grounds of appeal: page 9, first full paragraph).

3.4 The fact that claim 1 as granted should be read as indicated above was indicated in the Board's communication (section 6.1). No further arguments were presented during the oral proceedings before the Board. Thus, there are no reasons to deviate from the Board's preliminary opinion. Therefore, the above reading also applies hereinafter.

4. Inventive step - D12 as the closest prior art

4.1 Closest prior art and distinguishing feature(s)

4.1.1 D12 is directed to polyolefin compositions comprising a polyolefin base resin and two specific antioxidants that are used for making pipes for the transport of chlorine-dioxide containing water (D12: claims 1, 2 and 7 to 10; paragraph 1). Such a composition is illustrated by example 3 of D12 (table 1) using a base resin as disclosed in paragraph 91 as well as the combination of the following antioxidants:

- Irganox 1330, i.e. a compound corresponding to antioxidant (C) as defined in claim 1 as granted, and

- Vitamin E, i.e. a compound that does not correspond to antioxidant (B) according to claim 1 as granted (rather, it corresponds to antioxidant (B) according to formula (I) of claim 1 of D12).

4.1.2 It was common ground, in particular at the oral proceedings before the Board, that:

- D12 is a suitable document to be taken as the closest prior art and example 3 of table 1 thereof constitutes a particularly relevant starting point for the assessment of inventive step;

- The subject-matter of claim 1 as granted differs from said starting point in that an antioxidant (B) as defined in claim 1 of auxiliary request 1 is used.

The Board has no reason to be of a different opinion, in particular when the conclusion reached in section 3 above is taken into account.

4.2 Problem solved over the closest prior art

4.2.1 The parties disagreed as to how the problem effectively solved over example 3 of D12 is to be formulated.

Appellant 1 put forward that this problem resided in the provision of an improved method for increasing the lifetime of a pipe made of a polyolefin composition that was in permanent contact with chlorine dioxide-containing water and considered that the comparison of

example 3 of D12 with example 1 of the patent in suit showed that said problem was effectively solved.

Appellants 2 and 3 both disagreed with this formulation of the problem solved over D12 and considered that it rather resided in the provision of a mere alternative. Appellant 2 in particular considered that the comparison relied upon by appellant 1 could not be made because it had not been shown that the base resins used in the D12 and in the patent in suit were necessarily identical or at least comparable.

4.2.2 In that regard, although the Board had some doubts that the information provided and the arguments put forward by appellant 1 were sufficient to conclude that a fair comparison could be made between example 3 of D12 and example 1 of the patent in suit (see point 15.2.2 of the communication of the Board), it concluded that claim 1 as granted does not involve an inventive step when example 3 of D12 is taken as the closest prior art even if the improvement in terms of resistance against chlorine dioxide relied upon by appellant 1 were to be acknowledged (see point 4.3, below). Therefore, there is no need to address in details in the present decision the relevance of the critical comparison and it is considered hereinafter, to the benefit of appellant 1, that the objective technical problem solved over example 3 of D12 resides in the the use of an antioxidant combination to further improve the lifetime of a pipe made of a polyolefin composition that is in permanent contact with chlorine dioxide-containing water.

4.3 Obviousness

4.3.1 The question to be answered is if the skilled person, desiring to solve the problem identified as indicated above, would, in view of the closest prior art, possibly in combination with other prior art documents 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.

4.3.2 In this respect, appellants 2 and 3 based their objection, among others, on the combination of D12 with D26, whereby appellant 3 in particular put forward that said combination would be "obvious to try" or at the very least corresponded to a "try and see situation" according to established case law (statement of grounds of appeal of appellant 2: page 9, fourth paragraph; statement of grounds of appeal of appellant 3: page 13, first and third paragraphs).

"Obvious to try"

a) According to established case law, a course of action can be considered obvious within the meaning of Article 56 EPC if the skilled person would have carried it out in expectation of some improvement or advantage. In other words, obviousness is not only at hand when the results are clearly predictable but also when there is a reasonable expectation of success, whereby it is not necessary to establish that the success of an envisaged solution of a technical problem was predictable with certainty. In order to render a solution obvious it is sufficient to establish that the skilled person would have followed the teaching of the prior art with a reasonable expectation of success (Case Law of the Boards of Appeal of the EPO, 10th

edition, 2022, I.D.7.1).

b) D26 is the product datasheet of antioxidant Irganox 1330, which is one of the two antioxidants that is already present in the composition according to the closest prior art (example 3 of D12) and which corresponds to antioxidant (C) according to claim 1 as granted. According to D26, Irganox 1330 can be used in polyolefins for the stabilisation of pipes and is particularly recommended for polyolefin applications requiring good water extraction resistance combined with low colour development (D26: page 1, paragraph "Applications", first sentence; paragraph "Features/ benefits", penultimate sentence). It is further indicated that the effectiveness of the blends of Irganox 1330 with Irgafos 168 is "particularly noteworthy" (D26: page 1, paragraph "Features/ benefits", fourth sentence), whereby it was common ground that Irgafos 168 is an antioxidant (B) according to claim 1 as granted (Irgafos 168 is even used as antioxidant (B) in example 1 of the patent in suit). In this respect, it is conspicuous that Irgafos 168 is the sole additive that is specifically disclosed in D26 to be particularly effective in combination with Irganox 1330.

In addition, Irganox 1330 is used in D12 in combination with another antioxidant, Vitamin E, already to provide good resistance to polyolefin pipes against chloride dioxide. Also, as put forward by appellant 3, the combination of Irganox 1330 with Irgafos 168 is already used in example 4 of D1 to provide good resistance to polyolefin pipes against chlorine-dioxide containing water (statement of grounds of appeal of appellant 3: page 13, second and third paragraphs). In this respect, appellant 1 considered that the teaching of D1 was to

increase the resistance against chlorine dioxide-containing water (solely) by crosslinking the polyolefin base resin rather than by using specific antioxidants (statement of grounds of appeal: point 5.10). However, the Board does not share that view. In particular, although it is correct that an aspect of D1 is to use crosslinking to improve the resistance of polymers against chlorine dioxide (D1: page 12, third paragraph from the bottom), it makes no doubt that the purpose of using antioxidants in D1 is to further contribute to the resistance to chlorine-dioxide (see e.g. D1: page 8, second paragraph; page 13, last paragraph; page 14, second full paragraph; paragraph bridging pages 14-15). Therefore, the argument of appellant 1 is rejected.

In these circumstances, the Board considers that the skilled person would expect that the "particularly noteworthy" effectiveness of the combination of Irganox 1330 with Irgafos 168 specified in D26 would also apply to improve the resistance against chloride dioxide-containing water. Therefore, the Board agrees with appellant 3 that it would have been obvious for the skilled person to try the specific combination of Irganox 1330 with Irgafos 168 to solve, with a reasonable expectation of success, the problem posed.

c) It is correct that, as put forward by appellant 1, D26 does not contain any teaching regarding the effect of Irganox 1330 on resistance against chlorine dioxide and/or only specifically discloses that Irganox 1330 provides protection against thermo-oxidative degradation (statement of grounds of appeal: point 5.12; oral proceedings).

However, it is already derivable from table 1 of D12

that Irganox 1330, which is used in particular in example 3 as the main antioxidant, at least contributes to some extent to the resistance against chlorine dioxide. Also, it is well established that chlorine dioxide has strong oxidant properties that deteriorate the properties of polyolefin pipes (D12: paragraph 5). Therefore, it is agreed with appellant 3 that the skilled person would recognize that Irganox 1330 could be used as an antioxidant for any oxidising agent present, in particular chlorine dioxide (letter of appellant 3 dated 8 February 2024: page 8, end of third paragraph). For the same reason, the Board is satisfied that the skilled person would also have expected that its combination with Irgafos 168 would be particularly effective, in particular in view of the disclosure of example 4 of D1 mentioned above. In addition, what is mainly relevant to reach the conclusion of above paragraph 4.3.2.b is that D26 specifically discloses that the combination of antioxidants Irganox 1330 and Irgafos 168 is particularly effective and that this would have led the skilled person to try it in the context of example 3 of D12, i.e. by either adding Irgafos 168 thereto or by replacing Vitamin E by Irgafos 168 (considering that according to D26 Irgafos 168 is a "particularly noteworthy" antioxidant). For these reasons, the arguments of appellant 1 did not succeed.

d) For the same reasons, in view of the reasonable expectation of success of the combination of Irganox 1330 and Irgafos 168, the fact that it is known in the art that increasing the resistance of polyolefin pipes against chlorine dioxide may be particularly challenging (see e.g. D12: paragraph 6) does not affect the above conclusion.

"Try and see"

e) In addition, the Board also agrees with appellant 3 that, even if the skilled person would have had any concerns regarding the reasonable expectation of success of the combination of Irganox 1330 with Irgafos 168 to increase the resistance of polyolefin pipes against chlorine dioxide (as considered by appellant 1), the present case at least corresponds to a "try and see" situation. In that respect, it is established case law that a "try and see" situation can be be considered to be given if the skilled person, in view of the teaching in the prior art, had already clearly envisaged a group of compounds or a compound and then determined by routine tests whether such compound/s had the desired effect (Case Law, *supra*, I.D.7.2).

In the present case, taking into account that Irganox 1330 is already used as antioxidant to prevent the effects of chlorine dioxide of polyolefin pipes in the relevant disclosure of D12 taken as the closest prior art, the skilled person would have clearly envisaged to use a combination of Irganox 1330 with Irgafos 168, which is known from D26 to be a prominent, i.e. particularly effective, combination of additives, and then assessed by routine tests the effect of this combination of antioxidants on the resistance of a polyolefin composition against oxidation by chlorine dioxide. In particular, neither the implementation, nor the testing of the antioxidant properties of the prominent blend taught in D26 would be expected to present any particular difficulties (the tests of lifetime of pipes carried out in D12, paragraphs 73-78, and in the patent in suit, paragraphs 80-85, are essentially the same). For this reason, the Board

considers that the disclosure of D26 would have guided the skilled person towards the claimed subject-matter and that said person would merely have had to verify whether the potential solution conceived in the light of D26 effectively worked.

4.3.3 Appellant 1 briefly argued that the "obvious to try" and/or "try and see" situations had been "established mainly for the field of genetic engineering and biotechnology", which was clearly remote from the present case. Therefore, appellant 1 doubted that this case law could apply to the present case (letter of 11 March 2024: top of page 19).

However, the Board does not see why the considerations underlying the "obvious to try" and/or "try and see" lines of argument would be limited to certain technical fields and not be of general applicability. This understanding is in any case in line with the fact that appellant 1 used the term "mainly", which is not exclusive. For that reason, the argument of appellant 1 is rejected.

4.3.4 In view of the above, the subject-matter of claim 1 as granted does not involve an inventive step in view of D12 as the closest prior art and the main request as a whole is not allowable.

Auxiliary requests 1 to 16

5. It was acknowledged by appellant 1 during the oral proceedings before the Board that the amendments made in claim 1 of each of auxiliary requests 1 to 16 did not constitute any additional distinguishing feature(s) over the disclosure of example 3 of D12 (as compared to claim 1 of the main request). Appellant 1 further

stated that they agreed that auxiliary requests 1 to 16 could not overcome the objection of lack of inventive step based on D12 as the closest prior art that was successful against claim 1 of the main request. The Board sees no reason to be of a different opinion. Therefore, the subject-matter of claim 1 of each of auxiliary requests 1 to 16 does not involve an inventive step over D12 for the same reasons as the ones outlined above for claim 1 of the main request.

6. In these circumstances, there is no need to address in the present decision the question of the admittance of any of auxiliary requests 4, 7, 10, 13 and 16, which was disputed (letter of appellant 2 of 16 April 2024: page 1, first paragraph; letter of appellant 3 of 9 May 2024: bottom of page 1 to middled of page 2).

7. Since none of the requests defended by appellant 1 is allowable, 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. Semino

Decision electronically authenticated