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**Datasheet for the decision
of 3 September 2021**

Case Number: T 0145/19 - 3.3.03

Application Number: 11776857.2

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Language of the proceedings: EN

Title of invention:

COMPOSITIONS OF SELF-EXTINGUISHING EXPANDABLE VINYL AROMATIC
(CO) POLYMERS AND PROCESS FOR THEIR PREPARATION

Patent Proprietor:

versalis S.p.A.

Opponent:

Total Research & Technology Feluy

Relevant legal provisions:

EPC Art. 56
RPBA 2020 Art. 13(2)

Keyword:

Late-filed document - admitted (no)
Inventive step - (yes)
Late-filed objection - admitted (no)



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Case Number: T 0145/19 - 3.3.03

D E C I S I O N
of Technical Board of Appeal 3.3.03
of 3 September 2021

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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
2 November 2018 concerning maintenance of the
European Patent No. 2619263 in amended form.**

Composition of the Board:

Chairman O. Dury
Members: M. Barrère
C. Brandt

Summary of Facts and Submissions

I. The appeals of the proprietor and the opponent lie against the interlocutory decision of the opposition division posted on 2 November 2018 concerning maintenance of European Patent number 2 619 263 in amended form on the basis of the claims of the auxiliary request submitted at the oral proceedings of 11 October 2018 and an adapted description.

II. Claims 1 and 10 of said auxiliary request read as follows:

"1. Compositions based on self-extinguishing expandable vinyl aromatic polymers in granules comprising:

a. a polymeric matrix, comprising 50-100% by weight of one or more vinyl aromatic monomers and 0-50% by weight of a copolymerizable monomer; and, homogeneously englobed in the polymeric matrix,

b. 3-10% by weight, calculated with respect to the polymer (a), of an expanding system;

c. 0.005-5% by weight, calculated with respect to the polymer (a), of a flame-retardant agent consisting of a brominated hydrocarbon containing at least 30% by weight, preferably from 50 to 90% by weight, of bromine;

d. 0.001-2% by weight, calculated with respect to the polymer (a), of a synergic additive of the

brominated flame-retardant containing a C-C or C-O-O-C thermolabile bond;

e. 0.005-5% by weight, calculated with respect to the polymer (a), of at least one additive capable of regulating the cell structure after expansion of the granule and inhibiting the thermal degradation of the brominated flame-retardant, selected from the group consisting of:

ii. melamine polyphosphate;

iii. partially or completely salified polycarboxylic acids;

iv. citrates of alkaline or alkaline earth metals."

"10. Expanded articles having a density ranging from 5 to 50 g/l obtained from the sintering, after expansion, of granules having the composition described in anyone of the previous claims."

The remaining claims of that request are not relevant to the present decision.

III. A notice of opposition was filed against the patent, requesting the revocation of the patent in its entirety on the grounds of Article 100(a) EPC for lack of novelty and lack of an inventive step.

IV. The following documents were *inter alia* relied upon in the opposition division's decision:

E1 EP 2 025 700 A1

E2 EP 2 212 377 B1

E3 US 2004/0039073 A1
E4 US 2008/0200573 A1
E5 US 2004/0209967 A1
E9 US 5 445 893
E11 EP 0 355 531 A2
E12 US 4 769 397
E19 WO 2009/065880 A2

V. The findings of the opposition division, insofar as relevant for the present decision, can be summarised as follows:

- The pending main request did not comply with Rule 80 EPC.
- The auxiliary request filed during oral proceedings on 11 October 2018 complied with Rule 80 and Article 123(2) (3), 84, 83, 54 and 56 EPC.
- Specifically, the subject-matter of claim 1 of the auxiliary request involved an inventive step over either E19 or E11 as the closest prior art:
 - Claim 1 differed from E19 in that the composition comprised a melamine polyphosphate (additive (e.ii)), a partially or completely salified polycarboxylic acid (additive (e.iii)) or a citrate of alkaline or alkaline earth metal (additive (e.iv)) instead of the metal salt used as acid scavenger in E19. The objective problem to be solved was the provision of a composition having a good thermal stability and providing expanded products with an homogenous cell structure. Since none of the cited documents disclosed or suggested the use of additives (e.ii), (e.iii) or (e.iv) as an acid scavenger or

cell regulator, an inventive step was acknowledged.

- In view of E11, there was no explicit or implicit disclosure of sodium citrate in E11 and no sufficient evidence that Hydrocerol BIH (used in the examples of E11) led to the formation of sodium citrate in the expandable composition. Consequently claim 1 differed from E11 in that the composition comprised a synergic additive (d) and an additive (e.ii), (e.iii) or (e.iv) according to claim 1 of the auxiliary request. Since none of the cited documents disclosed or suggested the use of additives (e.ii), (e.iii) or (e.iv) in self-extinguishing expandable vinyl aromatic polymer beads, an inventive step was acknowledged.

Therefore, the patent was maintained on the basis of the auxiliary request.

VI. The patent proprietor (appellant 1) lodged an appeal against the above decision. In its statement of grounds of appeal, appellant 1 requested that the decision of the opposition division be set aside and the patent be maintained in amended form on the basis of either the main request or in the alternative, the first to third auxiliary requests filed therewith, whereby the main request and the second auxiliary request corresponded to the main request and the auxiliary request dealt with in the contested decision, respectively.

VII. The opponent (appellant 2) lodged an appeal against the above decision and requested that the decision of the opposition division be set aside and the patent be revoked.

The following documents were filed by appellant 2 with its statement of grounds of appeal:

E20: US 5,866,641

E21: "Polymer foaming with chemical blowing agents: Experiment and modeling", Polymer Engineering and Science, Wiley-Blackwell, 2015, 55 (9), pages 2018-2029

- VIII. In its rejoinder to appellant 2's statement of grounds of appeal (letter dated 25 July 2019), appellant 1 requested that the patent be maintained on the basis of the main request, or, alternatively, on the basis of the first to fifth auxiliary requests filed therewith, whereby the main request and the first, second and fifth auxiliary requests corresponded to the main request, first, second and third auxiliary requests filed with appellant 1's statement of grounds of appeal, respectively.
- IX. By letter of 30 April 2021, the parties were summoned to oral proceedings to be held on 3 September 2021.
- X. The Board then specified issues to be discussed at oral proceedings in a communication.
- XI. With letter of 28 July 2021 appellant 1 submitted new sets of claims and requested that the patent be maintained on the basis of the main request or any of the first to ninth auxiliary requests as identified in the table on pages 1-2 of the letter of 28 July 2012, i.e.
- the main request and the first auxiliary request were the main request and the first auxiliary

request filed with letter of 25 July 2019,
respectively;

- the second and third auxiliary requests were new requests filed with letter of 28 July 2021;
- the fourth and fifth auxiliary requests corresponded to the second and third auxiliary requests filed with letter of 25 July 2019;
- the sixth and seventh auxiliary requests were new requests filed with letter of 28 July 2021;
- the eighth and ninth auxiliary requests corresponded to the fourth and fifth auxiliary requests filed with letter of 25 July 2019.

XII. With letter of 3 August 2021 appellant 2 submitted the following documents:

E22: data sheet of Hydrocerol BIH

E23: US 8,008,398 B2

XIII. With the explicit agreement of the parties, oral proceedings were held before the Board on 3 September 2021 by videoconference.

In the course of the oral proceedings appellant 1 requested that documents E22 and E23 not be admitted into the proceedings. In addition, shortly before the end of oral proceedings, appellant 1 withdrew the then pending main request as well as the first to third auxiliary requests (see section XI above).

Furthermore appellant 2 raised a new objection according to Article 123(3) EPC against the fourth auxiliary request. Appellant 1 requested that said new objection not be admitted into the proceedings.

XIV. Appellant 1's arguments, insofar as relevant to the decision, may be summarised as follows:

(a) Fourth auxiliary request

(i) Article 56 EPC

Admittance of late-filed documents E22 and E23

E22 was published after the priority date of the opposed patent and was therefore not relevant for the question of inventive step. The content of E23 contradicted the information provided by appellant 2 in previous submissions and was therefore not reliable. Therefore E22 and E23 should not be admitted into the proceedings.

E11 as the closest prior art

E11 did not disclose an additive (e) according to claim 1 of the fourth auxiliary request. Contrary to appellant 2's opinion, no proof was provided that the additive "Hydrocerol BIH" (used in the examples of E11) contained or led to the formation of sodium citrate. In fact, document E21 taught that sodium citrate would be formed at a temperature of at least 240°C, which was higher than the extrusion temperature of polystyrene mentioned by appellant 2 (from 150°C to 220°C). Consequently, present claim 1 differed from E11 in that the composition comprised a synergic additive (d) and an additive selected from the group consisting of melamine polyphosphate (additive (e.ii)), partially or completely salified polycarboxylic acids (additive (e.iii)) or citrates of alkaline or alkaline earth metal (additive (e.iv)). In view of the examples provided in the opposed patent, the objective problems

to be solved over E11 were to inhibit the thermal degradation of the brominated additives and to regulate the cell structure after foam expansion. Since none of the available documents suggested to use an additive (e.ii), (e.iii) or (e.iv) in order to solve the above problems, the subject-matter of present claim 1 was not obvious over E11.

E19 as the closest prior art

Claim 1 of the fourth auxiliary request differed from E19 in that the composition comprised an additive (e.ii), (e.iii) or (e.iv). In the opposed patent said additive was added to the composition in order to inhibit the degradation of brominated flame retardants when they were subjected to a high temperature and to regulate the cell structure. Specifically, the amount of bromides in the granules was used as an index of the degradation of brominated flame retardants. In addition, said additives allowed the cell structure of the bead obtained after the expansion step to be regulated. The objective problems to be solved over E19 were therefore to inhibit the thermal degradation of the brominated additives and to regulate cell structure after foam expansion. E9 (which was used by appellant 2 in combination with E19) did not pertain to the technical field of the opposed patent. The person skilled in the art would therefore not consult this document. Since none of the available documents suggested to use an additive (e.ii), (e.iii) or (e.iv) in order to solve the above problems, the subject-matter of claim 1 was not obvious over E19.

(ii) Article 123(3) EPC

Admittance of the late-filed objection

The objection according to Article 123(3) EPC was submitted for the first time during the oral proceedings before the Board. Considering that there was no reason justifying such a filing during oral proceedings, this objection should not be admitted into the proceedings.

XV. Appellant 2's arguments, insofar as relevant to the decision, may be summarised as follows:

(a) Fourth auxiliary request

(i) Article 56 EPC

Admittance of late-filed documents E22 and E23

E22-E23 were submitted in order to provide additional evidence that the Hydrocerol BIH of E11 contained or led to the formation of sodium citrate. They were filed as a reaction to the preliminary opinion of the Board which held that the evidence on file was insufficient. E22 and E23 should therefore be admitted into the proceedings.

E11 as the closest prior art

The examples of E11 were the most promising springboard towards the invention. The additive "Hydrocerol BIH" used in said examples contained or led to the formation of sodium citrate. E12 showed that said additive was a blend of citric acid and sodium bicarbonate, which reacted under the effect of heat to form sodium citrate and CO₂. Furthermore, it was clear for a person skilled in the art that said blend would, in the presence of water, lead to the neutralisation of the acid by the

carbonate and the formation of sodium citrate, corresponding to an additive (e.iii) or (e.iv) according to present claim 1. Consequently, claim 1 differed from E11 only in that the composition comprised a synergic additive (d) containing a C-C or C-O-O-C thermolabile bond instead of Sb_2O_3 .

The examples of the opposed patent could not be relied upon to show that any problem was solved by the compositions according to present claim 1. Specifically, it was argued during the oral proceedings before the Board that the bromide content in said examples was not suitable to prove that the degradation of brominated flame-retardant agents was inhibited. Furthermore it was not credible that any effect would be present for additive concentrations as low as 0.005% (50 ppm) and for products other than those in the examples. Thus, the objective problem to be solved was formulated as to provide an alternative synergic additive to the one of E11. It was however well known in the present technical field that compounds containing a C-C or C-O-O-C thermolabile bond could be used as synergic additive (see E1-E5). Therefore, it was obvious to solve the above problem by replacing Sb_2O_3 , which was known to be carcinogenic, by a known less harmful synergic additive. The subject-matter of present claim 1 (alternatives (e.iii) or (e.iv)) was therefore obvious over E11 in combination with common general knowledge or E1-E5.

E19 as the closest prior art

E19 disclosed an expandable polystyrene (EPS) containing hexabromocyclododecane (HBCD) as brominated flame retardant, dicumylperoxide as a synergist of flame retardant and metal salts as acid scavengers.

Claim 1 of the fourth auxiliary request differed from E19 in that the composition comprised an additive (e.ii), (e.iii) or (e.iv) instead of a metal salt according to E19. For the same reasons as outlined in respect of E11 as the closest prior art, the objective problem to be solved was to provide an alternative acid scavenger. E9 disclosed the use of ionomers as acid scavengers, said ionomers corresponding to an additive (e.iii) according to present claim 1. It was therefore obvious for a person skilled in the art wishing to provide an alternative to the acid scavenger of E19 to use a ionomer as suggested by E9. The subject-matter of present claim 1 (alternative (e.iii)) was therefore obvious over E19 in combination with E9.

(ii) Article 123(3) EPC

Nature of the objection

Claim 1 of the fourth auxiliary request differed from granted claim 1 in that the additives (e.i), (e.v) and (e.vi) were deleted from the list of possible additives (e), whereby granted claim 1 defined that said additives were present in a specific amount of 0.005-5 % by weight based on polymer (a). As a result, present claim 1 covered compositions comprising more additive (e.i), (e.v) and (e.vi) than initially covered by granted claim 1. Claim 1 of the fourth auxiliary request therefore infringed the requirements of Article 123(3) EPC. Reference was made to the extensive case law on that topic (see Case Law of the Boards of Appeal, 9th edition, 2019, II.E.2.4.14).

Admittance of the late-filed objection

The objection according to Article 123(3) EPC was submitted for the first time during the oral proceedings before the Board because it was only noticed recently. This deficiency was overlooked in the previous phases of opposition and appeal proceedings since it was difficult to detect. It was clear that the amendment of present claim 1 infringed the requirements of Article 123(3) EPC and the question was therefore whether the EPO was willing to maintain a patent on the basis of an invalid set of claims. Besides the provision of Article 123(3) EPC would not apply to a national patent court. For these reasons, this objection should be admitted.

XVI. Appellant 1 requested that the patent be maintained in amended form on the basis of any of the following requests, in that order:

- fourth auxiliary request as identified in its letter of 28 July 2021 and corresponding to the second auxiliary request filed with letter of 25 July 2019,
- fifth auxiliary request as identified in its letter of 28 July 2021 and corresponding to the third auxiliary request filed with letter of 25 July 2019,
- sixth and seventh auxiliary requests as filed with letter of 28 July 2021,
- eighth and ninth auxiliary requests as identified in its letter of 28 July 2021 and corresponding to the fourth and fifth auxiliary requests filed with letter of 25 July 2019.

XVII. Appellant 2 requested that the decision under appeal be set aside and that the patent be revoked.

Reasons for the Decision

1. Following the withdrawal at the oral proceedings before the Board of the then pending main request and first to third auxiliary requests, the highest ranked request defended by appellant 1 was the fourth auxiliary request identified in its letter of 28 July 2021 (see table bridging pages 1 and 2), which corresponds to the second auxiliary request filed with letter of 25 July 2019. In view of sections VI, VIII and XI above, that request further corresponds to the auxiliary request dealt with in the decision under appeal. That operative request is hereinafter referred to as "fourth auxiliary request".

2. Fourth auxiliary request

The issues in dispute between the parties concern the requirements of Articles 56 and 123(3) EPC.

2.1 Article 56 EPC

Appellant 2 argued that claim 1 lacks an inventive step over E19 as the closest prior art in combination with E9 and over E11/E12 as the closest prior art in combination with common general knowledge as supported by E1-E5, E20, E21, E22 and E23. The two objections are discussed separately below, whereby the admittance of E22 and E23, which was in dispute between the parties, is addressed first.

2.1.1 Admittance of E22 and E23

E22-E23 are two documents filed by appellant 2 with the letter dated 3 August 2021, i.e. after notification of the summons to oral proceedings. Their admittance to the proceedings, which is contested by appellant 1, is subject to the stipulations of Article 13(2) RPBA 2020 (Article 25(1) RPBA 2020), according to which any amendment to a party's case filed after notification of the summons to oral proceedings shall, in principle, not be taken into account unless there are exceptional circumstances, which have been justified with cogent reasons by the party concerned.

According to appellant 2, E22-E23 were filed to establish that the additive "Hydrocerol BIH" of E11 contained or led to the formation of sodium citrate. They were submitted as a reaction to the preliminary opinion of the Board which held that the evidence on file was insufficient.

However, the Board notes that the question of whether Hydrocerol BIH leads to the formation of sodium citrate was already discussed during opposition proceedings. Specifically the opposition division came to the conclusion that there was no sufficient evidence on file to prove that sodium citrate would be present (see decision, pages 8-9, bridging paragraph). That view was further adhered to by appellant 1 in its rejoinder to appellant 2's statement of grounds of appeal (letter of 25 July 2019: page 7, section (ii)). Thus the lack of suitable evidence was known since the decision of the opposition division, pursued by appellant 1 at the beginning of the appeal proceedings and the board cannot recognise in the appellant 2's submissions any exceptional circumstance, which would justify the

admittance of E22-E23 after notification of the summons to oral proceedings.

Under these circumstances, E22 and E23 are not admitted into the proceedings (Article 13(2) RPBA 2020).

2.1.2 Starting from E11 as the closest prior art

(a) Closest prior art

The opposed patent pertains to self-extinguishing expandable vinyl aromatic polymers (page 1, paragraph 1; claim 1). Similar polymers are known from E11 (see page 2, lines 1-15), which was considered as a suitable closest prior art by the parties. There is no reason for the Board to deviate from that view. In particular, the example of E11 ("Verfahrensbeispiel": page 3, lines 17 - page 5, line 4) represents a promising starting point.

(b) Distinguishing features

E11 (see page 3, lines 20-31) discloses a self-extinguishing expandable polystyrene comprising:

- a. a polystyrene matrix corresponding to component (a.) according to present claim 1,
- b. 3,75 % of an expanding system corresponding to component (b.) according to present claim 1,
- c. 4 % of a flame-retardant agent.

It was undisputed between the parties that E11 did not disclose a synergic additive (d.) according to claim 1.

According to E11, the flame-retardant agent may be hexabromocyclododecane (HBCD) corresponding to a

brominated flame-retardant agent (c.) according to present claim 1 (see E11, page 4, lines 47-50).

According to E11 (page 4, lines 21-24 and 26-27), the expanding system may comprise "Hydrocerol BIH, preferably BIH 70". Appellant 2 is of the opinion that the Hydrocerol BIH, used in the examples of E11, contains or leads to the formation of sodium citrate which corresponds to an additive (e.iii) or (e.iv) according to present claim 1. Specifically appellant 2 relied on E12, E20 and E21 to substantiate his arguments.

The Board is not convinced that the evidence provided by appellant 2 is sufficient to show that sodium citrate is present in the expandable composition of E11. Firstly, the cited documents mention that Hydrocerol contains a blend of citric acid and sodium bicarbonate but not sodium citrate as such (see E12, column 4, lines 32-38; E20, column 21, table 12; E21, page 3, penultimate paragraph). Secondly, according to E21 (see page 4, penultimate paragraph and page 5, reaction (4)), the coupling reaction of the sodium bicarbonate and citric acid (leading to sodium citrate) takes place at a temperature of at least 240°C. Since the processing temperature of the compositions of E11 is at most 220°C (see E11, page 3, lines 35-36) and in view of the range of extrusion temperature of polystyrene mentioned by appellant 2 (from 150°C to 220°C: statement of grounds of appeal: page 5, third paragraph), it is not credible that sodium citrate is formed in the compositions of E11. In that respect, appellant 2 also relied on E12 (column 2, equation 1), in which it is disclosed that Hydrocerol BIH leads to the formation of sodium citrate at high temperature. However, considering that E12 does not indicate at

which temperature said reaction takes place, it provides no reason to deviate from the above conclusion based on the unambiguous disclosure in E21.

Appellant 2 further argued that the neutralisation of citric acid by sodium bicarbonate takes place spontaneously in the presence of water. However, no evidence was provided to show that this reaction effectively takes place under the processing condition of E11. In particular, while this may be true in an aqueous solution, the Board notes, however, that the compositions of E11 do not contain water and the reactions take place in a solid or viscous material. Furthermore, although E21 mentioned that water may be formed as a side product, said document nevertheless teaches that sodium citrate is only formed at a temperature of at least 240°C.

In the absence of suitable evidence, the Board comes to the conclusion that E11 does not clearly and unambiguously disclose an additive (e.) as set out in present claim 1.

Thus claim 1 of the fourth auxiliary request differs from the examples of E11 in that the composition further comprises:

d. 0.001-2% by weight of a synergic additive (d.); and

e. 0.005-5% by weight of at least one additive (e.) as defined therein.

(c) Problem to be solved

The subjective problem to be solved in the opposed patent is to inhibit the degradation of brominated flame-retardant agents and to regulate the cell structure of the bead after the expansion step (see opposed patent, paragraph 11).

According to appellant 2, the examples of the opposed patent cannot be relied upon to show that any problem is solved by the compositions according to present claim 1. Specifically, the release of bromide in the examples would not be suitable to show that the degradation of brominated flame-retardant agents is inhibited. Finally, appellant 2 held that the opposed patent showed no technical effect for additive concentrations as low as 0.005% (50 ppm) and for products other than those in the examples.

The Board cannot agree with this assessment of the examples. As shown in the examples of the opposed patent, various additives (e) contribute to the inhibition of the degradation of the brominated organic compound HBCD (see opposed patent, column 9, line 10 and comparative example 1 without additive (e) vs examples 2, 3 and 5 with additives (e.ii), (e.iii) and (e.iv)). Indeed, the concentration of free bromides is reduced to less than 50 ppm in the presence of the said additives, instead of 300 ppm in the absence thereof and it is reasonable to assume that the concentration of free bromide is an indicator of the degradation HBCD. Appellant 2's objection submitted during the oral proceedings before the Board that this was not correct is not supported by any evidence and, for that reason, fails to convince.

In view of the various examples provided in the opposed patent, the Board considers it credible that the

problem of degradation of brominated additives is effectively solved. Under these circumstances, it would have been the duty of appellant 2 to provide evidence to the contrary in order to refute the presumption created by the opposed patent, e.g. by showing that said effect was not achieved for certain additives (e) or certain amounts thereof as defined in claim 1 (see appellant 2's statement of grounds of appeal: page 2, fifth to seventh paragraphs). In the absence of such evidence, appellant 2's arguments are rejected.

Since an inventive step is acknowledged already on the basis of a reduction of the degradation of the bromine flame-retardant agents (see section (d) below), there is no need to consider whether an additional improvement in terms of cell regulation is effectively achieved, which was in dispute between the parties.

For these reasons, the Board comes to the conclusion that the objective problem to be solved is to provide a composition which exhibits a reduced degradation of the brominated flame-retardant agents contained therein.

(d) Obviousness

It remains to be decided whether or not it was obvious to solve the above-identified problem by modifying the teaching of E11 in such a way as to arrive at the subject-matter of claim 1.

According to appellant 2, the use of a synergist (d) as set out in present claim 1 is common general knowledge for the person skilled in the art as shown in any of documents E1-E5. Furthermore, as pointed out previously, appellant 2 took the view that the prior

art disclosed sodium citrate (as additive (e.iii) or (e.iv)) in expandable compositions.

The Board does not share this view for the following reasons:

None of the available documents suggests to use an additive (e.ii), (e.iii) or (e.iv) in order to inhibit the degradation of brominated flame retardants, let alone the combination of additives (d) and (e) according to claim 1. In fact, independently of the use of the additives, it has also not been shown that any of the cited documents discloses expandable vinyl aromatic polymer compositions comprising sodium citrate, corresponding to an additive (e.iii) or (e.iv) considered by appellant 2 for their objection.

In view of these considerations, the subject-matter of claim 1 involves an inventive step over E11 as the closest prior art.

2.1.3 Starting from E19 as the closest prior art

(a) Closest prior art

E19 pertains to self-extinguishing expandable polystyrene compositions (page 1, first paragraph; claim 1). The Board concurs with the parties that E19 is a suitable closest prior art document for the subject-matter of claim 1. In particular, example 1 of E19 represents a promising starting point.

(b) Distinguishing features

E19 (see example 1) discloses a self-extinguishing expandable polystyrene comprising:

- a. a polystyrene matrix corresponding to component (a.) defined in present claim 1,
- b. 6 % of pentane corresponding to an expanding system (b.) defined in present claim 1,
- c. 1,5 % of HBCD corresponding to a brominated flame-retardant agent (c.) defined in present claim 1,
- d. 0,4 % of dicumylperoxide corresponding to synergic additive of the brominated flame-retardant containing a C-O-O-C thermolabile bond (d.) defined in present claim 1 and
- f. 0,5 % of aluminium hydroxide.

In agreement with the parties, the Board considers that claim 1 of the fourth auxiliary request differs from example 1 of E19 in that the composition comprises:

- e. 0.005-5% by weight, calculated with respect to the polymer (a), of at least one additive (e) as defined therein.

(c) Problem to be solved

For the above reasons (see point 2.1.2(c)), the Board considers it credible, in view of the examples of the opposed patent, that the problem of degradation of brominated additives is solved by the above identified distinguishing feature.

Appellant 2 argued that the problem of the degradation of brominated additives is already solved by the use of

a metal salt in E19 and that the problem to be solved with respect to E19 should therefore be reformulated as to provide an alternative acid scavenger.

This assessment of E19 cannot be followed by the Board. According to the general description of this document (see page 3, first paragraph), it is only mentioned that the metal salt is used as a scavenger of the acid formed during degradation of brominated organic compounds. Thus, the effect of the metal salt mentioned in E19 is only to avoid the negative effect of the degradation but not to inhibit the degradation. Consequently, the Board considers that there is no evidence in E19 that the degradation of the brominated compound is inhibited (but only that the effects of the degradation are minimized).

It follows from this that the objective technical problem to be solved with respect to E19 is seen as to provide a composition which exhibits a reduced degradation of the brominated flame-retardant agents contained therein.

(d) Obviousness

According to appellant 2, document E9 discloses the use of ionomers (corresponding to an additive (e.iii)) for scavenging acidic substances (see E9, column 2, lines 23-36). It would therefore be obvious to use a ionomer in the compositions of E19.

The Board does not share this view for the following reasons:

As outlined in preceding section (c) (third paragraph), there is no teaching in E9 that said ionomers

effectively inhibit the degradation of brominated additives. In addition, E9 does not relate to the field of foamed articles according to E19. Therefore, it cannot be concluded that it would have been obvious for the person skilled in the art starting from E19 and wishing to solve the above identified problem to consult E9 which pertains to thermoplastic films and not to expandable products (see E9, column 1, lines 1-13).

Thus, since none of the cited documents suggests to use an additive (e.ii), (e.iii) or (e.iv) in order to inhibit the degradation of brominated flame retardants, the solution proposed in present claim 1 involves an inventive step over E19 as the closest prior art.

2.1.4 The above conclusions (see points 2.1.2 and 2.1.3 of the decision) apply *mutatis mutandis* to independent product claim 10, which was also held by appellant 2 to lack an inventive step for the same reasons as operative claim 1 (appellant 2's statement of grounds of appeal: page 4, eighth paragraph), since the distinguishing features and the problem to be solved remain identical to those identified for claim 1.

2.1.5 For these reasons, the objections of lack of inventive step raised by appellant 2 are rejected.

2.2 Article 123(3) EPC - admittance of the objection

During the oral proceedings, appellant 2 raised for the first time an objection under Article 123(3) EPC against claim 1 of the fourth auxiliary request.

Appellant 1 requested that said objection not be admitted into the proceedings.

2.2.1 Considering that the objection under Article 123(3) EPC was raised after notification of the summons to oral proceedings it constitutes an amendment to appellant 2's case and its admittance is subject to the stipulations of Article 13(2) RPBA 2020 (see Article 25(1) RPBA 2020).

2.2.2 According to appellant 2 the objection should be admitted into the proceedings for the following reasons:

i. the deficiency of claim 1 of the fourth auxiliary request was difficult to detect and could not be noticed until recently.

ii. the fourth auxiliary request clearly infringed Article 123(3) EPC and the EPO should not maintain invalid patents.

iii. the provisions of Article 123(3) EPC would not apply to a national patent court.

2.2.3 The Board cannot follow this line of argumentation for the following reasons:

The Board cannot recognise in appellant 2's submissions any exceptional circumstance that could justify the filing of an objection pursuant to Article 123(3) EPC at such a late stage of the proceedings. In particular, since the fourth auxiliary request was already defended from the outset of the appeal proceedings (and during the opposition proceedings: see section 1 above) appellant 2 undoubtedly had several opportunities to raise that objection earlier. In particular, appellant 2 has neither shown, nor even argued, that there had

been any surprising development of the case.

In the Board's view, the difficulty to detect the deficiency is not considered to be a valid argument since, as pointed out by appellant 2, the case law in relation to the present objection is clear and detailed (see Case Law, *supra*, II.E.2.4.14).

Furthermore, the fact that an objection might be relevant is, in view of the stipulations of Article 13(2) RPBA 2020 (see section 2.1.1 above, first paragraph), not sufficient to justify its admittance at such a late stage of the proceedings.

With regard to appellant 2's argument that "the provisions of Article 123(3) EPC would not apply to a national patent court" the Board holds that this was a *fortiori* a good reason to raise this objection at an earlier stage of the opposition (appeal-) proceedings.

Under these circumstances, the arguments provided by appellant 2 do not constitute cogent reasons demonstrating that exceptional circumstances in the sense of Article 13(2) RPBA 2020 prevailed in the present case, which would justify the filing during the oral proceedings of an objection pursuant to Article 123(3) EPC against the fourth auxiliary request. Therefore, said objection is not admitted into the proceedings (Article 13(2) RPBA 2020).

3. The objections raised by appellant 2 against the fourth auxiliary request being either not allowable or not admitted into the proceedings, there is no need for the Board to consider any of the fifth to ninth auxiliary requests.

Order

For these reasons it is decided that:

The appeals are dismissed.

The Registrar:

The Chairman:



B. ter Heijden

O. Dury

Decision electronically authenticated