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**Datasheet for the decision
of 19 December 2022**

Case Number: T 0637/20 - 3.3.09

Application Number: 10724573.0

Publication Number: 2427514

IPC: C08J9/00, C08J9/232

Language of the proceedings: EN

Title of invention:

EXPANDED ARTICLES WITH EXCELLENT RESISTANCE TO SOLAR RADIATION
AND OPTIMUM THERMOINSULATING AND MECHANICAL PROPERTIES

Patent Proprietor:

versalis S.p.A.

Opponents:

Total Research & Technology Feluy
SYNTHOS STYRENICS SPOLKA Z OGRANICZONA
ODPOWIEDZIALNOSCIA

Headword:

Expanded articles/VERSALIS

Relevant legal provisions:

EPC Art. 84
RPBA 2020 Art. 13(2)

Keyword:

Claims - clarity - main request, auxiliary requests 1, 4 and 5
(no)

Amendment after summons - taken into account (no)

Decisions cited:

G 0003/14, T 2027/13

Catchword:



Beschwerdekammern

Boards of Appeal

Chambres de recours

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Case Number: T 0637/20 - 3.3.09

D E C I S I O N
of Technical Board of Appeal 3.3.09
of 19 December 2022

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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
12 February 2020 concerning maintenance of the
European Patent No. 2427514 in amended form.**

Composition of the Board:

Chairman A. Haderlein
Members: C. Meiners
 F. Blumer

Summary of Facts and Submissions

- I. This decision concerns the appeals filed by the patent proprietor, opponent 1 and opponent 2 (all appellants) against the interlocutory decision of the opposition division which found that, on the basis of the second auxiliary request filed during oral proceedings before the opposition division on 18 November 2019, the patent in suit ("the patent") met the requirements of the EPC. As all involved parties are appellants, they will continue to be referred to as patent proprietor and opponents.
- II. In their notices of opposition, opponents 1 and 2 had requested that the patent be revoked in its entirety on the basis *inter alia* of the grounds for opposition under Article 100(a) EPC in combination with Articles 54 (lack of novelty) and 56 EPC (lack of inventive step) and Article 100(b) EPC (sufficiency of disclosure).
- III. In its decision, the opposition division found, *inter alia*, that the second auxiliary request pending at that time was clear (Article 84 EPC).
- IV. Together with its reply to the statements of grounds of appeal of opponents 1 and 2, the patent proprietor filed a new main request and first to fourth auxiliary requests. These requests were replaced by the main and first to fifth auxiliary requests filed with its letter dated 27 October 2022.
- V. The main request filed with the letter dated 27 October 2022 corresponds to the second auxiliary request, held

allowable by the opposition division.

Claim 1 thereof reads as follows:

"Expanded articles for thermal insulation with improved resistance to solar irradiation which comprise an expanded polymeric matrix, obtained by expansion and sintering of beads/granules of a vinyl aromatic (co)polymer, in whose interior a filler is homogeneously dispersed, which consists of:

a. 0.1-10% by weight, preferably 0.2-3%, of coke having an average diameter (MT50) ranging from 2 to 20 μm wherein the particle diameter (MT50) is measured with a laser granulometer and is the diameter which corresponds to 50% by weight of particles having a lower diameter and 50% by weight of particles having a higher diameter;

b. 0-5% by weight, preferably 0.1-2%, of a self-extinguishing brominated additive possibly thermally stabilized;

c. 0-2% by weight, preferably 0.1-1.3%, of a synergist for the self-extinguishing additive (b);

d. 0.15-10% by weight, preferably 0.15-6%, of at least one inorganic additive active within the wave-lengths ranging from 100 to 20,000 cm^{-1} , wherein the inorganic additive (d) comprises an inorganic material which has at least an absorption band between 100 and 20,000 cm^{-1} , as revealed by a spectrum analyzer in the near and medium infrared, and is selected from titanates, titanium oxides, silicon oxide, such as aerosilica and silica flour, aluminum oxides and hydroxides, barium sulfate, silicates such as alumino-silicates, calcium silicates and magnesium silicates, carbonates such as calcium and/or magnesium carbonate, calcium sulfates, calcium and zinc oxide, bentonite;

e. 1-10% by weight, preferably 1.5-8%, of an expanding agent;

wherein said percentages are calculated with respect to the overall weight of the bead/ granule and wherein the complement to 100% is a polymeric matrix (f) consisting of (f1) a copolymer of styrene and from 0.01 to 15% by weight, with respect to the copolymer, of at least one vinyl aromatic comonomer substituted in the ring or on the vinyl group and/or (f2) a mixture of polystyrene and a thermoplastic polymer compatible with polystyrene and having a Tg (glass transition temperature) > 100°C."

Claim 1 of the first auxiliary request is identical with claim 1 of the main request.

Claim 1 of the second and third auxiliary requests only differs from claim 1 of the main request in that the expression "*[,] in whose interior a filler is homogeneously dispersed, which consists of: [...]*" has been replaced by the wording "*[,] in whose interior a sole filler is homogeneously dispersed, which consists of: [...]*" (amendment with respect to claim 1 of the main request underlined).

In claim 1 of the fourth auxiliary request, the mentioned expression in claim 1 of the main request has been amended as follows (inserted amendment underlined): "*[,] in whose interior a filler is homogeneously dispersed, which consists essentially of: [...]*".

Claim 1 of the fifth auxiliary request differs from claim 1 of the main request in that it comprises both amendments inserted into the corresponding passage (inserted amendments underlined): "*[,] in whose interior a sole filler is homogeneously dispersed, which consists essentially of: [...]*".

VI. The patent proprietor's arguments, where relevant to the decision, can be summarised as follows:

- The subject-matter of the main request met, *inter alia*, the requirements of Article 84 EPC. In particular, it was clear that graphite and carbon black were excluded in claim 1. These compounds were inorganic materials and were thus fillers (components), excluded from the scope of claim 1. Paragraphs [0007] to [0012] of the patent referred to the prior art and thus did not render the claimed subject-matter unclear. Likewise, claim 1 was formulated as a closed claim, and the presence of further additives, while possibly contemplated in the description, was not contemplated by the claim but was now excluded from it. This aspect was thus exclusively a matter of adaptation of the description to the claims and not of the clarity of claim 1. As mentioned in paragraph [0057], additives used in the process were washed away in the washing step in the preparation of the beads. By contrast, the presence of any compounds, like coating agents, on the surface of the beads used to prepare the expanded articles was not excluded in claim 1. This included zinc stearates, which contributed to the total overall mass of the beads.

Claim 1 referred to the beads prior to expansion and which did not (yet) necessarily comprise the covering and coating.

All components a) to e), including components b) and e), were considered filler components in claim 1. This aspect of the claim was thus clear as well. The (optional) presence of further fillers was not

derivable from the description of the patent. Even assuming that further fillers could be present in the beads, they would end up in the first filler. The possibility of the optional presence of further, inhomogeneously dispersed filler(s) could not be read into claim 1 either. Moreover, even assuming such a possibility, such an optional presence of a further filler would also have existed in claim 1 as granted. This aspect was thus, in view of G 3/14, not open to examination with regard to the requirements of Article 84 EPC.

- The first and third auxiliary requests had been filed in response to the board's assessment detailed in its communication that claims 3 and 7 were particularly affected by lack of clarity issues. The filing of the second auxiliary request addressed issues under Article 123(2) EPC.
- As to the fourth auxiliary request (previous second auxiliary request), the expression "*which consists essentially of*" signalled that specific further components could be present (in the beads), namely those which did not materially affect the essential properties of the material prepared.

The arguments of opponent 1 and opponent 2, where relevant to the decision, can be summarised as follows:

- The subject-matter of the main request lacked clarity. It could be inferred from paragraphs [0007] to [0012] that athermanous additives, e.g. graphite and carbon black were possible additives or fillers which, in the absence of an unambiguous statement in the claims to the contrary, might be included in the articles claimed in claim 1. At

least components b) and e) of claim 1 were usually not considered fillers. Further, the proprietor's argument that claim 1 could only be interpreted as a "closed" claim was not convincing. Also claim 1 additionally used "comprising" language (see claim 1, claim sheet 1, line 4). The argument of the proprietor that further agents mentioned in the description, such as coatings or non-ionic surface active agents, should be disregarded, or that the beads contained at most traces of the covering and coating, went against the explicit teaching of the patent and was also not in line with common general knowledge that these agents were important or useful in the production and/or final processing and even in the expanded products. Likewise, the question arose as to whether or not the further filler components mentioned in paragraph [0048] of the patent, such as pigments, nucleating agents and release agents, were excluded in claim 1 due to the "consisting of" language. No evidence had been provided that, at the end of the washing process, the presence of additives as recited in paragraph [0057] of the patent was hardly detectable. In contrast, the coating agents were added to the dried beads, and zinc stearate as a parting agent was present in the final product, as was described in paragraph [0085] of the patent (see also paragraph [0069]). If one were to argue that the presence of antistatic or other coating agents on the beads was excluded, then the beads of e.g. example 1 did not fall under the definition of beads as recited in claim 1.

- The first to third auxiliary requests should not be taken into account under Article 13(2) RPBA 2020. No reasons had been provided by the patent

proprietor for the belated filing of these requests, nor had exceptional circumstances been invoked to justify their filing.

- As to the fourth auxiliary request (previous second auxiliary request), the introduction of the term "essentially" in claim 1 introduced an additional element of lack of clarity. The further additives applied as a coating in paragraph [0099] of the patent could not be considered as present in only trace amounts. Their concentration in the product even exceeded the minimum amount of even the preferred ranges for the filler components a) to d) as specified in claim 1.

- The fifth auxiliary request (previous third auxiliary request) introduced an additional element of unclarity, as the question arose as to whether or not the "consists essentially of" definition of the "sole filler" excludes the presence of heterogeneously dispersed filler or filler constituents.

VII. Requests

The patent proprietor requested that the appeals of the opponents be dismissed and that the patent be maintained on the basis of the main request or one of the first to fifth auxiliary requests, all filed with its letter of 27 October 2022.

Opponents 1 and 2 requested that the decision under appeal be set aside and that the patent be revoked.

Reasons for the Decision

1. *Clarity of the claims (Article 84 EPC) - main request and first auxiliary request*

- 1.1 The ambiguity, set out in more detail below, as to whether or not claim 1 allows for the presence of further "fillers" and/or additives, as mentioned in the description in e.g. paragraphs [0048] and [0057] was occasioned by the amendment "*in whose interior a filler is homogeneously dispersed, which consists of ...*", replacing the wording in granted claim 1 "*in whose interior a filler is homogeneously dispersed, which comprises ...*" (emphasis added by the board). Claim 1 as granted clearly allowed for the presence of e.g. further additives not expressly mentioned as components a) to e) due to said open formulation "*which comprises*". The amendment is thus open to examination as to its fulfilment of the requirements of Article 84 EPC (G 3/14).

It is contentious between the parties whether or not claim 1 is formulated as a "closed" claim due to the amended feature "*in whose interior a filler is homogeneously dispersed, which consists of ...*". According to the patent proprietor, claim 1 related to a "closed" claim and referred to the beads before expansion thereof. The filler consisted of components a) to e), wherein the complement to 100% was a polymeric matrix. The presence of further additives in the beads, while contemplated in the description, was excluded in claim 1. The latter discrepancy, however, was exclusively a matter of adaptation of the description to the claims and did not impinge on their clarity. Any additives used in the process for

preparing the polymer beads, such as the compounds mentioned in paragraph [0057] of the patent, were washed away in the washing step.

In contrast, the presence of any compounds on the surface of the beads, such as zinc stearate, was not excluded in claim 1. They contributed to the total mass/weight of the beads and were thus considered in the calculation of the 100% (mass). Hence, anything on the surface of the beads/granules was not subject to a "closed" claim formulation. Claim 1 clearly referred to fillers as being in the interior of the beads. Such coating agents were thus not a filler.

- 1.2 The board, contrary to the proprietor's position, considers that claim 1 could also be interpreted as an "open" claim. The proprietor's interpretation of the claim, i.e. that any materials coated on the surface of the beads contribute to the total mass of the beads to be considered as a reference for establishing 100% (mass) of the beads, would mean that not only filler components a) to e) and the polymeric matrix (as a complement) make up 100% by mass of the beads but that other components can contribute to the beads' total mass. This, however, leads to claim 1 being interpreted "openly". Moreover, this possibility would be in line with the interpretation that other components, such as additives, could be present in the beads besides the mentioned filler (cf. the formulation in claim 1 "a filler is homogeneously dispersed", emphasis added by the board) which would also contribute to the total mass of the beads, with the complement to 100% being the polymeric matrix.

Also, the wording "*a (sic) filler*" does not exclude the presence of further fillers. The counter-argument of

the patent proprietor that in this case, they would end up in the first filler does not convince the board. In this context, the board agrees with the opponents that the expression "filler" for referring to "expanding agents" in item e) of claim 1 seems rather unusual. Further additives mentioned in paragraph [0048] include pigments and nucleating agents which could also be regarded as "fillers" and/or additives featured in paragraph [0057] of the patent. To the board, it is not convincing that the latter additives, such as stabilising agents of the suspension or nucleating agents, would be washed off in the washing process of the beads. The position of the patent proprietor, however, that on the one hand the interior of the beads should be taken as a "closed" composition but that on the other the composition of components present on the surface of the beads was not "closed" is not convincing in the view of the board. This would mean that the expression "*and wherein the complement to 100% is a polymeric matrix*" would strictly apply to components a) to e) and not leave room for any further components in the interior of the beads besides the matrix polymer but would leave room for any further coating material on the beads' surface which contributes to the total mass of the beads (i.e. to 100% by mass/weight). In the board's view, such an interpretation of claim 1 cannot be inferred from its wording.

Considering the mentioned ambiguity occasioned by the amendment, the board concludes that the subject-matter of claim 1 lacks clarity within the meaning of Article 84 EPC.

- 1.3 As claim 1 of the first auxiliary request is identical to claim 1 of the main request, the board's conclusions in respect of lack of clarity in relation to the

subject-matter of claim 1 of the main request apply equally. The subject-matter of claim 1 of the first auxiliary request does not therefore meet the requirements of Article 84 EPC either.

2. *Admittance of auxiliary requests 2 and 3 (Article 13(2) RPBA 2020)*

2.1 Claim 1 of the second auxiliary request corresponds to claim 1 of the previous third auxiliary request (present fifth auxiliary request) wherein the expression "essentially" is deleted.

2.2 The only reason provided for the belated filing of the second auxiliary request was that the board had not expressed itself in its communication pursuant to Article 15(1) RPBA 2020 regarding the amendment "sole" in relation to "filler". This, obviously, cannot justify the deletion of the expression "essentially", an expression which opponent 2 had already objected to in its submission dated 6 January 2021.

2.3 The wording of claim 1 of the third auxiliary request is identical to that of claim 1 of the second auxiliary request. Hence, the remarks made above in relation to admittance of the second auxiliary request apply equally. The fact that in this request a number of additional claims are deleted does not change these findings. Further, the objections under Article 84 EPC regarding claims 3 and 7 of the previous first auxiliary request (present main request) were first raised by opponent 2 in its letter dated 6 January 2021 and not by the board.

2.4 It is for these reasons that the board did not take auxiliary requests 2 and 3 into account (Article 13(2) RPBA 2020).

3. *Clarity of the claims (Article 84 EPC) - fourth and fifth auxiliary requests*

3.1 The conclusions drawn in respect of lack of clarity of claim 1 of the main request apply similarly to the subject-matter of claim 1 of the fourth auxiliary request. The insertion "essentially" in the expression "*which consists essentially of*" (amendment underlined) adds a further feature which, instead of clarifying the scope of claim 1, namely by shedding light on the question of whether only the filler components a) to e) and the polymeric matrix can be present in the interior of the beads, merely raises further questions concerning the exact meaning of the term "essentially" in the given context of claim 1. The amendment thus introduces an additional element of lack of clarity, as already stated in the board's communication pursuant to Article 15(1) RPBA 2020.

3.2 While an expression like "consisting essentially of" may have a defined meaning in some instances, e.g. in the context of pharmaceutical compositions, its use renders the claimed subject-matter in the present context unclear (cf. also T 2027/13, Reasons 1.4 to 1.6). The coated beads described in the patent comprise additives, *such as* coating components, in amounts by far exceeding the required minimal concentrations of (filler) components a) and d). It thus cannot be argued that, apart from filler components a) - e) and the polymeric matrix called for in claim 1, only trace amounts of other ingredients could be present. Moreover, it is not plausible that such additional

additives would not influence the heat resistance of products and attenuation of IR radiation, as well.

3.3 A skilled person would thus be at a loss regarding the possible limitation introduced by an expression such as "*which consists essentially of*" and which components at which concentrations should be avoided in order not to materially affect the essential characteristics of the filler or even of the claimed products.

3.4 These conclusions apply equally to claim 1 of the fifth auxiliary request, comprising the same unclear feature "*which consists essentially of*". The subject-matter of claim 1 of the fifth auxiliary request thus does not meet the requirements of Article 84 EPC either.

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:



M. Schalow

A. Haderlein

Decision electronically authenticated