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Datasheet for the decision of 15 May 2025

Case Number: T 1326/23 - 3.3.03

Application Number: 16888487.2

Publication Number: 3337856

IPC: C08K3/00, C08L77/02, B29C64/165, B29C67/24, B33Y30/00, B33Y50/02, B33Y70/00

Language of the proceedings: EN

Title of invention:

THREE-DIMENSIONAL (3D) PRINTING COMPOSITE BUILD MATERIAL COMPOSITION

Patent Proprietor:

Hewlett-Packard Development Company, L.P.

Opponent:

Evonik Operations GmbH

Relevant legal provisions:

RPBA 2020 Art. 13(2)
EPC Art. 123(2), 54, 56

Keyword:

Amendment after expiry of period in R. 100(2) EPC
communication - exceptional circumstances (yes)
Amendments - allowable (yes)
Novelty - (yes)
Inventive step - (yes)

Decisions cited:

T 1055/17, T 2295/19

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Case Number: T 1326/23 - 3.3.03

D E C I S I O N
of Technical Board of Appeal 3.3.03
of 15 May 2025

Appellant: (Opponent)	Evonik Operations GmbH Rellinghauser Str. 1-11 45128 Essen (DE)
Representative:	Evonik Patent Association c/o Evonik Industries AG IP Management Postcode 84/339 Rodenbacher Chaussee 4 63457 Hanau (DE)
Respondent: (Patent Proprietor)	Hewlett-Packard Development Company, L.P. 10300 Energy Drive Spring TX 77389 (US)
Representative:	HGF HGF Limited 1 City Walk Leeds LS11 9DX (GB)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 19 May 2023 concerning maintenance of the European Patent No. 3337856 in amended form.**

Composition of the Board:

Chairman	M. Barrère
Members:	D. Marquis
	W. Ungler

Summary of Facts and Submissions

I. The appeal lies against the decision of the opposition division concerning maintenance of the European Patent No. 3337856 in amended form.

II. The decision under appeal was based on the claims of the main request, auxiliary request 1 and auxiliary request 2 all filed with letter of 26 November 2021.

III. The following documents were *inter alia* submitted during the opposition proceedings:

D1: EP 2 543 701 A1
D2: EP 2 543 700 A1
D3: EP 1 982 816 A1
D4: EP 2 103 643 A1
D5: WO 2005/090055 A1
D11: EP 1 642 923 A1

IV. The decision under appeal, as far as it is relevant to the present case, can be summarised as follows:

- The amendments in granted claims 4-7 found a basis in the description as originally filed.
- Granted claim 1 was novel over D1 and D3 but lacked novelty over example 5 of D11. The same conclusion applied to claim 1 of auxiliary request 1.
- Claim 1 of auxiliary request 2 was inventive over D3 or D11 as closest prior art. Claims 8 and 13 were also inventive over D5 as closest prior art.

V. Claims 1, 8 and 13 of auxiliary request 2 which was maintained by the opposition division read as follows:

"1. A three-dimensional (3D) printing composite build material composition, comprising:
a polymer particle, wherein the polymer particle is an aliphatic polyamide; and
an inorganic particle, wherein the inorganic particle is selected from the group
consisting of metal oxides, semiconductor oxides, inorganic glasses, carbides, nitrides, borides, and combinations thereof, and the inorganic particle has an average particle size ranging from 3 μm to 40 μm;
wherein a mass ratio of polymer particle to inorganic particle in the composite build material composition ranges from 1:1 to 1:3".

"8. A three-dimensional (3D) printing method, comprising:
applying a composite build material as defined in any one of claims 1 to 7;
heating the composite build material to a temperature ranging from 5°C to 50°C below a melting point of the polymer particle;
selectively applying a liquid functional material on a portion of the composite build material, the liquid functional material including an electromagnetic radiation absorber in an amount ranging from 0.1% to 15% by weight based on the total weight of the liquid functional material; and
exposing the applied composite build material and the applied liquid functional material to electromagnetic radiation, whereby the liquid functional material absorbs the electromagnetic radiation and heats up the portion of the composite build material in contact with the liquid functional material to at least partially fuse the portion of the composite build material in contact with the liquid functional material and to form

a layer of a three-dimensional (3D) object".

"13. A three-dimensional (3D) printing system, comprising:
a fabrication bed;
a composite build material as defined in any one of claims 1 to 7 to be introduced into the fabrication bed;
an inkjet applicator;
a liquid functional material to be selectively introduced by the inkjet applicator onto the composite build material in the fabrication bed, the liquid functional material including an electromagnetic radiation absorber in an amount ranging from 0.1% to 15% by weight based on the total weight of the liquid functional material; and
a radiation source to expose the liquid functional material and the composite build material in the fabrication bed to electromagnetic radiation".

VI. The opponent lodged an appeal against the decision of the opposition division.

VII. The patent proprietor submitted new auxiliary requests 1-6 with their rejoinder dated 5 February 2024.

VIII. On 15 January 2025 the Board issued a communication pursuant to Article 15(1) RPBA containing a preliminary opinion.

IX. On 22 April 2025 the respondent filed a reply together with a new main request and auxiliary request 1.

X. On 9 May 2025 the appellant filed a reply in which they stated that they did not object to the patentability of the new main request and the new auxiliary request 1.

It was furthermore suggested that the summons to oral proceedings be cancelled and that the agreement on the adapted version of the description be reached in writing.

XI. The oral proceedings have been cancelled.

XII. As far as relevant for the present decision the parties' final positions were as follows:

- The appellant did not object to the maintenance of the patent on the basis of the claims of the main request filed by the respondent on 22 April 2025.

- The respondent requested that the patent be maintained in amended form on the basis of the claims of the main request filed with letter of 22 April 2025.

XIII. The main request of 22 April 2025 contained 9 claims. Independent claims 1 and 8 read as follows:

"1. A three-dimensional (3D) printing method, comprising:
applying a composite build material;
heating the composite build material to a temperature ranging from 5°C to 50°C below a melting point of the polymer particle;
selectively applying a liquid functional material on a portion of the composite build material, the liquid functional material including an electromagnetic radiation absorber in an amount ranging from 0.1% to 15% by weight based on the total weight of the liquid functional material; and

exposing the applied composite build material and the

applied liquid functional material to electromagnetic radiation, whereby the liquid functional material absorbs the electromagnetic radiation and heats up the portion of the composite build material in contact with the liquid functional material to at least partially fuse the portion of the composite build material in contact with the liquid functional material and to form a layer of a three-dimensional (3D) object;
wherein the composite build material is a composite build material composition comprising:
a polymer particle, wherein the polymer particle is an aliphatic polyamide; and
an inorganic particle, wherein the inorganic particle is selected from the group consisting of metal oxides, semiconductor oxides, inorganic glasses, carbides, nitrides, borides, and combinations thereof, and the inorganic particle has an average particle size ranging from 3 µm to 40 µm;

wherein a mass ratio of polymer particle to inorganic particle in the composite build material composition ranges from 1:1 to 1:3".

"8. A three-dimensional (3D) printing system, comprising:
a fabrication bed;
a composite build material to be introduced into the fabrication bed;
an inkjet applicator;
a liquid functional material to be selectively introduced by the inkjet applicator onto the composite build material in the fabrication bed, the liquid functional material including an electromagnetic radiation absorber in an amount ranging from 0.1% to 15% by weight based on the total weight of the liquid functional material; and

a radiation source to expose the liquid functional material and the composite build material in the fabrication bed to electromagnetic radiation;
wherein the composite build material is a composite build material composition comprising:
a polymer particle, wherein the polymer particle is an aliphatic polyamide; and
an inorganic particle, wherein the inorganic particle is selected from the group consisting of metal oxides, semiconductor oxides, inorganic glasses, carbides, nitrides, borides, and combinations thereof, and the inorganic particle has an average particle size ranging from 3 µm to 40 µm;
wherein a mass ratio of polymer particle to inorganic particle in the composite build material composition ranges from 1:1 to 1:3".

The claims of auxiliary request 1 of 22 April 2025 are not relevant to the present decision.

XIV. The parties' submissions, in so far as they are pertinent, may be derived from the reasons for the decision below.

Reasons for the Decision

1. The patent in suit can be maintained on the basis of the main request filed by the respondent on 22 April 2025. The appellant stated in their letter of 9 May 2025 that they did not object to that request. A decision can therefore be taken in writing without the need for oral proceedings.

Main request (22 April 2025)

2. Admittance

2.1 The main request was filed on 22 April 2025, after the communication of the Board under Article 15(1) RPBA. The admittance of the main request into the proceedings underlies the provisions of Article 13(2) RPBA according to which any amendment to a party's appeal case made after notification of a 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.

2.2 In the present case it is immediately apparent that the amendments made to the main request filed on 22 April 2025 directly and completely remedy all the objections raised against the claims considered allowable by the opposition division and pursued in the appeal proceedings on which the preliminary opinion of the Board was also negative, namely

- the lack of support for claims 4 to 7 (statement of grounds of appeal, pages 4 and 5 and communication

of the Board, point 7) by deletion of these claims and

- the lack of inventive step of claim 1 in view of D3, D11, D1/D2, D4 and D5 and of claim 3 in view of D2 (statement of grounds of appeal, pages 11-20 and communication of the Board, point 10) by deletion of the claims relating to a three-dimensional (3D) printing composite build material composition.

2.3 For the other relevant objection of lack of inventive step against claims 8 and 13 (as upheld by the opposition division) in view of D5 the Board had provided a positive opinion (communication of the Board, point 10.6) and the appellant declared in their letter of 9 May 2025 that they had no objection against the corresponding claims 1 and 8 of the new main request.

2.4 The amendments made in the new main request overcome all the objections which the Board considered to be well-founded (see points 3 to 5 below). Furthermore, the respondent no longer has any objections to this request. As a consequence further procedural steps, in particular the holding of oral proceedings, can be avoided and a decision can be taken on the basis of the written submissions. Thus the amendments are highly advantageous in terms of procedural economy and therefore constitute exceptional circumstances within the meaning of Article 13(2) RPBA (cf. T 1055/17, Reasons point 2; T 2295/19, Reasons point 3.4.1 to 3.4.14).

2.5 The main request submitted with letter of 22 April 2025 is therefore admitted into the proceedings.

3. Amendments

3.1 Claims 1 and 8 of the main request correspond to claims 8 and 13 of auxiliary request 2 maintained by the opposition division including the wording of claim 1 of auxiliary request 2 replacing the mere reference to that claim. Claims 2-7 and 9 otherwise correspond to claims 2, 3, 9, 10, 11, 12 and 14 of auxiliary request 2.

3.2 Claims 1 and 8 find a basis in claims 9 and 14 of the application as originally filed further limited by the list of inorganic particles disclosed in paragraph 31, their particle size according to to paragraph 32 and mass ratio of paragraph 34. Claims 2-7 and 9 find a basis in claims 3, 4, 10, 11, 12, 13 and 15 as originally filed. The appellant did not object to the basis of the claims of the main request.

4. Novelty

4.1 An objection of lack of novelty was only pursued in the statement of grounds of appeal with respect to claim 1 of auxiliary request 2 upheld by the opposition division. Since that claim is not part of the main request in appeal and the appellant did not raise any other objection of lack of novelty of the claims of the main request, novelty is not an issue to be dealt with in the present decision.

5. Inventive step

5.1 Objections of lack of inventive step against claims 1 and 3 (depending on claim 1) of auxiliary request 2 maintained by the opposition division were laid out in the statement of grounds of appeal (pages 11-16). These

objections are no longer relevant to the present main request.

5.2 Claims 8 and 13 and their dependent claims 9-12 and 14 of auxiliary request 2 considered allowable by the opposition division were also initially objected to in view of D5 as the closest prior art in the statement of grounds of appeal (pages 16-21). That objection of lack of inventive step is relevant to claims 1 and 8 of the present main request.

5.3 For the sake of completeness, it should be noted that this objection was not maintained by the appellant as they explicitly acknowledged that the subject-matter of the claims of the main request did not appear to be deficient with respect to the EPC (letter of 9 May 2025, page 1, second paragraph).

5.4 D5 as closest prior art against claim 1

5.4.1 Claim 1 of the main request concerns a three-dimensional (3D) printing method. The appellant initially pursued the objection of lack of inventive step of claim 8 of auxiliary request 2 upheld by the opposition division that corresponds to claim 1 of the main request in view of the method disclosed in examples 2 and 3 of D5 as the closest prior art (statement of grounds of appeal, table on pages 17 and 18).

5.4.2 The opposition division came to the conclusion in the decision under appeal that claim 8 of the then auxiliary request 2 differed from the method disclosed in examples 2 and 3 of D5 in that claim 8 required the presence of inorganic particles of a chosen average particle size and in a chosen mass ratio relative to

the polymer particles.

5.4.3 Examples 2 and 3 of D5 disclose the use of a composition based on polyamide particles (EOSINT P PA 2200 in example 2 and Vestosint 2157 in example 3). None of the compositions of these examples is disclosed to contain inorganic particles. That was not contested by the appellant. In this respect the Board sees no reason to depart from the difference identified by the opposition division over examples 2 and 3 of D5, i.e. the presence of inorganic particles of a chosen average particle size and in a chosen mass ratio relative to the polymer particles.

5.4.4 The respondent referred to effects shown in Figures 8 and 9 of the patent in suit (rejoinder, item 68). The stiffness (N/m) at different temperatures (Figure 8) and the coefficient of thermal expansion (CTE, µm/(m. °C) at different temperatures ranges (Figure 9) are based on materials including a comparative material that does not contain inorganic particles. The effects shown in Figures 8 and 9 of the patent in suit are therefore relevant when assessing inventive step in view of examples 2 and 3 of D5. Figures 8 and 9 show that materials containing inorganic particles as defined in claim 1 of the main request display a higher stiffness over a temperature range of 20-100°C and a reduced coefficient of thermal expansion at 0-25°C and 100-120°C over materials that correspond to those of examples 2 and 3 of D5. The problem over D5 is therefore the provision of 3D objects having improved stiffness and reduced coefficient of thermal expansion particularly at elevated temperature, which is also the problem identified in the patent in suit (paragraphs 10 and 11).

5.4.5 While D5 (page 13, line 29, page 14, lines 10, 20, 26 and 27), D1 (paragraph 23), D2 (paragraph 32) and D3 (paragraph 53) suggest the possible presence of other components in the compositions including inorganic particles there is no further incentive to use these inorganic particles in the expectation to solve the problem posed, namely to improve the stiffness and coefficient of thermal expansion particularly at elevated temperature of 3D objects. Claim 1 of the main request is therefore inventive over D5. The same reasoning and conclusion apply to operative claim 8 which concerns a 3D printing system defined by the composition of the composite build material comprising inorganic particles. These conclusions were provided with the preliminary opinion of the Board (item 10.6) and were not contested by the appellant (letter of 9 May 2025).

5.4.6 The claims of the main request therefore meet the requirements of Article 56 EPC.

6. In view of the foregoing, the patent is to be maintained on the basis of the main request.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the opposition division with the order to maintain the patent on the basis of the claims of the main request filed on 22 April 2025 and a description to be adapted thereto.

The Registrar: The Chairman:

D. Hampe M. Barrère

Decision electronically authenticated