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Datasheet for the decision of 26 September 2007

Case Number: T 1258/05 - 3.2.07

Application Number: 99917906.2

Publication Number: 1086055

IPC: C03B 37/05

Language of the proceedings: EN

Title of invention:
Man-made vitreous fibre batts and their production

Patentee:
Rockwool International A/S

Opponents:
Paroc Oy Ab
Saint-Gobain Isover G+H AG

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56, 123(2)

Keyword:
"Extension beyond the content of the application as filed: main, fourth auxiliary request (yes)"
"Reformatio in peius: fifth auxiliary request (no)"
"Novelty: fifth, sixth auxiliary request (no)"
"Inventive step: seventh, eighth auxiliary request (no); ninth auxiliary request (yes)"

Decisions cited:
G 0001/99

Catchword:
-

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Case Number: T 1258/05 - 3.2.07

D E C I S I O N
of the Technical Board of Appeal 3.2.07
of 26 September 2007

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Decision under appeal:
Interlocutory decision of the Opposition Division of the European Patent Office posted 11 August 2005 concerning maintenance of European patent No. 1086055 in amended form.

Composition of the Board:

Chairman: H. Meinders
Members: K. Poalas
I. Beckedorf

Summary of Facts and Submissions

I. Each of the appellants 01 and 02 (opponents 01 and 02) lodged an appeal against the interlocutory decision of the Opposition Division maintaining European patent No. 1 086 055 in amended form.

The oppositions had been filed against the patent as a whole based on Article 100(a) EPC (lack of novelty and lack of inventive step).

The Opposition Division held that the grounds for opposition mentioned in Articles 100(a), 123(2) and 123(3) EPC did not prejudice the maintenance of the patent as amended.

The following documents of the opposition proceedings are pertinent for the present decision:

D0: WO-A-99/51536 (corresponds to the originally filed application)
Dl: DE-A1-3 940 896
D2: EP-Al-0 374 112
D4: WO-A1-97/20780
D5: US-A-2 503 067
D8: WO-A1-90/07473
D10: DE-C1-4 409 416.

II. Oral proceedings before the Board took place on 26 September 2007.

(a) The appellants requested that the decision under appeal be set aside and that the European patent be revoked.

(b) The respondent (patent proprietor) requested
1) that the appeals be dismissed and that the patent be maintained in the form upheld in the decision under appeal (main request), or, alternatively,
2) that the patent be maintained on the basis of the fourth auxiliary request (claims 1 to 18) as filed with letter dated 24 August 2007, or
3) that the patent be maintained on the basis of any of the fifth to ninth auxiliary requests filed during the oral proceedings, the first to third auxiliary requests as filed with letter of 24 August 2007 having been withdrawn.

III. Independent claim 1 according to the main request reads as follows:

"A product selected from a fire protection product and an acoustic insulation product and which is an integral MMV (man-made vitreous) fibre batt having a first face section (12) extending inwardly from one face (20), a second face section (13) extending inwardly from the opposed face and a core section (11) between the first (12) and second (13) face sections, wherein the sections (11, 12, 13) are integral with one another and are formed of air-laid mineral fibres and contain binder material and wherein the batt contains a solid particulate additive material which is a fire retardant additive material which renders the batt suitable for fire protection or is a high density additive having density above 2.5 t/m^3 and which renders the batt suitable for acoustic insulation and wherein the concentration of the additive material in the core

section (11) is higher than the concentration of that additive in each of the face sections (12, 13)".

Independent claim 1 according to the fourth auxiliary request reads as follows:

"A fire protection product which is an integral MMV (man-made vitreous) fibre batt having a first face section (12) extending inwardly from one face (20), a second face section (13) extending inwardly from the opposed face and a core section (11) between the first (12) and second (13) face sections, wherein the sections (11, 12, 13) are integral with one another and are formed of air-laid mineral fibres and contain binder material and wherein the batt contains a solid particulate additive material which is a fire retardant additive material which is a carbonate or hydrate which decomposes endothermically at a temperature above 200°C and which renders the batt suitable for fire protection and wherein the concentration of the additive material in the core section (11) is higher than the concentration of that additive in each of the face sections (12, 13)".

Independent claim 1 according to the fifth auxiliary request reads as follows:

"A fire protection product which is an integral MMV (man-made vitreous) fibre batt having a first face section (12) extending inwardly from one face (20), a second face section (13) extending inwardly from the opposed face and a core section (11) between the first (12) and second (13) face sections, wherein the sections (11, 12, 13) are integral with one another and

are formed of air-laid mineral fibres and contain binder material and wherein the batt contains a solid particulate additive material which is a fire retardant additive material which is a carbonate or hydrate which decomposes endothermically at a temperature above 200°C and wherein the concentration of the additive material in the core section (11) is higher than the concentration of that additive in each of the face sections (12, 13)".

Independent claim 1 according to the sixth auxiliary request reads as follows:

"A fire protection product which is an integral MMV (man-made vitreous) fibre batt having a first face section (12) extending inwardly from one face (20), a second face section (13) extending inwardly from the opposed face and a core section (11) between the first (12) and second (13) face sections, wherein the sections (11, 12, 13) are integral with one another and are formed of air-laid mineral fibres and contain binder material and wherein the batt contains a solid particulate additive material which is a fire retardant additive material which is a carbonate or hydrate which decomposes endothermically at a temperature above 200°C and wherein the concentration of the additive material in the core section (11) is higher than the concentration of that additive in each of the face sections (12, 13) and wherein the thickness of the core section (11) is up to 90% of the thickness of the batt".

Independent claim 1 of the seventh, eighth and ninth auxiliary requests reads as follows:

"A fire protection product which is an integral MMV (man-made vitreous) fibre batt having a first face section (12) extending inwardly from one face (20), a second face section (13) extending inwardly from the opposed face and a core section (11) between the first (12) and second (13) face sections, wherein the sections (11, 12, 13) are integral with one another and are formed of air-laid mineral fibres and contain binder material and wherein the batt contains a solid particulate additive material which is a fire retardant additive material which is a carbonate or hydrate which decomposes endothermically at a temperature above 200°C and wherein the concentration of the additive material in the core section (11) is higher than the concentration of that additive in each of the face sections (12, 13) in which the thickness of the core section (11) is up to 90% of the thickness of the batt and the additive material is present only in the core section (11)".

Independent claim 4 of the seventh auxiliary request reads as follows:

"A process of making a man-made vitreous (MMV) fibre batt comprising forming an air laid primary web (3) of MMV fibres and binder material wherein the primary web (3) has first (17) and second (18) opposed surfaces and first (14) and second (15) opposed edge regions and a centre region (16) and
transferring the primary web (3) to a cross-lapping point (1) and
cross-lapping the primary web (3) at the cross-lapping point (1) to form a secondary web (5) such that the secondary web (5) has a first face section (12) which

is formed mainly from the first edge region (14) of the primary web and a second, opposed, face section (13) which is formed mainly from the second edge region (15) of the primary web (3) and a core section (11) between the first and second face sections (12, 13) which is formed mainly from the centre region (16) of the primary web,
wherein the process also comprises applying solid particulate additive material to the first (17) and/or the second (18) surface of the primary web (3) after forming the primary web (3) and at or before the cross-lapping point (1) so that the concentration of the additive material applied to the or each surface in the centre region (16) is higher than the concentration of that additive material applied to the or each surface in each of the first (14) and second (15) edge regions, whereby the core section (11) of the secondary web (5) has a concentration of the additive material greater than the concentration of that additive in each of the first (12) and second (13) face sections".

Independent claim 4 according to the eighth auxiliary request reads as follows:

"A process of making a man-made vitreous (MMV) fibre batt according to claim 1 comprising forming an air laid primary web (3) of MMV fibres and binder material wherein the primary web (3) has first (17) and second (18) opposed surfaces and first(14) and second (15) opposed edge regions and a centre region (16) and transferring the primary web (3) to a cross-lapping point (1) and
cross-lapping the primary web (3) at the cross-lapping point (1) to form a secondary web (5) such that the

secondary web (5) has a first face section (12) which is formed mainly from the first edge region (14) of the primary web and a second, opposed, face section (13) which is formed mainly from the second edge region (15) of the primary web (3) and a core section (11) between the first and second face sections (12, 13) which is formed mainly from the centre region (16) of the primary web,
wherein the process also comprises applying solid particulate additive material to the first (17) and/or the second (18) surface of the primary web (3) after forming the primary web (3) and at or before the cross-lapping point (1) so that the concentration of the additive material applied to the or each surface in the centre region (16) is higher than the concentration of that additive material applied to the or each surface in each of the first (14) and second (15) edge regions, whereby the core section (11) of the secondary web (5) has a concentration of the additive material greater than the concentration of that additive in each of the first (12) and second (13) face sections and in which the additive material is applied to the first (17) and/or second (18) surfaces of the primary web (3) only in the centre region (16) whereby the additive material is present only in the core section (11) of the secondary web (5)".

Independent claim 4 according to the ninth auxiliary request reads as follows:

"A process of producing an MMV (man-made vitreous) fibre batt comprising
forming an air laid primary web (3) of MMV fibres and binder material

wherein the primary web (3) has first (14) and second (15) opposed edge regions and a centre region (16)
by centrifugally fiberising a mineral melt to form a cloud of MMV fibre entrained in air and collecting the fibres on a permeable conveyor (22) as the primary web (3) whilst the conveyor (22) is travelling in a first direction and transferring the primary web (3) to a cross-lapping point (1) and
cross-lapping the primary web (3) at the cross-lapping point to form a secondary web (5) wherein the secondary web (5) has a first face section (12) which is formed mainly from the first edge region (14) of the primary web (3) and a second, opposed, face section (13) which is formed mainly from the second edge region (15) of the primary web and a core section (1) between the first (12) and second (13) face sections which is formed mainly from the centre region (16) of the primary web (3) and the solid particulate additive material is incorporated into the primary web (3) by applying it to the cloud of MMV fibres entrained in air wherein the centrifugal fiberisation is conducted using at least one first centrifugal fiberising spinner and at least one second centrifugal fiberising spinner wherein the spinners are arranged substantially transverse to the first direction
and the additive material is applied to the cloud of fibres such that the concentration of the additive material in the centre region (16) of the primary web (3) is higher than the concentration of the additive material in each of the first (14) and second (15) edge regions
whereby the concentration of the additive material in the core section (11) of the secondary web (5) is higher than the concentration of the additive material

in each of the first (12) and second (13) face sections".

IV. The appellants argued essentially as follows:

(a) *Main request*

(i) *Claim 1- Amendments, Article 123(2) EPC*

Claim 1 according to the main request discloses the feature that the solid particulate additive material "renders the batt suitable for fire protection".

This feature defines that the claimed batt comprising air-laid mineral fibres and binder material becomes suitable for fire protection due to the addition of the fire retardant solid particulate material.

Such a feature was not known from the application as originally filed, D0, and its presence in claim 1 violates the requirements of Article 123(2) EPC.

(b) *Fourth auxiliary request*

(i) *Claim 1- Amendments, Article 123(2) EPC*

For the same reasons as stated under point IV(a)(i) above claim 1 violates the requirements of Article 123(2) EPC.

(c) *Fifth auxiliary request*

(i) *Claim 1 - Amendments, Article 123(2) EPC*

The expression "a product selected from a fire protection product and an acoustic insulation product" as claimed in claim 1 according to the main request defines a product which is both a fire protection product and an acoustic insulation product. A product being only a fire protection product as claimed now was not mentioned in D0 and such an amendment violates the requirements of Article 123(2) EPC.

(ii) *Claim 1 - Reformatio in peius*

The deletion of the expression "which renders the batt suitable for fire protection" in claim 1 does not agree with the principle of prohibition of *reformatio in peius*.

(iii) *Claim 1 - Novelty, Article 54 EPC*

D4 teaches the skilled person that when particulate endothermic additive material having a mean particle size lower than 5 μm is used, the problem of dusting further exists. The last sentence on page 12 of D4 describes that a slab having particulate magnesium hydroxide with a mean particle size of 2 μm has been tested. It is obvious

that this slab is novelty restoring for the subject-matter of claim 1.

(d) *Sixth auxiliary request*

(i) *Claim 1 - Novelty, Article 54 EPC*

Since the first face, second face and the core sections have only been defined in claim 1 on the basis of the concentration of the added particulate material the feature of claim 1 that the thickness of the core section is up to 90% of the thickness of the batt, is automatically present in a normal batt such as known from D4 with a thickness of 40 mm, i.e. face sections with a thickness of possibly 2 mm, having an additive material with a mean particle size of 2 μm and undergoing dusting at the face sections.

(e) *Seventh auxiliary request*

(i) *Claim 1 - Inventive step, Article 56 EPC*

The combination of the teaching of D4 with either the teaching of D2 or the teaching of D8 renders the subject-matter of claim 1 not inventive.

(ii) *Claim 4 - Novelty, Article 54 EPC*

A process according to claim 4 is known from D5.

(iii) *Claim 4 - Inventive step, Article 56 EPC*

The combination of the teaching of D5 with either the teaching of D4 or the teaching of D8 renders the subject-matter of claim 4 not inventive.

(f) Eighth auxiliary request

(i) *Claim 4 - Inventive step, Article 56 EPC*

The combination of the teaching of D5 with either the teaching of D4 or the teaching of D8 renders the subject-matter of claim 4 not inventive.

(g) *Ninth auxiliary request*

(h)

(i) *Claim 4 - Inventive step, Article 56 EPC*

The combination of the teachings of D10 and D1 or of D2 and D4 renders the subject-matter of claim 4 not inventive.

V. The respondent argued essentially as follows:

(a) *Main request*

(i) *Claim 1- Amendments, Article 123 (2) EPC*

It is common sense that by adding fire retardant material to a product said product becomes a fire protection product.

Accordingly, the expressions used in claim 1 "a product selected from a fire protection product" and the additive material being a fire retardant additive material which "renders the batt suitable for fire protection" are in fact redundant. Given that the application as originally filed (D0) is directed to products "suitable for use in applications including fire protection", see page 1, lines 10 and 11, the expression used in claim 1 does not violate the requirements of Article 123(2) EPC.

(b) *Fourth auxiliary request*

(i) *Claim 1- Amendments, Article 123(2) EPC*

Claim 1 no longer being directed to an acoustic insulation product and being restricted to a specific fire retardant additive material meets the requirements of Article 123(2) EPC.

(c) *Fifth auxiliary request*

(i) *Claim 1 - Amendments, Article 123(2) EPC*

Basis for the limitation in claim 1 to a fire protection product, i.e. no longer having "a product selected from a fire protection product and an acoustic insulation product" can be found in lines 8 to 12 on page 1 of D0.

(ii) *Claim 1 - Reformatio in peius*

The deletion of the expression "which renders the batt suitable for fire protection" falls under the third provision foreseen in G 1/99 (OJ EPO 2001, 381) as being admissible.

(iii) *Claim 1 - Novelty, Article 54 EPC*

D4 teaches the skilled person to avoid dusting by using uniformly distributed particulate endothermic material having a mean particle size above 5 μm, see claim 1. It is obvious that in products made according to that teaching of D4 no dusting occurs. Given that a batt is not mentioned in D4 and that avoiding dusting is the target of D4 a batt according to claim 1 is not known from D4.

(d) *Sixth auxiliary request*

(i) *Claim 1 - Novelty, Article 54 EPC*

The feature of claim 1 that the thickness of the core section is up to 90% of the thickness of the batt is not known from D4.

(e) *Seventh auxiliary request*

(i) *Claim 1 - Inventive step, Article 56 EPC*

No hint exists in the state of the art available in the present file towards a batt according to claim 1 having the additive material present only in the core section.

(ii) *Claim 4 - Novelty, Article 54 EPC*

Applying solid particulate additive material so that its concentration in the core section of the secondary web is greater than its concentration in each of the first and second face sections of the batt is not known from D5.

(iii) *Claim 4 - Inventive step, Article 56 EPC*

According to column 1, lines 1 to 6 of D5 the product "finds a particular field of use in the insulating of stoves and the like where one side of the unit is exposed to relatively high temperatures". Therefore, the reduction of or omission of the binder takes only place at said one side of the product exposed to relatively high temperatures. No indication exists in D5 that both face sections of the batt have less of the additive material. Furthermore, the nozzles 48 distributing the binder in D5 are suitable for distributing liquid

material but they are not suitable for distributing solid particulate material.

Therefore, the skilled person starting from D5 would not be led either by the teaching of D4 or by the teaching of D8 to the subject-matter of claim 4 without exercising an inventive activity.

(f) Eighth auxiliary request

(i) *Claim 4 - Inventive step, Article 56 EPC*

Claim 4 defining a process of making a batt according to claim 1, said batt being new and inventive, is automatically new and inventive.

(g) *Ninth auxiliary request*

(i) *Claim 4 - Inventive step, Article 56 EPC*

D10 teaches the addition of extra fibres in order to get a stronger product and it does not mention any cross-lapping. D1 teaches the addition of binder and additive material mainly at the edge regions of the product. D2 is similar to D1 and teaches also the positioning of binder and additive material essentially at the edge regions of the product. D4 proposes a uniform distribution of the additive material.

Therefore, neither the combination of the teachings of D10 and D1 nor the combination of the teachings of D2 and D4 deprives the subject-matter of claim 4 of an inventive step.

Reasons for the Decision

1. *Main request*

1.1 *Claim 1 - Amendments, Article 123(2) EPC*

Claim 1 according to the main request, i.e. claim 1 as upheld by the Opposition Division, involves the feature that the solid particulate additive material "renders the batt suitable for fire protection".

This feature, especially in the absence of any other element of the batt rendering it suitable for fire protection, infers that the claimed batt comprising air-laid mineral fibres and binder material becomes suitable for fire protection solely by solid fire retardant particulate additive material having been added into the batt.

This implies on the one hand a disclosure that when no solid fire retardant particulate additive material is present, the integral MMV (man-made vitreous) fibre batt comprising air-laid mineral fibres and binder material as otherwise claimed in claim 1 is not a batt suitable for fire protection, and on the other hand the disclosure that the addition of any amount of said additive material, i.e. even the amount of three

molecules of said additive material, renders automatically the batt suitable for fire protection. Neither of these disclosures implied by claim 1 has a basis in the application as originally filed (D0).

Furthermore, on page 2, lines 26 to 36 of D0 it is stated that it is well known to the person skilled in the art to distribute in a MMV fibre batt comprising MMV fibres and binder material a particulate fire retardant material which improves the fire resistance properties of the batt. D4 is mentioned as an example for such a case. Accordingly, it is known to the person skilled in the art that particulate fire retardant material when added to a MVV-fibre batt improves the fire resistance properties of the batt. The fact established by claim 1, namely that the addition of any amount of such an additive material renders automatically the batt into which it is added suitable for fire protection is not mentioned in D0 nor does it reflect reality.

It is well known to the skilled person that in case where the incorporation of only one specific element results in the product having specific properties that then it is indispensable for the manufacturing of the product to know at least the minimum amount of said ingredient to be present in said product. Such an information is missing in claim 1.

Therefore, claim 1 according to the main request violates the requirements of Article 123(2) EPC.

2. *Fourth auxiliary request*

2.1 *Claim 1 - Amendments, Article 123(2) EPC*

Claim 1 according to the fourth auxiliary request differs from claim 1 according to the main request in that the claim is no longer directed to an acoustic insulation product and in that the fire retardant additive material which renders the batt suitable for fire protection is "a carbonate or hydrate which decomposes endothermically at a temperature above 200°C".

The arguments presented in point 1.1 above apply *mutatis mutandis* to claim 1 according to the fourth auxiliary request. In claim 1 it is now claimed that it is said specific additive material which renders the batt suitable for fire protection, however, this is still independent of the amount of added material. No support can be found in D0 for such a relationship between the added material and the batt's fire protection ability.

Therefore, claim 1 according to the fourth auxiliary request also violates the requirements of Article 123(2) EPC.

3. *Fifth auxiliary request*

3.1 *Claim 1 - Amendments, Article 123(2) EPC*

Claim 1 according to the fifth auxiliary request differs from claim 1 according to the main request in that the claim is no longer directed to an acoustic

insulation product, in that the fire retardant additive material is "a carbonate or hydrate which decomposes endothermically at a temperature above 200°C" and in that the expression "and which renders the batt suitable for fire protection" has been deleted.

Basis for the feature that the fire retardant additive material is "a carbonate or hydrate which decomposes endothermically at a temperature above 200°C" can be found on page 10, lines 3 to 6 of D0. This was also not questioned by the appellants.

The appellants argued that the expression "a product selected from a fire protection product and an acoustic insulation product" as claimed in claim 1 according to the main request defined a product which is both a fire protection product and an acoustic insulation product. A product as presently claimed, being only a fire protection product, was not mentioned as such in D0 and such a claim violates the requirements of Article 123(2) EPC.

The Board cannot follow these arguments since the sentence of lines 8 to 12 of page 1 of D0, which is the basis for the expression used in claim 1 according to the main request, clearly defines that the products of D0 "are constructed so as to be suitable for use in applications including fire protection, horticulture and acoustic insulation". This means, that each product of D0 is suitable for use either in one of the above mentioned fields or in any combination of said fields. Thus, a fire protection product as presently claimed in claim 1 finds a basis in D0.

Therefore, the amendment of claim 1 according to the fifth auxiliary request does not violate the requirements of Article 123(2) EPC.

3.2 *Claim 1 - Reformatio in peius*

3.2.1 In G 1/99 (*supra*) the Enlarged Board of Appeal held that an exception to the principle of prohibition of *reformatio in peius* could be made in the case where the Opposition Division had allowed an amendment which turned out, in the appeal of the opponent as sole appellant, to be inadmissible pursuant to Article 123(2) EPC. The Enlarged Board of Appeal considered it inequitable for the patent proprietor/respondent not to be given a fair opportunity to mitigate the consequences of an error of judgement made by the Opposition Division. Accordingly, it found that in case where the Opposition Division had allowed such an inadmissible amendment, the patent proprietor/respondent may be allowed to file requests in order to overcome this deficiency, as follows:

a) in the first place, for an amendment introducing one or more originally disclosed features which limit the scope of the patent as maintained;

b) if such a limitation is not possible, for an amendment introducing one of more originally disclosed features which extend the scope of the patent as maintained, but within the limits of Article 123(3) EPC;

c) finally, if such amendments are not possible, for deletion of the inadmissible amendment, but within the limits of Article 123(3) EPC,

even if, as a result, the opponent and sole appellant is put in a worse situation than if it had not appealed.

3.2.2 In the present case claim 1 according to the main request, i.e. claim 1 as upheld amended by the Opposition Division involves the feature that the fire retardant additive material "renders the batt suitable for fire protection". As stated under point 1.1 this is an inadmissible amendment. In claim 1 according to the fifth auxiliary request the respondent has deleted said feature.

The Board establishes that solutions a) and b) for overcoming said deficiency are not applicable to the present case, since no limiting or equivalent features can be found in D0, which, when introduced into claim 1 of the main request, render said claim allowable under Article 123(2) EPC and keep it within the limits of Article 123(3) EPC. The Board further establishes that the deletion of the unallowable feature as in the present case does not violate the requirements of Article 123(3) EPC, since this feature was not present in claim 1 as granted.

Consequently, the Board concludes that the deletion of the inadmissible amendment is in agreement with the only remaining solution proposed in G 1/99 (*supra*) and allows said deletion.

3.3 *Claim 1 - Novelty, Article 54 EPC*

3.3.1 The Board first notes that D4 is directed to MMV-fibre products and their use in fire protection systems, see

title and the first two paragraphs of D4. Although said products are produced in the form of an endless web they are subsequently cut up into batts having different sizes in order to be applied to different fire protection locations, for example to different types of roof, in the interior of walls and doors of a building. The Board concludes therefore that a fire protection batt is known from D4.

3.3.2 The Board notes further that the features of claim 1 that the batt has a first face section extending inwardly from one face, a second face section extending inwardly from the opposed face and a core section between the first and second face sections, and that the concentration of the additive material in the core section is higher than the concentration of that additive in each of the face sections are not explicitly mentioned in D4.

It is, however, common ground that every batt has a first and a second face section and a core section between said two face sections. Accordingly, the first three of the above-mentioned features are implicitly disclosed in D4.

3.3.3 Therefore, it is to be examined whether also the remaining feature of claim 1 that the concentration of the additive material in the core section is higher than the concentration of that material in each of the face sections is known from D4.

On page 5, lines 4 to 8 of D4 it is stated that the "particle size of the endothermic material should preferably be as coarse as is reasonably possible so as

to allow good bonding of the endothermic material into the web without need for the use of a large amount of bonding agent". In lines 26 to 32 of the same page it is further stated that "it is necessary that the MMVF product should be bonded into the web in order that there is little or no dusting of the product from the web during transport and handling", and that "very small amounts of dusting are acceptable since the product can be covered on each surface by a fire resistant and temperature stable covering such as aluminium foil or other coating, but excessive dusting is unacceptable". According to the last sentence on page 12 of D4 "poor results were obtained by a fire resistant slab having as added particulate endothermic material magnesium hydroxide having an average particle size of 2 μm".

In D4 the above mentioned problem of dusting is solved in that it proposes a substantially uniform distribution throughout the fire protection product of said particulate endothermic material, which has a mean particle size above 5 μm, see claim 1. This means that when particulate endothermic material having a mean particle size lower than 5 μm is used the problem of dusting continues to exist and that dusting occurs more extensively at the face sections than in the core section of the fire protection product. Consequently, the fire resistant slab with 2 μm particles, as referred to, has automatically more additive material in the core section than in each of the face sections because of this dusting. Thus, the only remaining feature is also implicitly disclosed in D4.

The subject-matter of claim 1 is therefore not novel over D4 (Article 54 EPC).

4. *Sixth auxiliary request*

4.1 *Claim 1*

4.1.1 *Amendments, Article 123(2) EPC*

Claim 1 according to the sixth auxiliary request differs from claim 1 according to the fifth auxiliary request in that the thickness of the core section is up to 90% of the thickness of the batt. This additional feature finds its basis in claim 5 of D0.

Therefore, claim 1 according to the sixth auxiliary request meets the requirements of Article 123(2) EPC.

4.1.2 *Novelty, Article 54 EPC*

The additional feature of claim 1 according to the sixth auxiliary request over claim 1 according to the fifth auxiliary request is that the thickness of the core section is up to 90% of the thickness of the batt.

The first face, second face and core sections of the batt are defined in claim 1 according to the main, fourth auxiliary and fifth auxiliary requests only through the difference of the concentration of the added particulate material within said sections, without any reference to the extension of each one of said sections in relation to the thickness of the batt. The additional feature of claim 1 according to the sixth auxiliary request requires that the thickness of

the core section, i.e. of the section of the batt in which the concentration of the additive material is higher than the concentration of that material in each of the face sections, is up to 90% of the thickness of the batt. The first face section and the second face section, i.e. the parts of the batt having each a lower concentration of the additive material than in the core section, taken together, have a thickness which is more than 10% of the thickness of the batt. Since, as explained in point 3.3.3 above, dusting occurs primarily at the face sections and becomes less intensive towards the core of the batt the face sections irrespective of whether they extend to over 10% of the width of the batt or not, will always have less additive material than the remaining core section. Accordingly, also the additional feature of claim 1 according to sixth auxiliary request is present in the batt known from D4 and the subject-matter of claim 1 of the sixth auxiliary request is not novel (Article 54 EPC).

5. *Seventh auxiliary request*

5.1 *Claim 1*

For claim 1, see the eighth auxiliary request (see point 6.1 below).

5.2 *Claim 4*

5.2.1 *Amendments, Article 123(2) EPC*

Claim 4 according to the seventh auxiliary request differs from claim 6 as originally filed in that the

added material is a solid particulate material. This additional feature finds its basis in claim 2 of D0.

Therefore, claim 4 according to the seventh auxiliary request meets the requirements of Article 123(2) EPC.

5.2.2 *Novelty, Article 54 EPC*

The feature of claim 4 that solid particulate additive material is applied so that its concentration in the core section of the secondary web is greater than its concentration in each of the first and second face sections is not known from D5.

Even if the term "binder" in D5 is interpreted broadly, i.e. covering also other treating materials or materials which provide further functions in addition to their binding function (as allowed by D5, see column 5, line 62 to column 6, line 3), there is no disclosure in D5 of the application of a solid particulate additive material. In fact, the application of the binder or other treating material is carried out by spraying it on to the web via nozzles, connected to a source of fluid (column 4, lines 24 to 54).

Furthermore, according to column 1, lines 32 to 40 of D5 the binder "may be in lesser concentration or may be omitted entirely in those parts of the batt exposed to high temperatures or where, for other reasons, lower concentration or omission of the binder is desired". In the above mentioned passage of D5 it is not mentioned that in the end product the concentration of the binder in each of the first and second face sections is lower

than the concentration of the binder in the core section.

The subject-matter of claim 4 is therefore new (Article 54 EPC).

5.2.3 *Inventive step, Article 56 EPC*

Starting point for the discussion of inventive step is D5, as it relates to the same kind of production process of a MMV fibre batt involving additive material as claimed in claim 4. The batt closed in D5 is for insulating stoves. As stated under point 5.2.2 above the process according to claim 4 differs from the process known from D5 in that the added material is a solid particulate material and that the concentration of said material in the core section is greater than its concentration in each of the first and second face sections.

Claim 4 is directed to a process for making a batt comprising the steps of forming an air laid primary web of MVV fibres and binder material and the step of applying solid particulate additive material to the first and/or second surface of the primary web after forming the primary web. The wording of claim 4 covers also the specific case where the solid particulate additive material is a fire retardant material, applied together with a fluid binder, i.e. the solid particulate material is applied in the form of slurry.

The effect of such fire retardant solid particulate additive material is that the insulating material is better suited for fire protection.

Starting from the process of D5, the objective problem therefore is a how to impart fire protection capability or to improve the fire protection properties of the insulating batt resulting from this process.

Applying solid particulate fire retardant particles in a slurry is exactly the way how normally solid particulate additive material is applied to a MMV fibre batt to render it fire protective, see for example D4, page 5, lines 4 to 8; page 11, lines 26 to 32. Therefore, the skilled person starting from the process of D5 (see column 5, line 62 to column 6, line 3), wherein the binder used may also incorporate materials which have additional functions, and wishing to solve the above mentioned problem, would have at his disposal the teaching of D4, in which a slurry of solid particulate fire retardant particles in a liquid is used, see also D4, page 2, line 28 to page 3, line 19 and page 7, lines 4 to 8.

Furthermore, in column 1, lines 32 to 40 of D5 it is stated that the "principal object of the invention is the provision of a method of forming an insulating batt in a manner to distribute the binder in accordance with a predetermined plan, whereby the binder may be in lesser concentration or may be omitted entirely in those parts of the batt exposed to high temperatures..." (emphasis added by the Board), and in column 1, lines 41 to 51 it is stated that "... applying a binder or other treating material thereto in a manner to provide a lesser concentration of the material in certain selected areas of the lap..." (emphasis added by the Board). The above mentioned

citations provide the skilled person with the teaching that in case both sides of the batt are exposed to relatively high temperatures both exposed sides should have a lower concentration of the binder. In applying this teaching the person skilled in the art would therefore provide the slurry of liquid binder and solid particulate fire retardant additive material only in the middle of the web, prior to cross-lapping, such that in the finished batt the face sections have a lower concentration of binder and additive material than the core section. D5 provides the skilled person with the necessary teaching in column 4, lines 35 to 39: "Nozzles 48 are arranged in predetermined pattern to apply the binder or other treating material to the fibrous layer or lap in different concentrations widthwise (emphasis added by the Board) of the lap". Accordingly, the skilled person would be carrying out the process of distributing the additive material in the batt according to claim 4, which as a result does not involve an inventive step.

5.2.4 The respondent argued that according to column 1, lines 1 to 6 of D5 the product "finds a particular field of use in the insulating of stoves and the like where one side of the unit is exposed to relatively high temperatures". Therefore, the reduction or omission of the binder takes only place at said one side of the product exposed to relatively high temperatures. No indication exists in D5 that both face sections of the batt should have less additive material. Furthermore, the nozzles 48 distributing the binder in D5 are suitable for distributing liquid material but they are not suitable for distributing slurry with solid particulate material.

The Board is of a different opinion. Firstly, according to column 1, lines 32 to 51 of D5 there is mention of a plurality of parts of the batt which are exposed to high temperatures. The Board considers that it is more likely that these parts concern the face sections of the batt and that therefore the skilled person extracts from D5 the teaching that these sections should have a reduced amount of the binder. As a consequence, in such a batt the core section will automatically have a higher concentration of the additive material than the first face and second face sections. Secondly, as it is well-known in the art, see D4, page 7, lines 4 to 8; page 9, lines 11 to 16; page 10, lines 12 to 16 to spray solid particulate additive material in a suspension of liquid binder in the form of a slurry through "liquid flow outlets", the Board considers that the nozzles 48 disclosed in D5 would have no problem in distributing this slurry onto the web.

Therefore, claim 4 does not involve an inventive step (Article 56 EPC).

6. *Eighth auxiliary request*

6.1 *Claim 1*

Claim 1 of the eighth auxiliary request is identical with claim 1 of the seventh auxiliary request. Therefore, points 6.1.1 to 6.1.5 below apply also to claim 1 of the seventh auxiliary request.

6.1.1 *Amendments, Article 123(2) EPC*

Claim 1 according to the eighth auxiliary request differs from claim 1 according to the sixth auxiliary request in that the additive material is present only in the core section.

Support for this additional feature can be found on page 26, lines 3 to 6 of D0.

Therefore, claim 1 according to the eighth auxiliary request meets the requirements of Article 123(2) EPC.

6.1.2 *Novelty, Article 54 EPC*

Novelty of the subject matter of claim 1 was not questioned by the appellants. The Board has ascertained that none of the prior art documents in the file discloses a batt having all of the features of claim 1.

Therefore, the subject-matter of claim 1 according to the eighth auxiliary request fulfils the requirements of novelty, Article 54 EPC.

6.1.3 *Inventive step, Article 56 EPC*

The batt according to claim 1 differs from the batt known from D4 in that the additive material is present only in the core section.

The presence of the specific fire retardant additive material of claim 1 only in the core section allows a more efficient batt as far as it concerns fire protection, since by this specific distribution of the additive material an equivalent fire protection effect can be obtained using a lower total amount of fire

retardant additive, see paragraph [0022] of the patent specification (corresponding to page 5, lines 21 to 25 of D0).

Since also the other prior art documents in the file fail to disclose any hint to provide only the core section of the batt with the specific fire retardant additive material the skilled person would have to apply an inventive activity in order to arrive at the subject-matter of claim 1.

6.1.4 The appellants argued as follows:
D2 teaches the skilled person that the additive material can be applied to any part of the batt, i.e. the skilled person can inverse the distribution shown in figure 5 of D2 and extract from D2 the teaching that the additive material has to be applied mainly in the core section of the batt. Applying this teaching to the batt known from D4 the skilled person would automatically arrive at a batt according to claim 1.

Also figure 2 of D8 teaches the skilled person that it is the middle part of the batt into which the additive material has to be added. Therefore, the combination of the teachings of D4 and D8 renders the subject-matter of claim 1 not inventive.

6.1.5 The Board cannot follow the arguments of the appellants for the following reasons:

D4 is directed to the problem of avoiding dusting and it proposes a uniform distribution of a fire retardant particulate additive material having a mean particle size above 5 μm. On the other hand, D2 relates to the

distribution of the binder or of a mixture of binders applied to mineral wool fibres. In column 3, lines 14 to 19 of D2 it is stated that "a completely constant and homogeneously distributed binder does not always give an optimum product. In cases when there is no need for the same content of binder all over the mineral wool product the inner of the product has the least need or [*sic*] a binder". This passage of D2 together with the figure 5 teaches the skilled person that the concentration of the binder in the core has to be less than the concentration of the binder at the end portions of the product. D2 provides no pointer or motivation for the skilled person to change the uniform distribution of the additive material as proposed in D4. But even if the skilled person would do so, D2 would fail to provide the hint for an inversion of the binder/additive material distribution as shown in figure 5 nor for a total omission of the binder/additive material at the edge portions of the product (which in the cross-lapped final product would become the face sections). Accordingly, the skilled person would not combine the teachings of D4 and D2 with each other and if he would do so he would not arrive at the subject-matter of claim 1.

D8 is mainly concerned with the selection of the right fire retardant additive material. D8 is indifferent about the positioning or the distribution of the fire retardant additive material in the batt, see for example claim 1 of D8 lacking any mention of where the additive material is positioned. According to the preferred embodiment of D8 a separate septum carrying a phosphate-containing compound as fire retardant material is interposed between two layers produced from

a bisected glass wool matt, see page 3, lines 3 to 14 and the paragraph bridging pages 4 and 5. There is no indication in D8 that this location has any special effect, which then should also be strived at in an integral fibre batt (like the one known from D4) in order to improve the fire protection efficiency of such a batt. In fact, the application of the teaching of D8 to the manner of producing a fire resistant batt as proposed in D4 would require a complete restructuring of the production method, eliminating the essential feature of D4 by which a fire retardant material is sprayed into the cloud of fibres before the latter is collected on a collector.

Therefore, the subject-matter of claim 1 of the eighth auxiliary request involves an inventive step (Article 56 EPC).

6.2 *Claim 4*

6.2.1 *Amendments, Article 123(2) EPC*

The process according to claim 4 of the eighth auxiliary request differs from the process according to claim 4 according to the seventh auxiliary request in that it is a process of making a MMV fibre batt "according to claim 1" and in that the additive material is applied to the first and/or second surfaces of the primary web only in the central region whereby the additive material is present only in the core section of the secondary web.

Support for these additional features can be found on page 26, lines 3 to 6 of D0.

Therefore, claim 4 according to the eighth auxiliary request meets the requirements of Article 123(2) EPC.

6.2.2 *Inventive step, Article 56 EPC*

The process according to claim 4 differs from the process known from D5 in that:
a) the additive material is a solid particulate fire retardant material, which is
b) applied to the first and/or second surfaces of the primary web
c) only in the central region whereby the additive material is present only in the core section of the secondary web.

Features a) and b) cannot support inventive step for the same reasons as given in point 5.2.3 above.

Feature c):
As argued under point 5.2.3 above, in column 1, lines 32 to 40 of D5 it is stated that the "principal object of the invention is the provision of a method of forming an insulating batt in a manner to distribute the binder in accordance with a predetermined plan, whereby the binder may be in lesser concentration or may be omitted entirely in those parts of the batt exposed to high temperatures..." (emphasis added by the Board), and in column 1, lines 41 to 51 it is stated that "... applying a binder or other treating material thereto in a manner to provide a lesser concentration of the material in certain selected areas of the lap..." (emphasis added by the Board). The above mentioned citations provide the skilled person with the

teaching that in case that both sides of the batt are exposed to relatively high temperatures these exposed sides should have either a lower concentration of the added material or the added material should be even omitted entirely. The person skilled in the art thus receives the information that depending on the circumstances of use of the batt he should make his choice. Both choices being obvious, the provision of the binder plus additive material only in the centre region of the primary web, thus ending up with the additive material being present only in the core section of the secondary web after cross-lapping, cannot involve inventive step.

Therefore, the subject-matter of claim 4 does not fulfil the requirements of Article 56 EPC.

6.2.3 *The* respondent argued that since claim 4 contained a reference to claim 1 which was directed to an inventive product (see point 6.1 above), automatically process claim 4 relating to the making of said product would also involve inventive step.

This principle would be applicable when the claimed process steps inevitably result in the claimed product (see Guidelines for Examination in the EPO (version 2005), C-IV, 9.12, second sentence), however no indication exists in the process steps of claim 4 that the "solid particulate additive material" mentioned therein is the one of product claim 1. In the same sense, claim 4 relates to "a process for making a man made vitreous (MMV) fibre batt according to claim 1...", i.e. the reference can also relate to only the MMV fibre batt-features of claim 1, i.e. not involving the

specific additive material claimed therein. Thus, in the present case the process steps of claim 4 do not necessarily result in the product according to claim 1.

7. *Ninth auxiliary request*

7.1 *Claim 1*

Claim 1 of this request is the same as claim 1 of the seventh and eighth auxiliary request, see points 5.1 and 6.1 above.

7.2 *Claim 4 - Inventive step, Article 56 EPC*

7.2.1 The closest prior art for discussing inventive step of this process claim is no longer D5, but D10, which relates to forming an air laid primary web of MMV fibres and binder material by centrifugally fiberising a mineral melt to form a cloud of MMV fibre entrained in air and collecting the fibres on a permeable conveyor as the primary web, said primary web having first and second opposed edge regions and a centre region, wherein the additive material is incorporated into the primary web by applying it to the cloud of MMV fibres entrained in air and wherein the centrifugal fiberisation is conducted using two centrifugal fiberising spinners arranged substantially transverse to the conveyor's travelling direction. The process according to claim 4 differs from the process known from D10 in that the primary web is transported to a cross-lapping point, that the primary web is cross-lapped in order to form a secondary web and in that the concentration of the solid particulate additive material in the centre region of the primary web and

afterwards in the core section of the secondary web is higher than the concentration of the additive material in each of the first and second edge regions (which become the first and second face sections).

The higher concentration of the solid particulate additive material in the core section allows the production of a more efficient batt, since through this specific distribution of the additive material an equivalent effect can be obtained without the problem of dusting or of reduced mechanical strength and at the same time using a lower total amount of additive material, see paragraphs [0020] to [0022] of the patent specification (corresponding to page 5, lines 13 to 25 of D0).

The prior art documents in the file do not give any indication to a person skilled in the art starting from the process known from D10 to apply the additive material such that the concentration in the core section is higher than in each of the face sections of the secondary web.

7.2.2 The appellants first argued that according to the passage in column 7, line 45 to column 8, line 9 of D10 the cover layer has as a solid particulate additive material: different non-metallic fibres ("andersartige nicht-metallische Fasern") and according to the passage in column 11, lines 5 to 31 a batt is produced having a core section with this additive material and two face sections without the additive material. In order to have higher batt heights the skilled person will try to take advantage of the cross-lapping method and add that to the process of D10. Such a method is well known to

the person skilled in the art, see for example D1, see column 5, lines 2 to 16. D1 further teaches that the different parts of the primary web may have different amounts of binder and additive material such that this results in face sections having a composition different from the core section in the final batt, see column 3, lines 21 to 28 and line 67 to column 4, line 10; figures 5a, 5b. It is then obvious to the skilled person to apply said teaching of D1 to the process known from D10 and accordingly provide the additive material to the cloud of fibres such that the concentration of the additive material in the centre region of the primary web is higher than the concentration of the additive material in each of the first and second edge regions, resulting in a higher concentration of the additive material in the core section of the secondary web (the final batt).

The appellants argued further that D2 discloses a process of producing a MMV fibre batt where an air laid primary web is formed and collected on a permeable conveyor. The conveyor is travelling in a first direction and transferring the primary web to a cross-lapping point, where it is cross-lapped in order to form a secondary web, see column 2, lines 33 to 41. Further, D2 discloses that a binder and an additive material are incorporated into the primary web by applying them to the cloud of MMV fibres. According to the description of D2 it is possible to change the inner layer of the product by supplying therein a binder of another type, or another amount, see column 3, line 57 to column 4, line 2; column 4, lines 44 to 50. It is an obvious choice for a person skilled in the art to modify the process of D2 by applying the teaching of

D4 and incorporating solid particulate material in the core section of the collected web, since D4 discloses the process of making a MMV fibre product that comprises a non-homogeneous distribution of solid particulate additive material in the final batt, the solid particulate additive material being in the form of a slurry sprayed into the cloud of fibres before it is laid, see page 7, lines 4 to 8 and page 8, lines 19 to 22.

7.2.3 The Board cannot agree with both argumentation lines presented by the appellants for the following reasons:

Firstly, according to D10 non-metallic fibres are added to the batt in order to improve its compression strength without diminishing its insulating ability, see column 3, lines 27 to 31; claim 1. The application of cross-lapping to the process known from D10 would cause a redistribution of the fibres which would run counter to this objective. Furthermore, D1 teaches to increase the concentration of the additive material at the side edges of the primary web, as can be seen from figures 5a and 5b, instead of increasing it in the centre region, i.e. the skilled person would have to go against this teaching of D1. In any case, the application of the system of D1, i.e. the application of a different material in (a) centre region(s) of the primary web would involve a total re-design of the process and apparatus of D10, which goes beyond the application of normal technical skills.

Secondly, D2 discloses a process which is similar to the one of D1 and also teaches that the core section of

the final batt has the lesser amount of binder, see column 3, lines 14 to 19. The skilled person thus would have to go against this teaching as well. Further, in the process of D4 the solid particulate material slurry is applied directly into the cloud of fibres, thus there is no distinction of where this particulate material ends up in the final batt. The combination of these teachings thus cannot lead to the process of claim 4.

7.2.4 For the above-mentioned reasons the subject-matter of claim 4 involves an inventive step (Article 56 EPC).

Claims 2 and 3 being claims dependent on claim 1 and claims 5 to 9 being claims dependent on claim 4, thus all directed to preferred embodiments of the invention likewise involve inventive step.

8. *Additional remarks*

In claim 1 according to the ninth auxiliary request a comma is missing between the expressions "wherein the concentration of the additive material in the core section (11) is higher than the concentration of that additive in each of the face sections (12, 13)" and "in which the thickness of the core section (11) is up to 90% of the thickness of the batt". The Board considers this omission as a clerical error which is obvious to the reasonable reader. This error does not affect the clarity of the subject-matter of the claim. The parties, nevertheless, might resolve this clerical error in the remitted proceedings.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance with the order to maintain the patent on the basis of the figures 1 to 4 as granted, the following claims and a description to be adapted:
claims 1 to 9 as filed as the ninth auxiliary request during the oral proceedings.

The Registrar: The Chairman:

A. Wolinski H. Meinders