

**Internal distribution code:**

- (A)  Publication in OJ  
(B)  To Chairmen and Members  
(C)  To Chairmen  
(D)  No distribution

**Datasheet for the decision  
of 19 April 2011**

**Case Number:** T 1063/09 - 3.2.03  
**Application Number:** 00968902.7  
**Publication Number:** 1228277  
**IPC:** E04C 2/04, B32B 13/08  
**Language of the proceedings:** EN

**Title of invention:**  
Wallboard sheet including aerated concrete core

**Patentee:**  
HHI A/S af 3. maj 2004

**Opponent:**  
Xella Baustoffe GmbH

**Headword:**

-

**Relevant legal provisions:**

EPC Art. 54, 56

**Relevant legal provisions (EPC 1973):**

-

**Keyword:**

"Admittance of late submissions (no)"

"Novelty (yes)"

"Inventive step (yes)"

**Decisions cited:**

-

**Catchword:**

-



Case Number: T 1063/09 - 3.2.03

**D E C I S I O N**  
of the Technical Board of Appeal 3.2.03  
of 19 April 2011

**Appellant:** HHI A/S af 3. maj 2004  
(Patent Proprietor) Dampfaergevej 27-29, 4th floor  
DK-2100 Copenhagen Ø (DK)

**Representative:** von Eichel-Streiber, Caspar  
Raffay & Fleck  
Patentanwälte  
Grosse Bleichen 8  
D-20354 Hamburg (DE)

**Respondent:** Xella Baustoffe GmbH  
(Opponent) Franz-Haniel-Platz 6-8  
D-47119 Duisburg (DE)

**Representative:** Solf, Alexander  
Patentanwälte  
Dr. Solf & Zapf  
Candidplatz 15  
D-81543 München (DE)

**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 26 March 2009  
revoking European patent No. 1228277 pursuant  
to Article 101(3)(b) EPC.

**Composition of the Board:**

**Chairman:** U. Krause  
**Members:** E. Frank  
K. Garnett

## Summary of Facts and Submissions

- I. The appeal lies from the decision of the Opposition Division dated 17 March 2009 and posted on 26 March 2009 to revoke the European patent No. 1 228 277 pursuant to Article 101(3)(b) EPC.
- II. The Appellant (Proprietor) filed a notice of Appeal on 13 May 2009, paying the appeal fee on the same day. The statement of grounds of appeal was submitted on 27 July 2009.
- III. A communication pursuant to Article 15(1) RPBA was issued together with a summons to attend oral proceedings, which were duly held on 19 April 2011. During the oral proceedings, the Respondent (Opponent) filed a new document D14, and the Appellant withdrew its then existing main and auxiliary requests, making an amended auxiliary request its sole request.
- IV. The Appellant requested that the decision under appeal be set aside and the patent be maintained on the basis of the request filed during the oral proceedings.
- The Respondent (Opponent) requested that the appeal be dismissed.
- V. The wording of claim 1 reads as follows:
- "1. A wallboard sheet (30,60) comprising a core (40,70) of autoclaved aerated concrete having opposing first and second major surfaces (40a,40b,70a,70b), and face layers (42a,42b,72a,72b) on both of said major surfaces

of the core, characterised in that said face layers are paper face layers (42a,42b,72a,72b)."

VI. The following evidence has been considered for the purposes of the present decision:

D1 = DE 196 52 488 A

D2 = CH 658 487 A

D4 = DE 28 54 228 A

D6 = DE 18 52 594

D7 = EP 0 503 383 A

D8 = US 4 551 384

D14 = extracts from "Römpps Chemie-Lexikon", 8th edition (1985), pp.2981 - 2986

VII. The parties submitted the following arguments:

VII.1 Late submissions

The Respondent made reference to documents D7 and D8, which had been cited in the notice of opposition, in the appeal procedure for the first time during oral proceedings: Based on the disclosure of D7 and D8, fiberglass nets and cardboards were equivalent reinforcements for panels of aerated material.

The Appellant argued that D7 and D8 were not relevant and should not, however, be considered at such a late stage of the proceedings.

VII.2 Novelty

The Respondent argued that the face layers of the patent's wallboard sheet "might" comprise paper and

could also be adhesively secured to the major surfaces of the core, whereby the adhesive was incorporated into the face layers, ie the layers were soaked with adhesive, cf. patent, col.6, paragraph [0029].

Paragraph [0029] referred to the non-moisture resistant wallboard sheet of the first embodiment, but not to the moisture resistant backerboard sheet as described later on in the patent.

Therefore, the wallboard sheet's face layers of claim 1 apparently did not need to consist of pure paper, but rather, could contain adhesives or resins. Apart from that, paper always comprised other components, cf. D14: eg, recycled paper ("*aus Halbstoffen*"), fillers, dye stuff, resin, glue etc. Consequently, the "*Schichtstoffpressplatten*" of D2 (on both major surfaces of the core) had to be also considered a paper layer, and the outermost "*Überpresserpapier*", although somewhat soaked with resin, thus formed a paper face layer according to claim 1 of the patent.

Moreover, D1 disclosed a wallboard having an autoclaved aerated concrete core, cf. D1, col.2, last paragraph, and col.7, last paragraph. In col.3, last paragraph of D1 it was described that (visible) face layers of the wallboard could serve as an information carrier made of, eg, paper or cardboard (cf. D1, col.5, third last paragraph, and claim 8). As to the selection of paper and cardboard it was pointed out that these materials are preferred in respect of their intended use as an information carrier, and thus were cited in the first place. Since the wallboard of claim 1 did not define any thickness and paragraph [0002] of the patent specified its use for partitions or walls of rooms, no

difference could be seen between the wallboards of claim 1 and the panel elements ("*Plattenelemente*") of D1. Therefore claim 1 lacked novelty over D2 and D1.

The Appellant argued that the patent distinguished between an exposed paper layer (wallboard sheet) and a moisture-resistant layer (backerboard sheet) at the surface of the sheet, cf. patent, col.11, paragraph [0054] and col.14, paragraph [0065]. Thus, a "paper" face layer comprised paper on its outermost side, but not resin. Paragraph [0029] of the patent also gave no clue to the nature of the paper face layer, since prior to grant, other cover layers were also envisaged, and possibly some contradictions were not omitted from the present specification. However, a paper face layer according to claim 1 of the patent could not comprise resin, let alone a smooth resin film at its outermost side.

D2 concerned a compound element having a laminated cover layer ("*Schichtstoffpressplatte*"), the latter being applied onto a core material. Such a laminate was produced independently of the core, whereby paper and resin were compressed under high temperature and pressure, cf. D2, page 2, left col. last paragraph, and right col. first paragraph. Because of the presence of high temperatures whilst being compressed, the resin was partly extruded, and formed a finishing surface. This outermost decorative face layer thus was a scratchproof, moisture-resistant resin layer, irrespective of the additional provision of a "*Überpresserpapier*", cf. D2, page 2, right col., line 30 onwards. Therefore, D2 did not disclose a paper face layer within the meaning of claim 1.

Furthermore, wallboard sheets of the patent were commonly used as partition walls or wall claddings, ie interior fittings, typically fastened to a supporting framework, cf. paragraph [0002]. As opposed to this, D1 disclosed big building elements, such as prefabricated walls with doors included. Moreover, the paper layers of D1's panels did not form finishing layers, since they only served as a carrier for indicative markings of, eg, the placement of electric switches or wall sockets. Finally, a certain material selection from lists by way of example for both the panel and information carrier, ie the use of aerated concrete and paper, respectively, was not derivable from D1. Claim 1 therefore was novel over D2 and D1.

### VII.3 Inventive step

The Respondent argued that D4 disclosed a wallboard sheet of aerated concrete, suitable for a partition wall or cladding within the meaning of the patent. This wallboard was reinforced on both sides at the surface by glass fibre meshes, which were not necessarily embedded in fresh glue mortar, cf. D4, claim 12. Thus, the wallboard sheet of claim 1 differed from D4 in that its reinforcement consisted of paper, eg cardboard. Since this was long known for reinforcing plasterboards, it was obvious, based on common technical knowledge, to replace the glass fibre mesh with cardboard for reasons of cost-saving. It might be that cardboard had not been applied in D4 because cardboard was simply not considered moisture-proof, like the patent's wallboards, in contrast to backerboards.

However, D6 also described plasterboards which were reinforced by means of cardboards. As to the way of reinforcing, it could be deduced from page 3 (handwritten), third paragraph, of D6 that cardboard was just equivalent to meshes. The reinforcement was also suitable to be attached by all kinds of hardenable masses, cf. D6, page 4 (handwritten), fourth paragraph, and claim 1. Although the plasterboards of D6 were reinforced by cardboard on one side only, cardboard could likewise be used on both sides. Another option would be the additional provision of cardboard, ie onto a mesh, cf. D6, page 3 (handwritten), last paragraph. Consequently, starting from D4 and based on the teaching of D6, it was trivial to provide paper reinforcements instead of (or in addition to) glass fibre meshes, eg, for the production of a wallboard at lower cost or a non-humid area. Finally, a selection of aerated concrete and paper for panel and information carrier, respectively, was obvious for the skilled person, and thus claim 1 was also not inventive in the light of D1, or D4 and D1.

The Appellant argued that the reinforcement mats of the aerated concrete core of D4 were embedded in mortar, cf. D4, page 7 (handwritten), second paragraph, and page 9 (handwritten), first paragraph. As a result, the face layer of D4 was composed of both cured glue-mortar and glass fibre mesh, and apart from that, did not make up a finished smooth surface. Moreover, even though cardboard as well as meshes were suitable reinforcements for plasterboards in D6, this did not imply that both of them were likewise suitable for wallboard sheets of aerated concrete. In fact, only



glass fibre meshes at both sides of an aerated core were suggested in the art, which were connected to the core by being embedded into glue mortar. This was an over twenty year old technology, cf. D4. Although plasterboards such as of D6 were also a well known and old technology, their reinforcing paper face layers were never taken into consideration in combination with aerated concrete cores, since thin elements of aerated concrete were much more difficult to handle, cf. D4, page 8(handwritten), last paragraph. There was also no hint from D4 that its wallboard sheet had to be used for areas subject to high moisture or humidity, which possibly could have led away from a (thus disadvantageous) use of paper.

But even if, starting from D4, the paper face layer of D6 was considered by the skilled person, it would have been embedded in glue resulting in a rough surface, and, based on the teaching of D6, would have been applied in any event on one side only, but not on both sides of the core, cf. D6, page 3 (handwritten), third paragraph. D1 was not relevant, since the information carrier of D1's building panel did not form a reinforcement of a wallboard's core. Therefore, the provision of paper face layers on both sides of a core according to claim 1 involved an inventive step.

## **Reasons for the Decision**

1. The appeal is admissible.

2. *Admissibility of late submissions*

Although documents D7 and D8 were filed with the Respondent's notice of opposition, they had never been addressed in the written appeal proceedings. As regards the submissions about reinforcements of aerated materials with respect to D7 and D8 raised for the first time during oral proceedings, the Board considered these documents not to be prima facie relevant in this respect. The Board thus exercised its discretion under Article 13(3) RPBA not to admit these submissions into the proceedings at that late stage.

The late filed document D14, providing additional information on paper manufacturing, was accepted by the Appellant (and also by the Board), and therefore admitted into the proceedings, Article 13(3) RPBA.

3. Novelty  
(*Article 54 EPC*)

3.1 The Board accepts that, as argued by the Appellant, the only technically meaningful interpretation of the term "paper face layer" of claim 1 is the provision of an exposed paper layer, thereby forming the front most layer of the wallboard's major surface. Thus, the subject-matter of claim 1 considered as such is clearly understandable for the skilled person, and any further interpretation in the light of the patent's original disclosure to assess novelty of claim 1 therefore is not appropriate. It is noted that face layers according to claim 1, being solely made of paper on both outermost sides of the wallboard sheet, are also supported by the first wallboard sheet's embodiment of

paragraph [0029] of the patent, since a face layer which "may comprise" paper is not contradictory to a layer consisting of only paper.

- 3.2 The document D2 relates to compound elements for interior fittings of buildings such as wall claddings, which comprise decorative cover panels ("*zwei dekorative Schichtpressstoffplatten 3,4*") on both sides of an aerated concrete core material ("*Träger 2*"). However, these decorative cover panels are made of a paper laminate prior to being adhered to the core (cf. D2, page 2, line 44, left column to line 43, right column, and figure). Such a paper laminate consists of some layers of absorbent kraft paper ("*Kraftpapier*") and a final layer of decor paper ("*Dekorbogen*") which is then protected with an overlay ("*Überpresserpapier*"). The pile of lamination papers is first soaked and covered with resin ("*Phenolharz*"), and then compressed under high temperature and pressure to form a hard composite after having been cured. Therefore, as argued by the Appellant, the outermost decorative face layer of D2's laminate forms a scratchproof, moisture-resistant resin layer (cf. D2, page 3, lines 6 to 14, left column).

Although the Board acknowledges that during the papermaking process recycled paper and other additives such as fillers, colour dyes, glue resin, etc. (cf. D14) are mixed with the pulp slush, the resulting finished paper, ie a paper face layer of claim 1 of the patent, does not constitute a hardened resin layer on its outermost side, even if the paper face layer has been adhesively secured to the opposing first and second major surfaces of the core (cf. patent,

paragraph [0029]). The subject-matter of claim 1 therefore differs from D2's disclosure in that paper face layers are provided instead of paper laminates.

3.3 Wallboard sheets of claim 1 of the patent are widely used to form partitions or walls of rooms, or various claddings, ie, not to bear a static load. Contrary to the Respondent's view, wallboard sheets are thus not self-supporting, but rather, have to be fastened to a suitable supporting framework (cf. patent, paragraph [0002]). Therefore, as to their dimension and function, the large prefabricated, generally static load-bearing, building panels ("*Plattenelemente 1*") of D1's disclosure would not be recognized as wallboard sheets by a person skilled in the art (cf. D1, abstract and figures). Apart from that, multiple materials for both the panel element and information carrier, respectively, are cited in D1, cf. column 7, lines 54 to 57, and column 5, lines 49 to 53. Therefore, in the view of the Board, a selection of aerated concrete (panel element) and paper (information carrier) from two lists of considerable length, is not disclosed by D1. Therefore, D1 does not disclose wallboard sheets, let alone an aerated concrete core in context with a paper face layer (irrespective of whether the information carrier of D1 actually can be understood as a surface finishing layer or not).

3.4 Novelty of claim 1 over the remaining known prior art was not disputed by the Respondent, and is also acknowledged by the Board. Therefore the subject-matter of claim 1 meets the requirements of novelty.

4. Inventive step  
(Article 56 EPC)

4.1 The Board agrees with the parties that document D4 forms the closest prior art with respect to the subject-matter of claim 1, since D4 describes a wallboard sheet having a thin aerated concrete core, whereby its strength is increased by means of glass fibre mesh reinforcements at both surfaces of the core. In doing so, handling and transport advantages can be obtained (cf. D4, page 8 (handwritten), last paragraph), notwithstanding the danger of large aerated concrete sheets being prone to fraction. However, as argued by the Appellant, to cause the glass fibre meshes to be adhered to both surfaces of the aerated concrete core, the meshes are (at least partly) embedded into previously applied glue mortar, until the mortar is cured (cf. D4, page 9 (handwritten), first paragraph). These cover layers of thin hardened mortar, together with glass fibre meshes, do not appear to be smoothly finished outermost face layers, eg suitable for painting, but rough surfaces yet to be treated. The parties agreed that the subject-matter of claim 1 thus differs from the disclosure of D4 in that its reinforcement face layers are paper face layers.

In the Board's view, the problem underlying this distinguishing feature can be seen in the provision of smoother surfaces, eg to be painted, whilst the strength of the wallboard sheet is maintained.

4.2 To reinforce gypsum plasterboards with cardboard, ie paper, is well known in the art, cf. patent, paragraph [0002], and document D6 (cf. page 2 (handwritten),

first paragraph). However, in the opinion of the Board, based on the problematic material properties of thin aerated concrete known from D4, it seems doubtful that the skilled person would directly see, from a knowledge of commonly known plasterboards, viz. page 4 (handwritten), third paragraph, of D6, how cardboards had to be suitably connected to a fragile aerated concrete core, so as to ultimately withstand the critical tensile forces acting on the core. This problem seems to be also to have been known in the art for a long time, and had been formerly solved by means, for example, of centrally arranged steel mats, cf. D4, page 5 (handwritten), second paragraph, page 7 (handwritten), first paragraph, and page 8 (handwritten), last paragraph. Moreover, D4 gives no clue that its wallboards were possibly water-resistant because of use of glass fibre meshes, and that otherwise paper reinforcements could be equally well applied.

As to D6, contrary to the Respondent's view, this document also leads away from a provision of cardboards on both sides, since it teaches the reinforcing of one side of the core with cardboard (or mesh plus cardboard), and its respective opposed side with meshes, for reasons of fire protection (cf. D6, page 3 (handwritten), last two paragraphs).

Finally, document D1 would not be considered by the skilled person in this context, since it does not relate to reinforcing paper face layers of wallboard sheets, cf. point 3.3 above.

4.3 Therefore the Board concludes that, starting from D4 and taking into consideration his ordinary common technical knowledge, the skilled person, faced with the problem stated above, would not get any indication from known plasterboards, let alone from D6, to modify D4's reinforcement layers and their way of connection such that its glass fibre meshes should be replaced on both major surfaces by cardboards as finishing layers, thus to arrive at paper faces layers according to claim 1.

Because of paper face layers on both sides of its aerated concrete core, the patent in suit provides a wallboard sheet which is relatively lightweight, strong, and can be painted after mounting or covered with decorative wall covering, cf. patent, paragraphs [0002] and [0011].

Therefore the subject-matter of claim 1 involves an inventive step.

**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 claims 1 to 13 according to the request filed during the oral proceedings after any necessary consequential adaptation of the description and the figures.

The Registrar

The Chairman

A. Counillon

U. Krause