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**Datasheet for the decision
of 4 March 2021**

Case Number: T 1954/17 - 3.2.03

Application Number: 12700805.0

Publication Number: 2665876

IPC: E04B1/76, E04B1/80

Language of the proceedings: EN

Title of invention:
COMPOSITE THERMAL INSULATION SYSTEM

Patent Proprietor:
BASF SE

Opponent:
ROCKWOOL INTERNATIONAL A/S

Headword:

Relevant legal provisions:

EPC Art. 56, 123(2)
RPBA Art. 12(4)
RPBA 2020 Art. 12(2)

Keyword:

Inventive step - improvement not credible - obvious
modification

Amendments - added subject-matter (no)

Late-filed request - submitted with the statement of grounds
of appeal - admitted (yes)

Decisions cited:

Catchword:



Beschwerdekammern
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Chambres de recours

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Case Number: T 1954/17 - 3.2.03

D E C I S I O N
of Technical Board of Appeal 3.2.03
of 4 March 2021

Appellant: BASF SE
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Representative: BASF IP Association
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Respondent: ROCKWOOL INTERNATIONAL A/S
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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 6 July 2017
revoking European patent No. 2665876 pursuant to
Article 101(3) (b) EPC.**

Composition of the Board:

Chairman C. Donnelly
Members: B. Miller
E. Kossonakou

Summary of Facts and Submissions

- I. European patent No. 2 665 876 ("the patent") relates to a composite thermal insulation system.
- II. An opposition was filed against the patent, based on the grounds of Article 100(b) EPC and Article 100(a) EPC together with Article 56 EPC.
The opposition division revoked the patent pursuant to Articles 101(2) and 101(3) (b) EPC.

This decision was appealed by the patent proprietor ("the appellant").

The appellant requested that the decision under appeal be set aside and the patent be maintained as granted (main request) or, subsidiarily, on the basis of the auxiliary request filed with the statement setting out the grounds of appeal.

The respondent requested that the appeal be dismissed.

- III. The sole independent claim according to the main request (claim 1 as granted) reads as follows:

"An insulated building wall comprising a composite thermal insulation system and an external building wall (1), wherein the composite thermal insulation system is affixed to the side of the building wall facing away from the building, the composite thermal insulation system comprising an at least two-layer (3a to 3c) thermal insulation cladding, with at least two layers each containing from 25 to 95% by weight of aerogel and from 5 to 75% by weight of inorganic fibres and from

0 to 70% by weight of inorganic fillers, characterized in that the layers of the thermal insulation cladding are joined to one another by means of an inorganic binder (5) and the composite thermal insulation system has a gross calorific potential of less than 3 MJ per kilogram."

Claim 1 of the auxiliary request reads (amendments compared to claim 1 as granted are indicated in bold):

"An insulated building wall comprising a composite thermal insulation system and an external building wall (1), wherein the composite thermal insulation system is affixed to the side of the building wall facing away from the building, the composite thermal insulation system comprising an at least two-layer (3a to 3c) thermal insulation cladding, with at least two layers each containing from **35 to 65%** by weight of aerogel and from **15 to 65%** by weight of inorganic fibres and from 0 to **50%** by weight of inorganic fillers, characterized in that the layers of the thermal insulation cladding are joined to one another by means of **potassium water glass as** inorganic binder (5) and the composite thermal insulation system has a gross calorific potential of less than 3 MJ per kilogram."

IV. State of the art

The following documents cited already during the opposition proceedings are of particular importance for the present decision:

D10: WO 2010/046074 A1;

D14: WO 96/41924;

D17: PQ © "Potassium Silicates" information booklet.

- V. With the summons to oral proceedings, the Board sent a communication pursuant to Articles 15(1) and 17(2) of the Rules of Procedure of the Boards of Appeal (RPBA 2020) indicating to the parties its preliminary, non-binding opinion of the case.
- VI. With a letter dated 12 November 2020 the appellant commented on the preliminary remarks of the Board, in particular with regard to inventive step of the auxiliary request.
- VII. With the consent of both parties, oral proceedings were held on 4 March 2021 by videoconference.
- VIII. The appellant's arguments, as far as they are relevant for this decision, can be summarised as follows.

(a) Main request

Document D10 was not an appropriate starting point for the assessment of inventive step, since it referred to an insulation system which essentially contained a relatively thick layer of mineral wool and for which the composition of the aerogel containing layer was only vaguely defined. Moreover, the system of D10 required the application of mechanical fasteners.

The subject-matter of claim 1 of the main request differed from the disclosure of D10 in that each layer of the thermal insulation cladding contained:

- a) from 25 to 95% by weight of aerogel,
 - b) from 5 to 75% by weight of inorganic fibres and
 - c) from 0 to 70% by weight of inorganic fillers,
- and in that
- d) the layers of the thermal insulation cladding were

joined to one another by means of an inorganic binder (5) and

e) the composite thermal insulation system had a gross calorific potential of less than 3 MJ per kilogram.

The objective technical problem to be solved by the patent was derivable from paragraphs [0017], [0019], [0028] , [0040] and [0064] and could be formulated as one of how to provide a system having a reduced thickness with improved mechanical properties.

D10 was directed to composite materials comprising mineral wool and therefore did not provide any incentive for using aerogel composites comprising reinforcing fibers and aerogel in the amounts as defined in claim 1.

D14 does not relate to non-combustible insulation systems for buildings, but rather to fire-resistant insulating elements for ships and offshore installations. The term fire-resistant is not synonymous with non-combustible.

D14 also does not describe an insulation system comprising aerogel layers and therefore could not provide an incentive for the skilled person to use an inorganic binder for the insulation system described in D10.

Moreover, it was not common general knowledge that aerogel layers having an open porous, dusty surface could be adhesively bonded together with any inorganic binder.

Therefore, a combination of D10 and D14 could only be made with the benefit of hindsight.

(b) Auxiliary request

Claim 1 of the auxiliary request was based on claim 1 as granted and was further characterised by limiting the ranges for aerogel, inorganic fibres and inorganic fillers in line with page 6, lines 8 to 10 as originally filed. Furthermore, the inorganic binder was specified as potassium water glass based on claim 2 as filed.

None of the documents cited in the proceedings disclosed that potassium water glass could be used as a binder for aerogel composite layers.

IX. The respondent's respective arguments can be summarised as follows.

(a) Main Request

D10 was a suitable starting point for the assessment of inventive step. The patent has not demonstrated any effect relating to the use of a specific type of binder or the use of a specific amount of fibers or aerogel. Inorganic adhesives were known in the art as evidenced by D14 which disclosed an inorganic binder for adhesively joining high temperature resistant insulation materials. Using a known binder for its known purpose was an obvious measure for the skilled person. Arbitrarily selecting specific amounts for the aerogel or fibers according to claim 1 did not require any inventive skill.

(b) Auxiliary request

The auxiliary request had not been substantiated in the letter setting out the grounds of appeal and therefore

was not admissible pursuant to Article 12(2) RPBA 2020. Moreover, it could have been filed in opposition proceedings and should be held inadmissible pursuant to Article 12(4) RPBA 2007.

The amendments in claim 1 of the auxiliary request resulted from multiple selections and extended beyond the teaching as originally filed, contrary to the requirement of Article 123(2) EPC.

The choice of potassium silicate as an inorganic binder was arbitrary and boiled down to simply selecting it from a list of two, the other possibility being sodium silicate. Thus, the subject-matter of claim 1 of the auxiliary request was obvious for the same reasons set out in regard to claim 1 of the main request.

Reasons for the Decision

1. Main Request - Article 100(a) EPC in combination with Article 56 EPC
 - 1.1 The reasons in regard to inventive step as presented in point 8 of the contested decision are based on D10 as the closest prior art.

The appellant disputes that the skilled person would consider D10 as a promising starting point for an obvious development leading to the claimed invention, since D10 focuses on an insulation system comprising mineral wool, whereby the mineral wool plate has a thickness of 40 to 120 mm and the system requires the use of mechanical fasteners.

- 1.2 However, in selecting the closest prior art a central consideration is that it must be directed to the same purpose as the invention, since the skilled person is primarily concerned with the problem to be solved when choosing a starting point.

The patent aims at providing a composite thermal insulation system with not only good insulation performance and mechanical properties, but also which can be easily fixed to an external building wall (paragraph [0017]).

The same general problem is addressed by document D10, see page 5, lines 31 to 33.

Moreover, claim 1 of the patent neither excludes that the fibres contained in the aerogel layer are made from mineral wool nor excludes that mineral wool is present in form of additional layers or that fasteners are used for mounting the insulation system on a wall. Further, claim 1 does not contain any limitation concerning the thickness of the layers defined therein.

Hence, the argument of the appellant does not reflect the wording of claim 1 of the patent and does not put into doubt that D10 is an appropriate starting point for the assessment of inventive step.

- 1.3 D10 discloses on page 6, lines 1 to 12 and in claim 1, an insulated building wall comprising an external thermal insulation composite system (ETICS). The ETICS comprises an insulation sub-system which contains
A) a first insulating plate containing from 20 to 90 wt.% of aerogel and a second insulating plate containing mineral wool

or

B) at least one composite insulating plate containing mineral wool and from 20 to 90 wt.% of aerogel.

According to the embodiment described on page 16, lines 17 to 20 the composite thermal insulation system of D10 can comprise two or more aerogel containing layers having the same content of aerogel.

Hence, alternative B in combination with the embodiment on page 16 of D10 is a disclosure of an insulation subsystem comprising a composite insulating plate containing two or more layers, each of them comprising mineral wool and from 20 to 90 % by weight of aerogel.

D10 further confirms on page 16, lines 27 to 33, that the term "mineral wool" in general denotes a bonded non-woven mineral fibre network. Taking into account that claim 1 of the patent does not define the nature of the fibers in more detail, i.e. it does not define their material, intended use or form of application (loose fibers, woven or non-woven), it can only be concluded that the mineral wool fibers in the aerogel composite layer of D10 are fibers as broadly defined in claim 1 of the patent.

1.4 The subject-matter of claim 1 therefore differs from the insulated building wall disclosed in D10 in that:

- each layer of the thermal insulation cladding contains from 5 to 75% by weight of inorganic fibres,
- the layers of the thermal insulation cladding are joined to one another by means of an inorganic binder (5) and
- the composite thermal insulation system has a gross

calorific potential of less than 3 MJ per kilogram.

- 1.4.1 Following the problem-solution approach, it has to be established which effect is obtained by the distinguishing features in order to formulate the objective technical problem to be solved.
- 1.4.2 The appellant refers to various possible benefits addressed in paragraphs [0017],[0019], [0028], [0040] and [0064] of the patent, such as to provide an insulation system having very low thermal conductivity so that very good insulation performance is obtained even at lower layer thicknesses, high flexural strength and high long-term mechanical stability which renders the use of fasteners obsolete.

However, the patent does not establish a link between any of these benefits and the specific amounts of inorganic fibres, filler or aerogel as defined in claim 1. In particular, there is not a single comparative example demonstrating that the choice of any of the components of the composite thermal insulation system of claim 1 provides the advantages identified by the appellant. The patent therefore does not demonstrate that any of the problems identified by the appellant is solved by an insulation system as defined in claim 1 compared to the insulation system described in D10. The definition of the various weight ranges in claim 1 is rather to be regarded as arbitrary.

Furthermore, the thickness of the layers is not defined in claim 1 and the use of fasteners is not excluded by it. Hence, any possible technical problems relating to layer thickness or the use of fasteners are not conclusive in view of the claim wording. It was also argued by the appellant in this context that the higher

amount of aerogel made it possible to use thinner panels. However, the amount of aerogel required by claim 1 of the patent can vary from 25 to 95% by weight and corresponds to the range of 20 to 90% by weight of aerogel as proposed by D10. Hence, the amount of aerogel in the composite layer used according to D10 and the patent is substantially the same, contrary to the argument of the appellant.

Notwithstanding the above, it is credible that using an inorganic binder contributes to minimising the calorific potential of the insulation, since it is general technical knowledge that inorganic materials are less combustible than organic materials.

- 1.5 Hence, the objective technical problem can be regarded as one of how to provide a thermal insulating composite system fulfilling a particular burn class.
- 1.6 The subject-matter of claim 1 is an obvious solution to this problem for the following reasons.
 - 1.6.1 Defining a maximum value for the gross calorific potential is an obvious measure for the skilled person since it merely corresponds to the result to be achieved in order to meet the legislative requirements of the particular burn class.
 - 1.6.2 Further, selecting arbitrarily a minimum amount of 5 % by weight for the mineral wool fibres in the aerogel containing composite layer of D10 is also an obvious measure for the skilled person, in particular since a lower amount of fibres cannot be expected to achieve a fibre network as defined on page 16, lines 27 to 33 of D10.

- 1.6.3 In view of the aim to fulfil a specific burn class, it is common general technical knowledge that inorganic materials are less combustible than organic materials.

When looking for suitable binders, the skilled person would seek out documents describing insulation materials. As argued by the appellant, D14 is mainly concerned with insulation elements for use in ships and offshore constructions. However, it is not limited to this field, since it also discloses that the high temperature resistant multi-layered insulating element described therein can be used to secure buildings against fire (see D14 page 1, lines 1 to 4). Hence, D14 belongs in general to the same technical field as D10 and would be considered by the skilled person.

D14 states on page 2, lines 15 to 19 and on page 3, lines 31 to 32, that an inorganic binder is suitable for adhesively joining layers of insulation material while providing sufficient rigidity. As examples of heat resistant adhesives, inorganic binders selected from water glass, silicate glue and cement glue are mentioned in D14 on page 2, lines 15 to 17 and in claims 1 and 2.

Hence, D14 confirms the expectation of the skilled person that an inorganic binder can be used to adhesively join layers in an insulation system.

Therefore, it is obvious for the skilled person to select a conventional inorganic binder for joining the aerogel composite layers disclosed in D10 when seeking to reduce the calorific potential of the system.

- 1.6.4 In this regard, the appellant argued that none of the cited documents suggests that an inorganic binder is

particularly suitable for binding aerogel composite layers.

However, as the name suggests, an inorganic binder in general terms is a material intended to bind materials. No technical prejudice has been demonstrated by the appellant which would prevent the skilled person from considering inorganic binders for adhering layers containing aerogel.

Such a prejudice is also not derivable from the teaching of the patent which, on the contrary, proposes in claim 1 and paragraph [0028] that any inorganic binder can be used. In particular, no teaching can be found in the patent that there are any limitations for the choice of binder which have to be observed in order to ensure adequate bonding when the surfaces of the aerogel layers to be joined together according to claim 1 are covered in aerogel dust.

This is also not necessarily the case in view of the broad definition of claim 1 of the patent which, similarly to D10, only requires the composite layer to comprise at least 25 % by weight of aerogel. The bonding characteristics of the composite layer are therefore also determined by the nature of fibers and possibly of the filler contained therein.

In summary, the skilled person has no reason to doubt in view of their common general knowledge that an inorganic binder could be used to join adhesively composite layers comprising an aerogel.

- 1.7 The Board therefore agrees with the reasoning in point 8 of the contested decision that the subject-matter of claim 1 as granted is not based on an inventive step

and that the ground of opposition pursuant to Article 100(a) EPC in combination with Article 56 EPC prejudices the maintenance of the patent as granted.

2. Auxiliary Request - admissibility

2.1 Applicable Rules of Procedure of the Boards of Appeal

The appeal was filed before the entry into force of the revised version of the Rules of Procedure of the Boards of Appeal (RPBA 2020) on 1 January 2020. In accordance with the transitional provisions laid down in Article 25 RPBA 2020, the RPBA 2020 is applicable to appeals already pending on the date of entry into force as well as to appeals filed thereafter (Article 25 (1) RPBA 2020).

Pursuant to Article 25 (2) RPBA 2020, Article 12 (4) and (6) RPBA 2020 shall not apply to statements of grounds of appeal filed before its entry into force and to replies thereto filed in due time. Instead, Article 12 (4) RPBA 2007 continues to apply.

2.2 The auxiliary request was filed by the appellant together with the statement setting out the grounds of appeal.

The appellant explains therein how the subject-matter of claim 1 of the auxiliary request differs from the subject-matter of claim 1 as granted. Furthermore, it states that "Potassium water glass is neither disclosed or suggested as inorganic binder in D10 nor D14".

Although this statement is rather short, it explains why the appellant is of the opinion that the subject-matter of claim 1 of the auxiliary request is not

rendered obvious by the prior art discussed in the contested decision.

Hence, the Board considers that the auxiliary request is sufficiently substantiated and fulfils the requirements of Article 12(2) RPBA 2020.

- 2.3 Article 12(4) RPBA 2007 gives the Board a discretion to hold inadmissible a request, which could have been filed in opposition proceedings. In the present case the auxiliary request is based on the former auxiliary request 2 filed during opposition proceedings, which has been further limited by defining the inorganic binder in more detail on the basis of claim 2 as granted.

It can be considered as a normal behaviour by the losing party to file a new, more limited request in order to overcome the objections discussed in the contested decision.

Hence, the Board does not make use of its discretion pursuant to Article 12(4) RPBA 2007 to the disadvantage of the appellant and admits the request into the appeal proceedings.

3. Auxiliary Request - Article 123(2) EPC

Claim 1 of the auxiliary request is based on claim 1 as filed in combination with the teaching on page 6, lines 8 to 10 and claim 2 as originally filed.

Selecting one of the alternatives in claim 2 as filed and limiting the ranges indicated in claim 1 as filed according to the embodiment described on page 6 does

not generate subject-matter which extends beyond the teaching as originally filed.

4. Auxiliary Request - Article 100(a) EPC in combination with Article 56 EPC
 - 4.1 Claim 1 of the auxiliary request corresponds to claim 1 of the main request whereby the amounts of the aerogel, inorganic fibres and filler have been limited and the inorganic binder has been defined as potassium water glass.
 - 4.2 As indicated above with regard to the main request, the selection of the ranges for the amounts of the aerogel, filler and fibers are arbitrary, since the patent does not demonstrate any specific effect to be achieved by using the compounds in the amounts as defined in claim 1.
 - 4.3 Also, no particular benefit or purpose arising from the selection of potassium water glass as the inorganic binder is derivable from the patent.

D14 already confirms that water glass is a suitable heat resistant binder, which can be used in fire resistant insulation applications, see page 2, lines 15 to 17 and claim 2. It is also undisputed that the term "water glass" usually denotes sodium or potassium water glass. Therefore, the respondent is correct in arguing that the specification of potassium water glass effectively boils down to the selection of one well-known compound from a list of two.

If the skilled person needed any further information to this end, D17, which is a standard commercial catalogue, further confirms on pages 5 and 7, that

potassium water glass is a well-known binder which can be applied in wide range of applications. In conclusion, the selection of potassium water glass is a routine choice for the skilled person looking for a water glass binder for use in the system of D10 and would not require any inventive activity.

- 4.4 In view of the above, the Board concludes that the subject-matter of claim 1 of the auxiliary request is obvious and that the ground of opposition pursuant to Article 100(a) EPC in combination with Article 56 EPC prejudices the maintenance of the patent in amended form on the basis of the auxiliary request.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



C. Spira

C. Donnelly

Decision electronically authenticated