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**Datasheet for the decision
of 15 April 2024**

Case Number: T 0224/22 - 3.3.05

Application Number: 11736396.0

Publication Number: 2598450

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C08K7/14, C03C1/02, C03B1/02,
C03B5/12

Language of the proceedings: EN

Title of invention:
COMPACTED BODY FOR USE AS MINERAL CHARGE IN THE PRODUCTION OF
MINERAL WOOL

Patent Proprietor:
ROCKWOOL A/S

Opponents:
Owens Corning Intellectual Capital, LLC
Knauf Insulation

Headword:
MINERAL CHARGE IN THE PRODUCTION OF MINERAL WOOL/Rockwool

Relevant legal provisions:
RPBA 2020 Art. 13(2), 12(4)
EPC Art. 123(2), 56

Keyword:

Amendment to case - exercise of discretion

Amendment after summons - exceptional circumstances (no)

Amendments - allowable (yes)

Inventive step - obvious alternative - auxiliary request (yes)

Decisions cited:

T 0939/92

Catchword:



Beschwerdekammern

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Case Number: T 0224/22 - 3.3.05

D E C I S I O N
of Technical Board of Appeal 3.3.05
of 15 April 2024

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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
30 November 2021 concerning maintenance of the
European Patent No. 2598450 in amended form.**

Composition of the Board:

Chairman E. Bendl
Members: J. Roider
 P. Guntz

Summary of Facts and Submissions

I. The appeals by the patent proprietor (appellant 1) and opponent 2 (appellant 2) lie from the opposition division's interlocutory decision to maintain the patent in amended form on the basis of auxiliary request 1.

II. The following documents, already cited during the opposition proceedings, are relevant here:

D1 WO 00/76929 A1

D2 EP 1 382 642 A1

D13 US 3,619,221 A

Annex A Test results, submitted on 24 February 2020 and re-submitted in appeal proceedings on 8 April 2022

III. The following document, cited in opponent 2's statement of grounds of appeal, is relevant here:

Annex B Test results, submitted on 8 April 2022

IV. The claims of the main request correspond to the claims as granted. Independent claims 1, 15 and 18 read as follows:

"1. A compacted body, in particular a briquette, suitable for use as mineral charge in the production of man-made vitreous fibres (MMVF), said compacted body comprising:

(i) recycled waste mineral wool which comprises MMVF fibres in contact with a non-cured MMVF binder comprising:

(a) a sugar component and
(b) a reaction product of a polycarboxylic acid component and an amine component and
(ii) a cement binder."

"15. A method of producing a compacted body, in particular a briquette, suitable for use as mineral charge in the production of man-made vitreous fibres (MMVF), said method comprising the steps of:

mixing recycled waste mineral wool which comprises MMV fibres in contact with a non-cured MMVF binder comprising

(a) a sugar component and
(b) a reaction product of a polycarboxylic acid component and an amine component

with a cement binder and
compacting/shaping and curing the mixture to form said compacted body."

"18. The use of a compacted body according to any one of claims 1 to 14 as a mineral charge in the production of MMV fibres or wool."

V. In auxiliary request 1, claims 1 and 15 of the main request were amended by adding the following features at the end of each of said claims:

", wherein the weight ratio of sugar component to cement is within the range of 0.3 to 3.0 parts by weight of sugar component per 100 parts by weight of cement."

In addition, in comparison to the main request, a dependent claim was deleted and the subsequent claims were renumbered. The independent claims are thus

claims 1 (product), 14 (method) and 17 (use).

- VI. In auxiliary request 1a, all the method claims of auxiliary request 1, thus claims 14-16, were deleted. The use claim was renumbered to become claim 14.
- VII. In auxiliary request 1b, all the product claims and the only independent use claim, thus claims 1-13 and 17 of auxiliary request 1 were deleted. The method claims were renumbered to become claims 1-3.
- VIII. In auxiliary request 2, claims 1 and 15 of the main request were amended by adding the following features at the end of each of said claims:

" , wherein the amine component is selected from primary or secondary amines, alkanolamines, amino acids or urea ."

Furthermore, compared to the main request, a dependent claim was deleted and the subsequent claims were renumbered. The independent claims are thus claims 1 (product), 14 (method) and 17 (use).

Dependent claims 2-13, 15 and 16 relate to particular embodiments of the invention.

- IX. The key arguments of appellant 1 (patent proprietor) can be summarised as follows:

Admission of the auxiliary requests

The opposition division correctly admitted the auxiliary requests into the proceedings.

Admission of Annex B

The auxiliary requests were filed in due time.

Auxiliary request 1 was a combination of claims 1 and 12 of the patent in suit. Thus, any experiments should have been submitted in first instance proceedings. Annex B was moreover not pertinent.

Admission of the line of argument brought forward in the submission of 29 February 2024

The new objections should have been raised earlier and should thus not be admitted under Article 13(2) RPBA 2020.

Auxiliary requests 1, 1a, 1b: inventive step, Article 56 EPC

The teaching of annexes A and B could not be combined. Therefore opponent 2 failed to show that the effect was not achieved. The technical problem could not therefore be reformulated so as to provide an alternative.

Auxiliary request 2: amendments, Article 123(2) EPC

The deletion of ammonia excluded more compounds than ammonium citrate and thus was not a singling out of a non-working example.

- X. The key arguments of appellant 2 (opponent 2) can be summarised as follows:

Admission of the auxiliary requests

The opposition division wrongly exercised their discretion by admitting the auxiliary requests into the proceedings.

Admission of Annex B

The auxiliary requests were filed only shortly before the oral proceedings before the opposition division, which did not allow sufficient time to file further tests. It was also surprising that the opposition

division considered the tests of Annex A not pertinent due to the absence of MMVF. Annex B proved again what had already been shown in Annex A, account also being taken of the claimed ranges in claim 1 of auxiliary request 1. Annex B should consequently be admitted.

Admission of the line of argument brought forward in the submission dated 29 February 2024

The request for revocation of the patent in its entirety which was already stated in opponent 2's grounds of appeal extended to auxiliary request 2.

Auxiliary requests 1, 1a, 1b: inventive step, Article 56 EPC

The subject-matter of claim 1 of auxiliary requests 1, 1a and 1b lacked an inventive step at least when starting from D1. Annexes A and B showed that ammonium citrate cannot mitigate the retarding effect of dextrose on cement curing. The technical problem, which was obvious to the skilled person, was therefore to provide an alternative.

Auxiliary request 2: amendments, Article 123(2) EPC

The deletion of ammonia amounted to singling out non-working examples.

XI. Opponent 1, a party as of right, has not submitted any objections.

XII. Substantive requests:

The appellant 1 (patent proprietor) requested that the decision under appeal be set aside and the oppositions be rejected or, in the alternative, that appellant 2's appeal be dismissed (auxiliary request 1) or that the patent be maintained in amended form on the basis of

one of auxiliary requests 1a to 15b as filed with the reply of 23 August 2022 to the appellant 2's statement of grounds of appeal.

The appellant 2 (opponent 2) requested that the decision under appeal be set aside and that the European patent be revoked.

Reasons for the Decision

1. Admission into the appeal proceedings

1.1 Admission of the auxiliary requests

During the opposition proceedings, the patent proprietor filed 44 auxiliary requests after the negative opinion of the opposition division and before the final date according to Rule 116(1) EPC. They were admitted into the proceedings by the opposition division.

The present board cannot agree that the opposition division exercised their discretion in an unreasonable way or based on the wrong criteria. They considered that the requests were a serious attempt to address objections raised by the opponents. They also considered the time of filing appropriate in view of their negative opinion. These criteria are appropriate criteria to rely on when deciding on the admission of late requests.

According to established case law, the boards do not have the power to disregard on appeal submissions correctly admitted by the opposition division in exercise of their discretion (Case Law of the Boards of Appeal of the EPO, 10th edition, 2022, V.A.3.4.4).

Therefore, the auxiliary requests are part of the appeal proceedings.

1.2 Admission of Annex B

The patent in suit contains a large number of alternatives in the dependent claims. Claim 1 of auxiliary request 1 (the set of claims maintained by the opposition division) is a combination of claims 1 and 12 as granted. It was not obvious that the patent proprietor would select this combination as first line of defence. The auxiliary requests on file, including auxiliary request 1, were filed only shortly before the final date set by the opposition division under Rule 116(1) EPC. In the case at hand, it would not have been reasonable to have required the filing of test results in the period between submission of the auxiliary requests and the scheduled oral proceedings before the opposition division.

The opposition division concluded that the tests in Annex A were not pertinent because of the absence of MMVF in the tested briquettes (impugned decision, para. 9.2).

Annex A was designed to demonstrate the retarding effect of dextrose on cement curing. For that purpose, no MMVF was added to the test samples.

In view of the present circumstances, it was not unreasonable to expect that the opposition division might consider the absence of MMVF in the tests to be insignificant. After all, the subject-matter of claim 1 does not require a minimum content of MMVF and therefore also encompasses briquettes with a very low content.

The filing of Annex B with opponent 2's grounds of appeal was thus a valid response to the opposition division's decision and is taken into consideration in the appeal proceedings.

1.3 Admission of the line of argument brought forward in the submission of 29 February 2024

In the submission of 29 February 2024, the opponent raised objections for the first time against auxiliary request 2 under Article 56 EPC and Article 123(2) EPC.

This submission was filed after notification of a summons to oral proceedings and after a communication containing the board's preliminary opinion and thus shall not be taken into account unless there are exceptional circumstances, which have been justified by cogent reasons (Article 13(2) RPBA 2020).

The opponent failed to present cogent reasons for their late submission.

Moreover, there are no exceptional circumstances. The present auxiliary requests, including auxiliary request 2, had already been filed during the opposition proceedings. The patent proprietor resubmitted these requests with their statement of grounds of appeal on 8 April 2022 and again with their reply to the opponent's appeal on 23 August 2022.

In their reply to the patent proprietor's appeal of 10 August 2022, the opponent did not comment on auxiliary request 2, nor did they respond to the patent proprietor's reply to their appeal, in which auxiliary request 2 was again filed.

If the opponent wished to challenge auxiliary request 2, they should have done so in their reply to the patent proprietor's statement of grounds of appeal or at the latest in a submission prior to the issue of the board's preliminary opinion.

There were no new or unforeseeable developments in the appeal proceedings. The board cannot therefore acknowledge exceptional circumstances.

The opponent argued that they had requested revocation of the patent in its entirety which *inter alia* extended to auxiliary request 2.

The mere fact that the opponent had requested revocation of the patent in its entirety must not be confused with the requirement to set out the reasons as to why the decision under appeal should be reversed (Article 12(3) RPBA).

The arguments against higher ranking requests are also not applicable to auxiliary request 2.

The objection under Article 56 EPC against auxiliary request 1 was based on the opponent's test results. Their aim was to show that ammonium citrate does not overcome the inhibition of cement curing caused by dextrose.

The amendment in auxiliary request 2 excludes ammonium citrate. Therefore the arguments against auxiliary request 1 cannot be directly applied to auxiliary request 2.

Auxiliary request 2 incorporates the list of amine components from claim 9 into claim 1, with the deletion of ammonia. No objection was raised under

Article 123(2) EPC against claims 1 or 9 of higher ranking requests. Therefore the arguments against higher ranking requests cannot be directly applied to auxiliary request 2.

The opponent did not therefore set out the reasons why auxiliary request 2 did not meet the requirements of Article 56 EPC and Article 123(2) EPC.

1.4 Thus, the objections raised in opponent 2's submission of 29 February 2024 are not taken into consideration.

2. Auxiliary request 1, inventive step, Article 56 EPC

The patent is directed to a compacted body suitable for use as a mineral charge in the production of MMVF (claim 1), its production method (claim 14) and its use (claim 17), wherein the compacted body includes waste MMVF (patent in suit, paragraphs [0001] and [0008]).

2.1 D1 is considered by the opposition division and the patent proprietor to be the most promising springboard for an inventive step objection.

2.2 D1 discloses briquettes for use as a mineral charge in the production of MMVF, wherein the bodies of the briquettes include waste MMVF (e.g. page 3, lines 24-29).

2.3 According to the patent proprietor, the problem the patent aims to solve is that of providing cement-containing briquettes suitable for use as the mineral charge in the production of MMVF which, despite the presence of sugar-containing mineral wool binder in the MMVF waste, show satisfactory strength during briquette production (reply to opponent 2's appeal, page 15,

penultimate paragraph and paragraph [0016] of the patent in suit).

Strength is satisfactory if the briquettes can be transported and bear the raw material column in the shaft oven or cupola. A compression strength of 3.5-5.5 MPa is preferred (paragraph [0072] of the patent in suit).

2.4 Claim 1

- 2.4.1 It is proposed to solve the problem with the features of claim 1, which differs from D1 in using MMVF with an uncured binder which comprises a sugar component and a reaction product of a polycarboxylic acid component and an amine component, the sugar component and the cement being present in a specific ratio (see claim 1).

The subject-matter of claim 1 is broad. It covers a binder resin which is the reaction product of two large classes of chemical substances, a polycarboxylic acid component and an amine component.

The examples in the patent in suit show that a reaction product of diethanolamine, tetrahydrophthalic anhydride and trimellitic anhydride overcomes the retardation effect of dextrose.

Dependent claim 8 lists a large number of polycarboxylic acid components, with citric acid being mentioned first.

Dependent claim 9 lists a number of amine components, with ammonia being mentioned first. Paragraph [0049] explicitly refers to triammonium citrate. It is to be expected that triammonium citrate will show the purported effect.

Annex A shows that triammonium citrate, the reaction product of citric acid and ammonia, cannot mitigate the retardation effect of dextrose sufficiently for the briquettes to show satisfactory strength. As apparent from Annex B, the absence of MMVF in the briquette does not substantially change this finding.

The patent proprietor argued that the results in Annex A and Annex B could not be combined. While Annex A showed that curing of the cement was retarded by the presence of dextrose, it did not contain MMVF. Annex B only showed that the inventive binder resulted in a lower strength of the briquette than a briquette with a conventional binder. It could not show that the retardation effect of the dextrose was reduced because there was no comparison example containing dextrose but no ammonium citrate. Moreover, a comparison of Annex A and Annex B did show that the MMVF increased the strength of the briquette.

The subject-matter of claim 1 aims to provide a briquette suitable for use as a mineral charge in the production of MMVF. Paragraph [0072] of the patent states the strength required for the briquettes to be considered suitable.

Merely reducing the retardation effect of dextrose on the cement curing is thus not enough.

Annex B shows that the necessary strength is not obtained. While a comparison of Annexes A and B may suggest that the presence of 60% MMVF increases the strength of a briquette, the briquette in Annex B is nevertheless not suitable for the specified use as it falls significantly short of the strength specified in paragraph [0072]. Moreover, claim 1 does not require a minimum content of MMVF. It is not convincing that a

low content of MMVF would by itself substantially increase the strength of the briquette.

Annexes A and B therefore show that the purported effect cannot be achieved for triammonium citrate.

2.4.2 The technical problem must therefore be reformulated to a less ambitious problem, that of providing an alternative product (see Case Law of the Boards of Appeal, 10th ed. I.D.9.9.3; T 939/92, points 2.4-2.6).

2.4.3 The differences between claim 1 and D1 relate to the nature of the recycled MMVF waste, which D1 does not specify in detail. The question to be assessed is whether or not the recycling of specific MMVF waste is rendered obvious to the skilled person.

D1 discloses that MMVF waste from the screw conveyor below the spinner contains moisture. Apart from mechanical pressing, spinner waste is not normally otherwise dried before recycling (page 13, line 33 to page 14, line 2).

Therefore, although D1 does not explicitly disclose that the moisture content of spinner waste originates from the use of an aqueous binder system, it is at least an alternative the skilled person would recognise. In particular, D1 does not teach away from this possibility.

It is also noted that the binder is uncured upstream of the curing oven.

2.4.4 D2 discloses a formaldehyde-free aqueous binder for MMVF mats and their production (paragraph [0001]). A skilled person seeking an alternative product would

consider this document.

According to D2, conventionally, fibres from the spinner are blown into a forming chamber, and while airborne and still hot, are sprayed with a binder solution and randomly deposited as a mat or web. Thereafter the fibre mat is transferred to a curing oven (paragraph [0002]).

According to paragraph [0009], the aqueous binder system contains components (A) and (B). Component (A) is a reaction product of a carboxylic anhydride, thus a polycarboxylic acid component, and an alkanolamine, an amine component. Component (B) is a carbohydrate, thus a sugar component. D2, example 5 discloses mixing the reaction product of diethanolamine, tetrahydrophthalic anhydride and trimellitic anhydride with glucose syrup so as to prepare binders no. 1 to 3.

- 2.4.5 The skilled person, when tasked with providing an alternative to the cement briquette of D1, example 1, would consider using the MMVF waste originating from a manufacturing process using binders no. 1 to 3 of example 5 of D2.

The cement briquette according to D1, example 1 contains 12% cement and 48% MMVF waste (D1, page 17, lines 23-28). The binder according to D2 is applied in an amount of 0.1-15% of the bonded mineral fiber product (D2, paragraph [0041]). Binders no. 1 to 3 contain 25% sugar (D2, paragraph [0051]).

The claimed range of 0.3 to 3.0 parts of sugar per 100 parts of cement is well within the possible alternatives suggested in D1 and D2.

The skilled person would in particular also consider using the MMVF waste originating from the process steps from spraying the aqueous binder system onto the airborne fibres up to transfer into the curing oven, thus MMVF waste with uncured binder.

The patent proprietor argued that even if the problem was to provide an alternative, the skilled person would not have combined D1 and D2 because it was known from D13 that dextrose retarded the curing of cement. The skilled person would therefore not have considered applying the binder in D2 to D1.

D13 is a patent document, which cannot normally be considered to be part of the common general knowledge of the skilled person. The patent proprietor did not provide reasons why D13 was an exception nor are such apparent (Case Law of the Boards of appeal, 10th ed., 2022, I.C.2.8.2).

Therefore, no reason to combine D1 and D2 with a further document, D13, can be seen and the latter does not discourage the skilled person from combining D1 and D2.

The subject-matter of claim 1 of auxiliary request 1 thus does not involve an inventive step (Article 56 EPC).

2.5 Claim 14

Claim 14 relates to the production method of the briquettes at issue and repeats the features of claim 1 or contains generic corresponding method features such as "mixing" and "compacting/shaping" which are implied when producing such briquettes.

The subject-matter of claim 14 thus lacks an inventive step for the same reasons as claim 1.

3. Main request, auxiliary requests 1a, 1b

3.1 It follows directly from point 2 above that the subject-matter of claim 1 of the main request lacks an inventive step since its scope is broader, as it contains fewer features than claim 1 of auxiliary request 1.

3.2 It also follows directly from point 2 above that claim 1 of auxiliary request 1a lacks an inventive step for the same reasons as claim 1 of auxiliary request 1, and claim 1 of auxiliary request 1b lacks an inventive step for the same reasons as claim 14 of auxiliary request 1.

4. Auxiliary request 2

No objection against auxiliary request 2 was raised in due time.

The objections under Article 56 EPC and Article 100 (b) EPC / Article 83 EPC against the higher ranking requests also cannot be directly applied to auxiliary request 2.

These relied on the opponent's finding in Annexes A and B that ammonium citrate does not overcome the inhibition of cement curing by dextrose. Since the amendment in auxiliary request 2 excludes ammonium citrate, these objections are rendered irrelevant.

The requirements of Article 123(2) EPC are assessed by the board *ex officio*.

Claim 1 originates from a combination of claims 1 and 9 as originally filed, with one member of the list contained in claim 9, i.e. ammonia, being deleted.

The list in original claim 9 contained ammonia, primary or secondary amines, alkanolamines, amino acids and urea. It thus contained several nitrogen-containing classes of substances.

The deletion of ammonia from the list is allowable. It merely shrinks this list by one item. The remaining list still contains several classes of nitrogen-containing compounds. The amendment does not therefore single out a class of compounds (see Case Law of the Boards of Appeal, 10th ed., 2022, II.E.1.6.3).

The deletion is not to be seen solely as the exclusion of non-working examples, as argued by opponent 2. Annexes A and B show that the specific reaction product of ammonia and citric acid does not provide the purported effect. They do not show that the reaction product of ammonia and any polycarboxylic acid in general does not produce the purported effect. However, such reaction products are also excluded by these amendments.

The requirements of Article 123(2) EPC are met.

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 in amended form on the basis of the claims of auxiliary request 2 dated 23 August 2022 and a description to be adapted.

The Registrar:

The Chairman:



C. Vodz

E. Bendl

Decision electronically authenticated