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**Datasheet for the decision  
of 5 February 2007**

**Case Number:** T 0084/04 - 3.2.06

**Application Number:** 96924398.9

**Publication Number:** 0897431

**IPC:** D04H 1/60

**Language of the proceedings:** EN

**Title of invention:**

Bonding fibrous batts with thermosetting fiber-binders of certain epoxy resins

**Patentee:**

Ramcon-Fiberlok, Inc.

**Opponent:**

DuPont Performance Coatings GmbH & Co.KG

**Headword:**

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**Relevant legal provisions:**

EPC Art. 54, 56, 100(c), 114, 123(2)

EPC R. 55(c)

**Keyword:**

"Admissibility of opposition - yes"

"Admissibility of fresh grounds of opposition - yes"

"Inventive step - no"

**Decisions cited:**

G 0001/93, T 0934/99, T 0453/89, T 0279/88, T 0222/85,

T 0925/91, T 0736/95

**Catchword:**

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Case Number: T 0084/04 - 3.2.06

**DECISION**  
of the Technical Board of Appeal 3.2.06  
of 5 February 2007

**Appellant:** DuPont Performance Coatings GmbH & Co.KG  
(Opponent) Christbusch 25  
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**Representative:** Morf, Jan Stefan  
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**Respondent:** Ramcon-Fiberlok, Inc.  
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**Representative:** Woodcraft, David Charles  
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**Decision under appeal:** Interlocutory decision of the Opposition  
Division of the European Patent Office posted  
28 October 2003 concerning maintenance of  
European patent No. 0897431 in amended form.

**Composition of the Board:**

**Chairman:** P. Alting van Geusau  
**Members:** G. Kadner  
R. Menapace

## Summary of Facts and Submissions

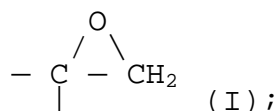
I. The appeal is from the decision of the Opposition Division posted on 28 October 2003 to maintain European patent No. 0 897 431 as amended, granted in respect of European patent application No. 96 924 398.9. Claim 1 maintained granted and reads as follows:

"A process for producing a bonded, non-woven, batt of fibers comprising the steps of:

I. providing a dry, solid, particulate, latent-cross-linkable thermosetting, fiber-binder which is an intimate mixture of:

A. a solid epoxy resin having

(a) epoxide groups of Formula I:



- (b) an epoxide equivalent weight of above 500;
- (c) a glass transition temperature above about 40°C;
- (d) a melting point above about 70°C; and

B. a coreactive effective amount of a cross-linking agent which reacts with the epoxide groups of the epoxy resin, wherein the fiber-binder is substantially free from solvents for the epoxy resin and for the cross-linking agent, wherein the equivalent ratio, A:B, of (A) the epoxy resin to (B) the cross-linking agent is from about 1.3:1 to about 1:1.3, and wherein the fiber-binder is substantially anhydrous, and wherein

the fiber-binder has a softening point of about 40 to about 160°C, and wherein the fiber-binder has a glass plate flow of about 14 to about 150 mm , and wherein the fiber-binder has a particle size from about one to about 200 microns; and then

II. contacting fiber-binding amounts of the fiber-binder with the fibers to form a raw batt with the fiber-binder loosely adhering to the fibers of the batt; and then

III. heating the raw batt to a cross-linking temperature above the melting point of the fiber-binder but below the scorching of the fibers thereby melting the fiber-binder whereupon the fiber-binder flows to intersections of the fibers and subsequently the cross-linking agent reacts with the epoxide groups of the epoxy resin thereby converting the raw batt into a hot cross-linked batt, wherein the heating of the raw batt is done at a temperature of about 100 to about 240°C for a sufficient time from about 20 seconds to about 10 minutes at an adequate temperature; and then

IV. cooling the hot cross-linked batt."

II. In the decision under appeal the Opposition Division considered that the patent as amended according to the second auxiliary request met the requirements of the EPC, in particular those of novelty and inventive step having regard to the prior art disclosed in:

D1: WO-A-96/16218

D2: Data Sheet Shell Resins Epikote 3003

D3: WO-A-95/30034

D4: The Science of Powder Coatings by David A. Bate  
pages 260-261, 149

III. Appellant I (Opponent) and Appellant II (Patentee) both lodged an appeal, received at the EPO on 23 December 2003 and 29 December 2003, respectively, against this decision and simultaneously paid the appeal fee. The respective statement setting out the grounds of appeal was filed on 25 February 2004 by Appellant II and on 1 March 2004 by Appellant I.

Additionally Appellant I filed:

(1) Copy of an Email relating to the publication of D2  
(Data Sheet Shell Resins Epikote 3003), March 1989

(2) A clean copy of D2

(3) Copies of pages 258 to 263 of D4

IV. In a communication dated 7 November 2006 sent together with the summons to oral proceedings the Board expressed the preliminary opinion that no error was seen in the Opposition Division's reasoning that the opposition was admissible and that the subject-matter of granted claim 5 extended beyond the content of the application as filed. The introduction of the ground of opposition under Article 100(c) EPC by the Opposition Division was a matter of discretion and did not appear to constitute a procedural violation as was argued by Appellant II.

The Opposition Division's finding in respect of novelty did not give rise to objections, however the issue of inventive step would have to be discussed more in detail.

- V. With letter dated 19 December 2006 Appellant II announced that he would not be represented during the oral proceedings.
- VI. Oral proceedings were held on 5 February 2007 in which only Appellant I was present.
- VII. Appellant II (Patentee) had requested in writing that the decision under appeal be set aside, the opposition be deemed inadmissible (main request), that the patent be maintained as granted (first auxiliary request) or be maintained in amended form as upheld by the Opposition Division (second auxiliary request).
- VIII. Appellant I (Opponent) requested that the decision under appeal be set aside and that the European patent No. 0897431 be revoked.
- IX. The submissions of Appellant II can be summarised as follows:

*Main request*

D1 filed within the opposition period was a document according to Article 54(3) EPC which was not to be considered in respect of inventive step. Since the Opponent had argued only on inventive step based on this prior art document, the requirement of Rule 55(c) EPC was not met, and therefore the opposition was inadmissible.

*Auxiliary requests*

The ground of opposition according to Article 100(c), 123(2) EPC was introduced after expiry of the opposition period and was therefore late filed, with the consequence that in accordance with the case law of the Boards of Appeal, and in particular G 1/93, the objection based on added subject-matter should not be allowed into the proceedings.

Anyhow, the added limiting feature to claim 5 was properly disclosed in the application as originally filed, and the Opposition Division's objection based on Article 100(c) EPC was wrong. Maintenance of the patent as granted was thus justified.

- X. In support of its request Appellant I essentially made the following submissions:

The Opposition Division's decision in respect of the main and first auxiliary request was correct.

The subject-matter of claim 1 according to the second auxiliary request was not inventive when compared with the teachings of D3 and D2 or those of D3 and D4. D3 disclosed a process similar with that of claim 1 in which a mixture of an epoxy resin, a phenolic cross-linking agent and a polyester resin were used as fiber-binder ("Beispiel 1"). According to the description of that document epoxy resins were useful, and thus the skilled person would be inclined to select a commonly used resin such as Epikote 3003 which was listed in the first place of the table on page 260 of D4. This resin

inherently had the features claimed in claim 1. Furthermore, it was stated in D4 that attention should be paid to the number of reactive groups (D4, page 9, lines 26 to 29). D4 was also cited in D3, and there on page 149 the curing agent stoichiometry was mentioned in connection with the epoxy equivalent ratio, so that the skilled person would be led to the claimed equivalent ratio of epoxy resin and cross linking agent.

Since the patent in suit also described the preferred use of phenolic cross-linking agents like novolac resins whereas also phenolic resins were not excluded by claim 1, the Opposition Division's conclusion arrived at in the decision under appeal was wrong. Rather, the skilled person was led to the process of claim 1 by the obvious combination of the teachings of D3 with those of D4.

### **Reasons for the Decision**

1. The appeal is admissible.
  
2. *Admissibility of opposition*

The Patentee contested the admissibility of the opposition arguing that, since D1 which had to be considered only for novelty (Article 54(3) EPC) and clearly did not anticipate the subject-matter of claim 1, the notice of opposition did not fulfil the requirements of Rule 55(c) EPC. As a consequence the notice of opposition did not contain any valid facts, evidence and arguments presented in support of the sole ground of opposition, i.e. lack of inventive step.



In the absence of any new arguments submitted by Appellant II the Board sees no reason to deviate from its preliminary opinion set out in its communication.

In view of the case law of the Boards of Appeal (see T 934/99; T 453/87; T 279/88) the Board considers the requirement of Rule 55(c) EPC to be met. The citing of a 54(3)-document in support of an alleged lack of inventive step was certainly illogical and an apparent contradiction. This inconsistency, however, did not render the submissions as a whole meaningless and thus unsubstantiated; rather, it made it evident to a skilled person that the Opponent's line of reasoning was wrong. The requirement of Rule 55(c) EPC being of a substantive nature (T 222/85) and the compliance with it having to be assessed on an objective basis (T 925/91), it is considered irrelevant for admissibility whether the lack of merit of the submissions in question was immediately evident. Consequently the Patentee's main request cannot be allowed.

3. *Fresh Ground of Opposition (Article 100(c) EPC)*

As to the Patentee's first auxiliary request, namely the contention that Article 100(c), 123 (2)EPC should not have been admitted as (late) ground for opposition, it must be pointed out that the consideration of "fresh" grounds of opposition is, in contrast to admissibility, a matter of discretion by the Opposition Division (see G 10/91; T 736/95). No arguments have been presented or are apparent for other reasons, to suggest that the discretion was not properly exercised.

Therefore the late admission of that ground does not constitute a procedural violation as argued by Appellant II.

The feature concerning the humidity resistance of the batt was disclosed in the application as originally filed only in connection with the features of Example 28. Since in claim 5 as granted this feature is used together with other features in a generalized form, protection is sought for a product which was not originally disclosed in that combination. The opposition division's judgment in the decision under appeal is therefore correct.

4. *Second auxiliary request*

4.1 Novelty

The opposition division's finding in respect of novelty does not give rise to objections. The combination of the features of claim 1 is not explicitly or implicitly disclosed neither in D1 nor in D3. However, this issue need not be considered further, since the subject-matter of claim 1 is not patentable for another reason.

4.2 Inventive step

4.2.1 D3 discloses a process for producing a bonded, non-woven, batt of fibers comprising the steps of:

I. providing a dry, solid, particulate, latent-cross-linkable thermosetting, fiber-binder which is an intimate mixture comprising a solid epoxy resin a coreactive effective amount of a cross-linking agent

which reacts with the epoxide groups of the epoxy resin, wherein the fiber-binder is substantially free from solvents for the epoxy resin and for the cross-linking agent, and wherein the fiber-binder is substantially anhydrous, and wherein the fiber-binder has a mean particle size of about 35 microns (page 11 to 12, Beispiel 1); and then

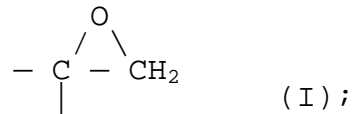
II. contacting fiber-binding amounts of the fiber-binder with the fibers to form a raw batt with the fiber-binder loosely adhering to the fibers of the batt; and then

III. heating the raw batt to a cross-linking temperature above the melting point of the fiber-binder but below the scorching of the fibers thereby melting the fiber-binder whereupon the fiber-binder flows to intersections of the fibers and subsequently the cross-linking agent reacts with the epoxide groups of the epoxy resin thereby converting the raw batt into a hot cross-linked batt, wherein the heating of the raw batt is done at a temperature of about 140 to about 200°C for a sufficient time from 10 to 500 seconds at an adequate temperature (page 9, line 30 to page 10, line 20).

Starting from this known process in which a mixture of an epoxy resin and two cross-linking agents is used, the problem underlying the patent in suit can be seen in the provision of an alternative process for providing a bonded, non-woven batt of fibers.

4.2.2 The solution to that problem is characterised in that the epoxy-resin has epoxide groups of the formula:

(a)



- (b) an epoxide equivalent weight of above 500;
- (c) a glass transition temperature above about 40°C;
- (d) a melting point above about 70°C;
- (e) that the equivalent ratio, A:B, of (A) the epoxy resin to (B) the cross-linking agent is from about 1.3:1 to about 1:1.3,
- (f) that the fiber-binder has a softening point of about 40 to about 160°C,
- (g) wherein the fiber-binder has a glass plate flow of about 14 to about 150 mm , and
- (h) that the cross-linked batt is cooled after cross-linking by heating.

4.2.3 In D3 it is stated that common epoxy resins can be used (page 6, lines 6 to 12), and thus the skilled person looking for a suitable alternative epoxy resin would find such a product "frequently used in powder coatings" named Epikote 3003 in D4 (table pages 260, 261) which document is also mentioned in D3 (page 6, lines 34 to 36). This resin has an epoxide equivalent weight of 725-825, a glass transition temperature of 51°C and a soft point of 90°C, and therefore inherently fulfils the features (a) to (d) above.

4.2.4 D3 furthermore teaches (page 9, lines 26 to 28; page 7, lines 26 to 30) that the number of reactive groups has to be observed and that, if required, additional cross-linking agents can be added. D4 (page 149) also deals with the stoichiometry in respect of epoxide equivalent weight, and thus the skilled person encouraged to

observe the equivalent ratio would primarily apply the generally suitable ratio of 1:1. Within his general knowledge he considers deviations up to 30 % to be acceptable without worsening the result too much, and consequently he would arbitrarily allow a deviation of that range arriving at an equivalent ratio of the epoxy resin to the cross-linking agent from about 1.3:1 to about 1:1.3. Thus by the teachings of D3 and D4 feature (e) above is rendered obvious.

4.2.5 As to features (f) and (g) above the Opponent submitted a sheet "Properties of fiber binders according to D1 and D3" dated 1 March 2004, the content of which was not contested by the Patentee. It is shown that the binder mixtures of D3 have a softening point of 93°C and 102°C and a glass plate flow of 39 mm and 32 mm which fully fall into the claimed range. Although these mixtures have a content of phenol novolac resin, they are relevant in respect of the process claimed since, as described in the patent specification (page 7, paragraphs [0057] and [0067]), the claimed invention can also be realized with the use of such phenolic cross-linking agents, and claim 1 does not exclude the application of such resins. In this respect the Opposition Division's interpretation of the subject-matter of claim 1 to solve the problem related to the use of phenolic resins which produce toxic fumes is in contrast to the cited passages in the patent in suit clearly embracing phenolic resin.

4.2.6 Finally, regarding feature (h) above, it is self-evident that the cross-linked batt has to be cooled after cross-linking by heating, at least by lowering its temperature down to room temperature.

4.3 Summarizing, the features (a) to (h) are made obvious by the prior art according to D3 and D4 in connection with the general knowledge of the skilled person working in the technical field concerned. Thus the process of claim 1 does not involve an inventive step (Article 56 EPC).

## **Order**

### **For these reasons it is decided that:**

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:

M. Patin

P. Alting van Geusau