

**Internal distribution code:**

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

**Datasheet for the decision  
of 15 March 2023**

**Case Number:** T 1099/21 - 3.3.02

**Application Number:** 07250962.3

**Publication Number:** 1834524

**IPC:** A01N43/80, A01N25/28,  
A01P15/00, C09D5/16

**Language of the proceedings:** EN

**Title of invention:**  
BLENDS OF ENCAPSULATED BIOCIDES

**Patent Proprietor:**  
Rohm and Haas Company

**Opponent:**  
Thor GmbH

**Relevant legal provisions:**  
EPC Art. 100(c), 123(2)

**Keyword:**  
Grounds for opposition - added subject-matter

**Catchword:**

Any unclarity that may arise from an ambiguity in an application as filed is to the detriment of a patent proprietor, who is ultimately responsible for the drafting of the application as filed and its claims. The fact that a feature in the application as filed is unclear cannot therefore justify or excuse the complete deletion of the unclear feature or its replacement by another feature if this results in an extension beyond the content of the application as filed. What prompted a patent proprietor to make a particular amendment to the claims cannot have any influence on the outcome of the assessment of the ground for opposition under Article 100(c) EPC (point 8 of the Reasons).



**Beschwerdekammern**

**Boards of Appeal**

**Chambres de recours**

Boards of Appeal of the  
European Patent Office  
Richard-Reitzner-Allee 8  
85540 Haar  
GERMANY  
Tel. +49 (0)89 2399-0  
Fax +49 (0)89 2399-4465

Case Number: T 1099/21 - 3.3.02

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.02**  
**of 15 March 2023**

**Appellant:** Thor GmbH  
(Opponent) Landwehrstraße 1  
67346 Speyer (DE)

**Representative:** Apenberg, Stefan  
Thor GmbH  
Landwehrstraße 1  
67346 Speyer (DE)

**Respondent:** Rohm and Haas Company  
(Patent Proprietor) 100 Independence Mall West  
Philadelphia, PA 19106-2399 (US)

**Representative:** Kent, Venetia Katherine  
Patent Outsourcing Limited  
1 King Street  
Bakewell  
Derbyshire DE45 1DZ (GB)

**Decision under appeal:** **Decision of the Opposition Division of the  
European Patent Office posted on 10 June 2021  
rejecting the opposition filed against European  
patent No. 1834524 pursuant to  
Article 101(2) EPC**

**Composition of the Board:**

**Chairman** M. O. Müller  
**Members:** A. Lenzen  
M. Blasi

## **Summary of Facts and Submissions**

- I. This decision concerns the appeal filed by the opponent (appellant) against the opposition division's decision (decision under appeal) to reject the opposition against European patent No. 1 834 524 (patent).
- II. With its reply to the statement of grounds of appeal, the patent proprietor (respondent) filed the sets of claims of auxiliary requests 1 to 3.
- III. With its letter dated 30 June 2022, the respondent filed the sets of claims of auxiliary requests 4 to 6 and a further document. This document was submitted in relation to an issue which did not need to be dealt with by the board in these proceedings.
- IV. In preparation for the oral proceedings, arranged at the parties' request, the board issued a communication pursuant to Article 15(1) RPBA 2020.
- V. The oral proceedings before the board took place as a videoconference on 15 March 2023 in the presence of both parties. At the end of the oral proceedings, the chair announced the order stated in the present decision.
- VI. The appellant's arguments relevant to the present decision can be summarised as follows.

The functional feature in claim 1 as originally filed "*up to a concentration that does not reduce the glass transition temperature of the film forming polymer by more than 20 °C*" was disclosed as essential in the application as originally filed. It could not be

deleted, nor could it be replaced by a different non-equivalent feature such as the numerical upper limit in claim 1 of the main request. This was because the question of whether or not the glass transition temperature of the film forming polymer was reduced by more than 20 °C depended on the coating composition under consideration and in particular the actual film forming polymer contained in it. Hence, the subject-matter of claim 1 of the main request extended beyond the content of the application as originally filed. The same reasoning applied to claim 1 of auxiliary requests 1 to 6.

VII. Summaries of the respondent's arguments are contained in the reasons for the decision.

VIII. The parties' final requests relevant to the present decision were as follows.

The appellant requested that the decision under appeal be set aside and the patent be revoked in its entirety.

The respondent requested

- that the appeal be dismissed (main request), implying that the patent be maintained as granted, or in the alternative,
- that the patent be maintained in amended form based on one of the following sets of claims:
  - auxiliary request 1, 2 or 3, filed with the reply to the statement of grounds of appeal,
  - auxiliary requests 4, 5 or 6, filed with the letter dated 30 June 2022.

## Reasons for the Decision

The application as originally filed

1. Claim 1 of the application as filed reads as follows (emphasis added):

*"A coating composition comprising:*

- a. a microencapsulated biocide comprising an isothiazolone biocide or antifouling agent as a core material encapsulated in a wall material that is essentially impermeable to xylene and from which water can leach the biocide from the wall material;*
- b. free isothiazolone biocide or antifouling agent;*
- c. a film forming polymer or binder; and*
- d one or more solvents;*

***wherein the concentration of free isothiazolone biocide or antifouling agent is from 0.25 percent, by weight of the composition, up to a concentration that does not reduce the glass transition temperature of the film forming polymer by more than 20 °C."***

2. Thus, claim 1 as filed essentially relates to a coating composition comprising a microencapsulated biocide and a free (i.e. not microencapsulated) isothiazolone biocide or antifouling agent.

Of particular interest in the present case is the feature in bold above which relates to the upper concentration limit of the free isothiazolone biocide

or antifouling agent. This upper limit is defined functionally in terms of a result to be achieved ("*up to a concentration that does not reduce the glass transition temperature of the film forming polymer by more than 20 °C*").

3. The application as filed (paragraph bridging pages 1 and 2) identifies 4,5-dichloro-2-n-octyl-3(2H)-isothiazolone (DCOIT) as an important biocide for marine antifoulant paints. However, its plasticising effect, i.e. lowering the glass transition temperature ( $T_g$ ) of polymeric binders, is considered a disadvantage, as it leads to a reduction in the integrity of the paint film and often to an increase in the drying time of the antifoulant paint. Thus, according to the application as filed (page 2, lines 10 to 14),

*"there is a need for improved marine antifoulant paint compositions in which the balance between free DCOIT and encapsulated DCOIT is such that the amount of free DCOIT available is high enough to control fouling organisms but low enough to ensure that the  $T_g$  of the paint film is not reduced to a level wherein the integrity of the paint film is compromised."*

4. Against this background, it must be concluded that the functionally defined upper limit of the concentration range for the free isothiazolone biocide is set out as being necessary for solving the technical problems addressed by the application as filed, namely maintaining the integrity of the paint film and avoiding prolongation of the drying time of the coating composition. This means that, as correctly pointed out by the appellant, this functional feature is disclosed

in the application as filed as an essential feature of the invention and does not merely relate to a preferred embodiment thereof as held in the decision under appeal (point 1.14) with which the respondent agreed.

The decision under appeal (point 1.14) also states that, in addition to claim 1, the set of claims as filed contained the further independent claim 6 and that in the latter the functional feature was directed to avoiding the prolongation of the drying time and was therefore not equivalent to the functional feature in claim 1. From this it could be concluded that the functional feature of claim 1 was not essential. The respondent also expressly agreed with this point of the decision under appeal. The board does not find this line of argument convincing, not least because the prolongation of the drying time is attributed to the reduction in  $T_g$  in the application as filed. Thus, if anything, this can only support the above conclusion that the functional feature of claim 1 as filed is disclosed as essential in the application as filed.

Main request (patent as granted) - Amendments  
(Article 100(c) EPC)

5. Claim 1 of the main request reads as follows (emphasis added):

*"A coating composition comprising:*

*a. a microencapsulated biocide comprising an isothiazolone biocide as a core material encapsulated in a wall material, wherein less than 20 percent of the encapsulated biocide is released when contacted with xylene for a period*



*of 90 days at 45°C and from which water can leach the biocide from the wall material;*

*b. free isothiazolone biocide;*

*c. a film forming polymer or binder solids; and*

*d. one or more solvents;*

*wherein the water solubility of the isothiazolone biocide is less than 2 percent at room temperature;*

***wherein the concentration of free isothiazolone biocide is from 0.25 percent to 15 percent of the weight of the film forming polymer or binder solids;***

*wherein the amount of free and microencapsulated isothiazolone biocide is a total of 1.5 percent to 30 percent by weight of the composition; and wherein the isothiazolone biocide is encapsulated in:*

*i) a microcapsule having a wall that is formed from a hydrolyzed polyvinyl acetate and phenolic resin;*

*ii) an amino-urea-formaldehyde shell system;*

*iii) a dual walled capsule, wherein said dual walled capsule comprises: a first interfacial capsule wall of acrylic polymer and a second wall of polyvinyl acetate-urea-resorcinol-*

*glutaraldehyde; or a first interfacial capsule wall of acrylic polymer and a second wall of polyvinyl acetate-urea-resorcinol-formaldehyde;*

*iv) a microcapsule having a wall that is formed from: a melamine-formaldehyde shell capsule further re-encapsulated with polyvinyl acetate-urea-resorcinol-formaldehyde; a melamine-formaldehyde shell capsule re-encapsulated with polyvinyl acetate-urea-resorcinol-glutaraldehyde polymer; a polyvinyl acetate-urea-resorcinol*

*glutaraldehyde shell capsule re-encapsulated with a melamine-formaldehyde process; a hydrophilic shell comprising gelatin-gum arabic as a first shell and a second shell of melamine-formaldehyde or a urea-resorcinol formaldehyde condensation polymer;*  
*v) a melamine-formaldehyde wall having a thickness of less than 0.1 micron, and then further encapsulated in a polyvinyl acetate wall."*

6. Thus, the functionally defined upper limit of the concentration range for the free isothiazolone biocide from claim 1 as filed has been deleted. The upper limit is now defined numerically ("*to 15% by weight of the film forming polymer or binder solids*").

According to established case law, deleting from an independent claim a feature which the application as filed consistently presented as being an essential feature of the invention results in an extension of the claimed subject-matter beyond the content of the application as filed under Article 123(2) or Article 100(c) EPC (Case Law of the Boards of Appeal of the European Patent Office, 10th edition 2022, II.E.1.4.3). As set out above, the functional feature deleted in claim 1 of the main request is essential in the context of the application as filed.

7. The respondent argued that the functional feature of claim 1 as filed had in fact not been deleted but replaced by the numerical upper limit. The application as filed disclosed the plasticising effect of DCOIT (paragraph bridging pages 1 and 2). Therefore, it was clear that the only quantitative teaching in the

application as filed relating to DCOIT on page 8, lines 21 to 22, stating that

*"[i]n one embodiment, the free DCOIT is added in an amount of from 0.25% to 15% of the weight of the film forming polymer or the binder solids",*

was meant to address this plasticisation problem and the reduction in  $T_g$  and was applicable to the invention of claim 1 as filed.

- 7.1 The board does not agree with this analysis, even assuming in the respondent's favour that the disclosure on page 8, lines 21 to 22, referring to the specific biocide DCOIT, can indeed be generalised to all isothiazolone biocides with a water solubility of less than 2 percent at room temperature, as is done in claim 1 of the main request.

The application as filed does not disclose that the numerical upper limit of 15% is meant to be the same as the functionally defined upper limit of claim 1 as filed or that the latter is always complied with when the concentration of the free isothiazolone biocide is  $\leq 15\%$ . Rather, the opposite conclusion must be drawn, namely that, as argued by the appellant, the question of whether or not the  $T_g$  of the film forming polymer is reduced by more than 20 °C depends on the coating composition under consideration and in particular the film forming polymer it contains. In other words, it is very readily conceivable, and this was acknowledged by the respondent at the oral proceedings, that claim 1 of the main request encompasses film forming polymers for which amounts of free isothiazolone biocides close or identical to the numerical upper limit of 15% actually

reduce the glass transition temperature by more than 20 °C, contrary to claim 1 as filed.

- 7.2 In this context, the respondent submitted that the plasticising effect of certain biocides such as DCOIT on film forming polymers was well-known to the skilled person. The wording of claim 1 of the main request stated the concentration of the free isothiazolone biocide in relation to the weight of the film forming or binder solids. This was a pointer to the skilled person that the coating composition of claim 1 of the main request should not contain too much free isothiazolone biocide, depending on the film forming polymer actually used. For this reason, compositions in which, for example, concentrations of 15% of free isothiazolone biocide caused a  $T_g$  reduction of more than 20 °C precisely did not fall within the subject-matter of claim 1.

The respondent's argument ultimately means reading into claim 1 of the main request a lower possible concentration for the free isothiazolone biocide precisely when concentrations close or identical to the numerical upper limit of 15% lead to a  $T_g$  decrease of more than 20 °C. The board cannot agree with this, as the subject-matter of a claim is determined by its wording, which in the present case provides for an explicit upper limit of 15% for any film forming polymer.

8. The respondent also argued that the functional feature in claim 1 as filed could not be meaningfully interpreted by the skilled person as defining a boundary. The replacement of the functional feature in claim 1 as filed by the numerical upper limit in claim 1 of the main request was made to address the

examining division's objections in this respect under Articles 83 and 84 EPC and should be considered allowable.

The board cannot agree with this contention. It is already clear from the wording of the functional feature that it is intended to define an upper limit for the concentration of the free isothiazolone biocide in the coating composition. The fact that claim 1 as filed does not define an exact numerical upper limit may be due to the fact that the actual upper limit depends on the composition under consideration (see above). However, any unclarity that may arise from an ambiguity in an application as filed is to the detriment of a patent proprietor, who is ultimately responsible for the drafting of the application as filed and its claims. The fact that a feature in the application as filed is unclear cannot therefore justify or excuse the complete deletion of the unclear feature or its replacement by another feature if this results in an extension beyond the content of the application as filed. In fact, what prompted a patent proprietor to make a particular amendment to the claims (in this case to address the examining division's objections) cannot have any influence on the outcome of the assessment of the ground for opposition under Article 100(c) EPC.

9. In view of the intended use of the composition according to claim 1 for coating, the question may arise as to whether this intended use implicitly limits the subject-matter of claim 1 in that the functionally defined upper limit is always complied with, i.e. that the free isothiazolone biocide is necessarily present in such a low concentration that the glass transition

temperature of the film forming polymer is not reduced by more than 20 °C.

However, this was not argued by the respondent. To assume such a limitation would also run counter to the wording of claim 1 as filed, which is also directed to a coating composition but nevertheless provides for the functionally defined upper limit in question (see above).

10. The respondent also did not put forward any arguments as to from where in the application as filed, apart from claim 1 as filed, the combination of features of claim 1 of the main request might be directly and unambiguously derivable.

IX. Hence, the subject-matter of claim 1 of the main request extends beyond the content of the application as filed and the ground for opposition of Article 100(c) EPC prejudices the maintenance of the patent as granted.

Auxiliary requests 1 to 6 - Amendments (Article 123(2) EPC)

11. Claim 1 of auxiliary request 1 differs from claim 1 of the main request essentially in that the isothiazolone biocides are more narrowly defined as being

*"selected from the group consisting of 4,5-dichloro-2-n-octyl-3(2H)-isothiazolone (DCOIT), 2-n-octyl-3(2H)-isothiazolone (OIT), benzisothiazolone (BIT) and their alkyl derivatives, and combinations thereof".*

Similarly, in claim 1 of auxiliary requests 2 and 3, the microencapsulated and/or the free isothiazolone biocides are more and more narrowly defined.

Claim 1 of auxiliary requests 4 to 6 differs from that of auxiliary requests 1 to 3 only in that the abbreviations for the specific isothiazolone biocides and the feature "*and their alkyl derivatives*" have been deleted.

12. Thus, the amendment in claim 1 of the main request objected to above as extending beyond the content of the application as filed is still present in claim 1 of auxiliary requests 1 to 6. In particular, the amendments made do not eliminate the problem that claim 1 of these requests still encompasses compositions in which the glass transition temperature of the film forming polymer is reduced by more than 20 °C, i.e. embodiments which are not directly and unambiguously disclosed in the application as filed. Thus, the reasoning for claim 1 of the main request still applies with the consequence that the subject-matter of claim 1 of each of auxiliary requests 1 to 6 extends beyond the content of the application as filed. Hence, auxiliary requests 1 to 6 are not allowable.

**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:



N. Maslin

M. O. Müller

Decision electronically authenticated