BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS | BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE | CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

Publication in the Official Journal Yes / No

File Number: T 516/89 - 3.3.2

Application No.: 81 300 980.0

Publication No.: 0 037 188

Title of invention: Chemical blowing agent composition, its composition and use

Classification: C08J 9/10

D E C I S I O N
of 19 December 1990

Proprietor of the patent: Schering Agrochemicals Limited

Opponent: Bayer AG, Leverkusen

Headword: Confidential papers/SCHERING

EPC Rule 93

Keyword: "Confidential papers" - "documents excluded from file inspection"

Headnote

Papers marked "confidential" which do not belong to classes of documents to be excluded from file inspection (Rule 93 EPC; decision of the President of the EPO, OJ EPO 1985, 316) are returned to the party concernded without taking notice.

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number : T 516/89 - 3.3.2

D E C I S I O N
of the Technical Board of Appeal 3.3.2
of 19 December 1990

Appellant : (Proprietor of the patent)
SCHERING AGROCHEMICALS LIMITED
Hauxton
Cambridge CB2 5HU (GB)

Representative :
Wells, Norman David
Schering Agrochemicals Limited
Industrial Property Department
Chesterford Park Research Station
Saffron Walden
Essex CB10 1XL (GB)

Respondent : (Opponent)
Bayer AG, Leverkusen
Konzernverwaltung RP
Patente Konzern
Bayerwerke
D-5090 Leverkusen

Decision under appeal :
Decision of the Opposition Division of the European Patent Office dated 23 June 1989 revoking European patent No. 0 037 188 pursuant to Article 102(1) EPC.

Composition of the Board :

Chairman : P. Lançon
Members : P. Krasa
R.L. Schulte

Summary of Facts and Submissions

I. European patent No. 37 188 was granted on the basis of eight claims in response to European patent application No. 81 300 980.0. Claims 1 and 2 read:

"1. A method for making a blowing agent composition which comprises an azo compound or sulphonhydrazide blowing agent, and an activator for the blowing agent, which activator is an amine or amide, urea, a sulphonhydrazide, or a metal salt, oxide or soap, characterised in that a mixture of the blowing agent and the activator is comminuted until the mean particle size of the mixture is less than 5 μm.

2. A blowing agent composition comprising a mixture of an azo compound or sulphonhydrazid blowing agent, and an activator for the blowing agent, which activator is an amine or amide, urea, a sulphonhydrazide, or a metal salt, oxide or soap, characterized in that the mixture has been comminuted to a mean particle size of less than 5 μm."

Claims 3 and 4 related to an expandable polymer composition and a pre-mix composition for incorporation into a polymer composition respectively, both comprising, inter alia, a blowing agent composition according to Claim 2; Claims 5 to 8 were dependent claims.

II. A notice of opposition was filed by the Respondents requesting revocation of the patent because its subject-matter was not patentable for the grounds given in

Article 100 EPC, which grounds were specified as lack of inventive step in view of

(1) Taschenbuch der Kunststoff-Additive
Carl Hanser-Verlag München Wien 1979, pages 373 ff., especially pages 477-479 and

(2) Technology of Celogen Blowing Agents
Uniroyal Chemical, Div. of Uniroyal Inc., Naugatuck, Connecticut 06770.

III. The Opposition Division revoked the patent by a written decision posted on 23 June 1989. In its decision it held that the comparative experiments submitted on 22 July 1987 by the Respondents demonstrated that there was no difference between a blowing agent obtained according to a process of the state of the art and a blowing agent obtained according to the method of Claim 1. It took the view that mixing the already micronized components in an air-jet mill at an air pressure of 3 bars was a mixing process according to the state of the art and thus a valid basis for such a comparison, as no convincing arguments were produced by the Appellants that micronization actually took place under such process conditions.

IV. The Appellants lodged an appeal on 11 August 1989 and paid the prescribed fee. They filed a Statement of Grounds of Appeal on 20 October 1989 together with amended claims. In reply to a communication from the Board indicating that these claims could be objectionable under Article 123(3) EPC amended claims were filed by the Appellants on 15 November 1990 which were further amended on 10 December 1990.

V. The Grounds of Appeal were accompanied by papers marked 'CONFIDENTIAL' and in the covering letter the Appellants requested the EPO to treat these documents as such. With

two letters the registrar of the Board made inquiries whether these papers should be returned to the Appellants or should be transmitted to the Respondents. In reply, on 27 December 1989 the Appellants requested the President of the European Patent Office to order under Rule 93(d) EPC that the respective documents should be excluded from public file inspection.

The Board passed this request to the President of the EPO who decided that the respective papers could not be excluded from file inspection in accordance with Rule 93(d) EPC. They did neither fall under one of the alternatives (e) to (f) of Rule 93 EPC nor did they belong to the classes of documents designated in the President's decision dated 16 September 1985 (OJ EPO 1985, 316). They could also not be excluded from inspection of file by a decision for this particular case as they were filed to prove, according to the Appellants, the commercial success of the invention and, thus, to support inventive step. Therefore, such information could serve the purpose of informing the public on the European patent and, hence, could not be exempted from inspection of file.

After this decision of the President of the EPO the Board returned the documents marked 'CONFIDENTIAL' to the Appellants, informing them inter alia that no member of the Board had taken note of these documents.

VI. The Appellants requested that the impugned decision be set aside and the patent be maintained in amended form on the basis of eight claims filed on 10 December 1990. Claim 1 of this request differs from Claim 1 as granted by replacing "comminuted until the mean particle size" by "comminuted in a fluid energy mill to give a product of mean particle size" and in Claim 2 similarily "comminuted to a mean particle size" was replaced by "comminuted in a fluid energy mill to a mean particle size "; Claims 3 to 8

have the same wording as the respective claims as granted.

The Appellants' arguments may be summarised as follows.

The composition which the Opposition Division considered to be one of the state of the art (formulation IIc), and which was used as the basis for the comparative tests submitted by the Respondents on 22 July 1987, was in fact no composition of the state of the art but rather a composition according to the invention. This was inferred from the mean particle size of the mixture IIc which was exactly the same as the particle size of one of the components and, thus, indicating that formulation IIc was no true mixture. The mean particle size of a true mixture should have been between the respective particle sizes of the components. Such straight mixtures were known from the state of the art acknowledged already in the disputed patent and exemplified by

(3) US-A-3 511 787.

Appellants further submitted that the use of an air-jet mill for mixing components was rather unusual and required the components to be premixed because it was a continuous flow device.

VII. The Respondents submitted that "mixing" was one of the typical applications for air-jet mills. In support of this argument they submitted the document

(4) Chemie-Ingenieur Technik 42(1), 6-15 (1970)

According to the Respondents no comminuting occurred when the components were mixed for obtaining formulation IIc of the comparative experiments by means of an air-jet mill at

an air pressure of 3 bars. They took the view that, thus, composition IIc was prepared according to the state of the art. This composition IIc had the same properties as a composition which was prepared according to the disputed patent. Hence, the alleged technical problem was already solved in the state of the art and that the subject-matter claimed did not involve an inventive step. The mean particle size of formulation IIc was to be explained by the formation of agglomerates.

Finally, the Respondents stated that the difference between conventional mixers and micronizers, as emphasised by the Appellants, was only an artificial one.

The Respondents requested that the appeal be dismissed.

VIII. At the end of the oral proceedings, which took place on 19 December 1990, the Chairman announced the Decision of the Board to allow the appeal.

Reasons for the Decision

1. The appeal is admissible.

2. Claims 1 to 8, filed on 10 December 1990, meet the requirements of Article 123 EPC and, thus, are admissible. This not being in dispute there is no need to give further details.

3. The technical problem

3.1 The disputed patent relates to blowing agent compositions, methods for making them and expandable compositions containing them (cf. page 2, lines 3 and 4 of the granted patent). According to the patent specification it is known

from the prior art to produce such compositions comprising the blowing agent and an activator by mixing the components having the desired particle size (cf. page 2, lines 7, 8). Such prior art as illustrated by document (3) is not in dispute between the parties.

3.2 However, the Respondents submitted comparative tests where a composition according to the patent (component Ia) was compared with a composition IIc, produced by mixing the components at a low air pressure of only 3 bar in the same air jet mill as used to produce composition Ia. The Respondents alleged that composition IIc was one of the state of the art as no micronisation took place in the course of its preparation. The use of an air jet mill was said to be quite conventional, mixing of powders being one of the typical fields of application of such a device. In this connection, the Respondents referred to document (4) in support.

3.3 The Respondents' above submission amounts to the question whether or not the said composition IIc, obtained by mixing its components at a low air pressure in an air jet mill was a product of the state of the art and, thus, had to be taken into account when defining the technical problem underlying the disputed patent.

The mixing of powders is, as the Appellants stated convincingly at the oral proceedings, a low energy process which is performed in mixers, typically at a couple of revolutions per second and with the components practically remaining unchanged. Thus, in the Board's opinion, a skilled man would not avail himself of a device which is primarily designed to micronise particles - as follows already from its designation as a "mill" - even if this device could accessorily be used also as a mixer under particular operating conditions. Especially when

considering homogeneity of the mixture aimed at this could be achieved much more easily with low speed powder mixers as compared with an air jet mill. Hence, the Board concludes that suggesting a product obtained by the use of an air jet mill as mixing device for its components - which possibility is not foreshadowed in the state of the art -amounts to suggesting an artificial state of the art which is not an appropriate starting point to define the underlying technical problem. The technical problem to be solved by an invention must be so formulated as not to contain pointers to the solution (see T 229/85, OJ EPO 1987, 237).

3.4 This conclusion cannot be changed by document (4) which is concerned with the milling of materials in air jet mills. The most relevant paragraph, referred to by the Respondents reads (in the English translation): "Most finely grounded carrier material with a grain size of from about 2 to 10 μm, as e.g. Kaolin ... is treated in an air jet mill with the admixed roughly agglomerated organic ... active compound. At this occasion essentially only the agglomerates of the active compounds are split and deposited on the carrier particles ..." (see (3), page 7, the first paragraph following Figure 5). This makes it clear, that also in this case the air jet mill is not used as a mere mixing device but rather to change the components of an already existing mixture.

3.5 Thus, the problem to be solved has to be defined only on the basis of the prior art which is not in dispute between the parties and as reflected in the comparative examples

of the patent in suit. The said problem is to provide a blowing agent composition which shows

- a lower decomposition temperature and

- an increased efficiency, i.e. a reduced dwell time at a given oven temperature for achieving a particular expansion of the respective polymer.

4. According to the patent in suit this technical problem is essentially solved by the provision of a blowing agent composition which was prepared by comminuting in a fluid energy mill the respective components to give a product of mean particle size less than 5 μm.

The examples in the disputed patent indicate that with the blowing agent compositions according to the patent as compared with a composition according to the state of the art (see points 3.1 and 3.3 above)

- the decomposition temperature is lowered (examples 1, 2),

- the expansion of an expandable polymer is higher at the same oven temperature and dwelling time (example 3), and dwelling time reduction of from 16% to 41% may be achieved for the same expansion (examples 4 to 8).

In the light of this experimental evidence, which was not disputed by the Respondents, the Board is satisfied that the above-defined technical problem is effectively solved.

5. After examination of the cited documents the Board has reached the conclusion that the subject-matter of the disputed patent is novel and, since this issue was not contested, there is no need to give detailed reasons for this finding.

6. It still remains to be decided whether the statutory requirement of inventive step is met by the claims as they now stand.

6.1 Document (1) discloses the possibilities to modify the performance of azodicarbonamide as a blowing agent. The influence of the particle size and of the addition of an activator is discussed. However, (1) is completely silent on how to produce the blowing agent - activator compositions.

6.2 Document (2) discloses, inter alia, the properties of a range of blowing agents (Celogen ^{R}) and confirms the importance of particle size (see e.g. page 5, left-hand column under "activation"; page 14, left-hand column under "effect of particle size on foam development"). The use of activators is also disclosed but, again, there is no indication of how to manufacture blowing agent - activator mixtures.

6.3 Document (3) relates to blowing agent compositions comprising azodicarbonamide and activators. Example 5 discloses the preparation of a composition by milling the azodicarbonamide in a liquid plasticizer and thereafter mixing it with the activators (a lead salt and a highly reactive particulate silica) in a conventional mixer ("Hobart" Model 50).

6.4 The only document before the Board relating to the use of air jet mills is (4), which was already discussed above. This document makes no mention of blowing agents and of

activators therefor and there is especially no hint at all that the use of an air jet mill in the manufacture of blowing agent compositions as suggested in present Claim 2 would result in a solution of the above-defined technical problem.

6.5 It follows from the above that the cited references, neither on their own nor in combination with each other, are such as to render obvious the subject-matter of Claim 2.

6.6 This conclusion cannot be changed by the Respondents' finding that there may exist another solution to the problem as defined, i.e. compositions prepared by mixing the components in an air jet mill without comminuting them. Their argument that a skilled person would aim at a contact as close as possible for the two components and, thus, be led automatically to the use of an air jet mill, results, in the Board's opinion, from hindsight. The skilled person could not even deduce from the cited prior art that an improved performance of blowing agent compositions of the state of the art could be achieved at all; still less could he gain from the prior art any indication of how to achieve such an improvement.

6.7 Claim 1 relates to a process for manufacturing a blowing agent composition according to Claim 2 and derives its patentability from Claim 2 as do Claims 3 and 4. Dependent Claims 5 to 8 relate to preferred embodiments of the respective independent claims and are also allowable.

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 8, filed on 10 December 1990, and a description to be adapted.

The Registrar: The Chairman:

E. Görgmaier P. Lançon