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Datasheet for the decision of 8 November 2013

Case Number: T 0950/10 - 3.3.05

Application Number: 01912296.9

Publication Number: 1264813

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Language of the proceedings: EN

Title of invention:
GAS GENERATOR WITH AUTOMATIC FIRING FUNCTION

Patent Proprietor:
DAICEL CHEMICAL INDUSTRIES, LTD.

Opponent:
TRW Airbag Systems GmbH

Headword:

Relevant legal provisions:
EPC Art. 83, 100(b), 123(2), 111(1)
RPBA Art. 12(4)

Keyword:
Sufficiency of disclosure - main request (no) - information gap which could not have been filled by common general knowledge
Amendments - could not have been presented before the department of first instance
Auxiliary requests 1 to 4 - added subject-matter (yes)

Decisions cited:
T 0822/07, T 0952/06, T 1641/11, J 0006/98, T 0105/09, T 0214/04

Catchword:

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Case Number: T 0950/10 - 3.3.05

D E C I S I O N
of Technical Board of Appeal 3.3.05
of 8 November 2013

Appellant: (Patent Proprietor)	DAICEL CHEMICAL INDUSTRIES, LTD. 1 Teppo-cho, Sakai-ku Sakai-shi, Osaka 590-8501 (JP)
Representative:	Grünecker, Kinkeldey, Stockmair & Schwanhäusser Leopoldstrasse 4 80802 München (DE)
Respondent: (Opponent)	TRW Airbag Systems GmbH Werner von Braun Strasse 1 85544 Aschau/Inn (DE)
Representative:	Sulzbach, Werner Prinz & Partner Rundfunkplatz 2 80335 München (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 25 February 2010 revoking European patent No. 1264813 pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chairman: G. Raths
Members: A. Haderlein
C. Vallet

Summary of Facts and Submissions

I. The present appeal lies from the decision of the opposition division to revoke European patent EP-B-1 264 813. The patent in suit concerns a gas generating composition.

II. In its decision, the opposition division found that the main and the three auxiliary requests filed by the proprietor (hereinafter: appellant) under cover of the letter dated 7 January 2010 did not comply with the requirement of sufficiency of disclosure in particular in view of the following evidence:

D7: EP 1 241 153 A.

Under the heading "9 Observations", the decision contains a statement that, according to the opposition division, the auxiliary requests did not comply with Art. 123(2) EPC since features of the embodiment shown in Fig. 1 were taken in isolation, leading to an intermediate generalisation seemingly not disclosed in the application as filed.

III. The appellant's notice of appeal and its statement of grounds of appeal were received on 30 April 2010 and 7 July 2010, respectively. The appellant maintained its main request and filed four auxiliary requests, the requests reading as follows (amendments with respect to claim 1 of the patent as granted being underlined or marked by strikethrough):

Main request
"1. A gas generator <u>including a first combustion chamber (5a) contains a first generating agent (9a) and</u>

a second combustion chamber (5b) provided adjacent to each other
wherein a gas generating agent (9b) in the second combustion chamber (5b) maintains an automatic igniting function even after the gas generating agent (9b) has been kept at 105°C for 400 hours, and ~~said gas generating agent~~ has a composition comprising at least:
- guanidine nitrate or nitroguanidine as a fuel, and
- a basic copper nitrate,
wherein the first combustion chamber (5a) communicates with the second combustion chamber (5b) through a through-hole (10) only when the gas generating agent (9b) in the second combustion chamber (5b) is ignited."

Auxiliary request 1
"1. A gas generator including a first combustion chamber (5a) contains a first generating agent (9a) and a second combustion chamber (5b) provided adjacent to each other
wherein a gas generating agent (9b) in the second combustion chamber (5b) maintains an automatic igniting function even after the gas generating agent (9b) has been kept at 105°C for 400 hours, and ~~said gas generating agent~~ has a composition comprising at least:
- guanidine nitrate ~~or nitroguanidine~~ as a fuel, and
- a basic copper nitrate,
wherein the first combustion chamber (5a) communicates with the second combustion chamber (5b) through a through-hole (10) only when the gas generating agent (9b) in the second combustion chamber (5b) is ignited."

Auxiliary request 2
"1. A gas generator comprising a housing including a substantially inner cylindrical member (4) arranged therein, a first combustion chamber (5a) formed in an outer side of the inner cylindrical member (4), and a

second combustion chamber (5b) provided inside the inner cylindrical member (4), a gas generating agent (9a, 9b) for generating a combustion gas stored in the first and second combustion chambers (5a, 5b), respectively, and ignition means (12a, 12b) to activate the gas generating agent (9a, 9b), respectively,
wherein said gas generating agent (9b) in the second combustion chamber (5b) maintains an automatic igniting function even after the gas generating agent (9b) has been kept at 105°C for 400 hours, and ~~said gas generating agent~~ has a composition comprising at least:
- guanidine nitrate ~~or nitroguanidine~~ as a fuel, and
- a basic copper nitrate."

Auxiliary request 3
"1. A gas generator comprising a housing including a substantially inner cylindrical chamber (4) arranged therein, a first combustion chamber (5a) formed in an outer side of the inner cylindrical member (4), and a second combustion chamber (5b) provided inside the inner cylindrical member (4), the first and second combustion chambers (5a, 5b) being provided adjacent to each other in radial direction of the gas generator housing and communicate (sic) with each other through a through-hole (10) only when a gas generating agent (9b) in the second combustion chamber (5b) is ignited, a gas generating agent (9a,9b) for generating a combustion gas stored in the first and second combustion chambers (5a, 5b), respectively, and ignition means (12a, 12b) to activate the gas generating agent (9a, 9b), respectively,
wherein said gas generating agent (9b) in the second combustion chamber (5b) maintains an automatic igniting function even after the gas generating agent (9b) has been kept at 105°C for 400 hours, and ~~said gas generating agent~~ has a composition comprising at least:

- guanidine nitrate ~~or nitroguanidine~~ as a fuel, and
- a basic copper nitrate."

Auxiliary request 4
"1. A gas generator including a first combustion chamber (5a) and a second combustion chamber (5b), concentrically arranged and provided adjacent to each other in the radial direction in a gas generator housing (3) and communicate (sic) with each other through a through-hole (10) closed by a seal tape (11) which is ruptured only when a gas generating agent (9b) in the second combustion chamber (5b) is ignited and said gas generator is provided with an ignition means for each combustion chamber (5a, 5b) comprising an igniter (12a, 12b) and a transfer charge (16a, 16b), wherein said gas generating agent (9b) in the second combustion chamber (5b) maintains an automatic igniting function even after the gas generating agent (9b) has been kept at 105°C for 400 hours, and ~~said gas generating agent~~ has a composition comprising at least:
- guanidine nitrate ~~or nitroguanidine~~ as a fuel, and
- a basic copper nitrate."

The main request corresponds to the main request on which the decision of the opposition division was based. Auxiliary request 1 corresponds to the main request with the exception that the alternative relating to nitroguanidine as a fuel has been deleted. Auxiliary requests 2 to 4 correspond to auxiliary requests 1 to 3 on which the impugned decision was based with the exception that the alternative relating to nitroguanidine as a fuel has been deleted.

Apart from the above claim requests, the statement of grounds of appeal contained two annexes, i.e.

AP1: an extract from Wikipedia titled "Zeolithe (Stoffgruppe)" and dated 06.07.2010, and

AP2: F. Volk, Determination of gaseous and solid decomposition products of nitroguanidine, 1984.

IV. Oral proceedings were held on 8 November 2013.

V. The arguments submitted by the appellant in its statement of grounds of appeal, in its letter received on 8 October 2013, and at the oral proceedings are summarised as follows:

a) The skilled person would learn from D7 that adsorbents are to be used in gas-generating compositions according to D7. D7 also taught that the invention in D7 aims at adsorbing small molecules such as water, decomposition products and impurities which lead to the decomposition of nitroguanidine. For the skilled person it should be readily apparent that examples of such adsorbents were zeolites, as evidenced by document AP1. It was also common general knowledge that nitroguanidine was susceptible to decomposition in the presence of water, as evidenced by document AP2. The skilled person would therefore dry the composition comprising nitroguanidine as much as possible and, in particular, would use an adsorbent such as a zeolite in the compositions of the present invention in order to remove any remaining water, thereby preventing the undesired decomposition of nitroguanidine.

b) The examination of the auxiliary requests should be limited to the issue of sufficiency of disclosure as this was the only issue on which the

appealed decision was based. Examination of the requirements of Article 123(2) EPC by the Board would be contrary to the right of the appellant to have its arguments heard by two instances.

c) Claim 1 of auxiliary request 1 was based on column 4, lines 2 to 21 of the patent specification. The features incorporated into claim 1 could be isolated from the remaining features of the embodiment depicted in Figure 1, in particular because it was not necessary to locate both combustion chambers concentrically. The skilled person would be immediately aware of the fact that the two chambers had to be arranged adjacent to each other and had to be able to communicate with each other through the through-hole, but a lateral arrangement would also fulfil these conditions. It was not necessary either to provide a seal tape since such a seal tape was just one of a number of options known to the skilled person to keep the through-hole closed during normal use of the gas generator and provide access after self-ignition of the gas generating agent contained in the second combustion chamber. The through-hole could likewise be closed by a thermal plastic or wax closure. It was furthermore not necessary to provide a transfer charge.

VI. The arguments submitted by the respondent in its letters received on 20 January 2013 and 17 September 2013, and those submitted at the oral proceedings are summarised as follows:

a) The patent was silent on humidity control. Production example 1 of D7 corresponded, apart from the optional carboxymethyl cellulose salt, to

the sole example of the patent in suit. The gas generating agent of production example 1 of D7, however, was unstable although it was said in the patent that it was dried. D7 taught that in order to assure the long-term stability of a fuel comprising nitroguanidine additional measures, such as the addition of a zeolithe must be taken. Such a teaching was, however, absent from the disclosure of the patent in suit. AP2 showed that the decomposition of nitroguanidine was initiated by ammonia and, therefore, AP2 did not support the appellant's allegation that humidity control of nitroguanidine-based fuels was common technical knowledge. Therefore, the requirement of sufficiency of disclosure was not complied with for the main request.

b) In *obiter dictum*, the opposition division stated that the amendments corresponding to those made in the auxiliary requests filed before the Board infringed Article 123(2) EPC. Therefore, the auxiliary requests were *prima facie* not allowable and thus should be rejected as inadmissible pursuant to Article 12(4) RPBA.

c) If the Board admitted the auxiliary requests into the proceedings, the case should not be remitted to the first instance and compliance of the amendments with Article 123(2) EPC should be dealt with by the Board as this requirement was to be examined at any stage of the proceedings.

d) All the requests contained added subject-matter contrary to Art. 123(2) EPC. None of the requests contained all the features necessary for the functioning of the embodiment depicted in Fig. 1

of the patent in suit. In particular, as could be seen from the paragraphs [0019], [0041], and [0042] of the patent in suit, the seal tape (11) was essential and it was essential that its material and its thickness were adjusted. Also, paragraph [0022] of the patent in suit taught that it was essential that the second igniter 12b was never ignited before the first igniter 12a.

VII. Requests

The appellant requested that the decision under appeal be set aside and that the case be remitted to the department of first instance for further prosecution, in particular in regard to Article 123 (2) EPC.

The respondent requested dismissal of the appeal.

Reasons for the Decision

1. Main request - sufficiency of disclosure

1.1 The patent in amended form must disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Articles 83 and 100(b) EPC).

1.2 The requirement of sufficiency of disclosure is not complied with in particular if there is an information gap which cannot be filled by common general knowledge (see e.g. T 822/07 of 15 December 2010, Reasons 2.1; T 952/06 of 6 August 2009, Reasons 2).

1.3 The dryness of the gas generating agent was central in the submissions of the parties.

It is uncontended that the patent in suit neither mentions that the gas generating agent must be dried nor that the humidity of the gas generating agent must be controlled during storage and use. In particular, the passages in the patent in suit (paragraphs [0035] and [0048]) dealing with the manufacture of the gas generating agent do not mention that the gas generating agent should be dry during use whereas one of the methods to produce an extrusion-moulded gas generating agent involves the admixture of water (see paragraph [0035]).

In the appellant's favour, the Board nevertheless considers it part of the common general knowledge of the skilled person that gas generating agents of the type used in the patent in suit are normally dried before use.

In this context reference is made to D7, production examples 1 and 2 (paragraphs [0065] and [0066]), wherein the extruded nitroguanidine composition is "dried well" before the test.

1.4 In D7 (see production example 1), which is a patent application in the name of the appellant, a composition of nitroguanidine, basic copper nitrate and an additive, namely carboxymethyl cellulose, is prepared having an almost identical composition to the sole example of the patent in suit wherein guar gum is used as an additive.

It should be noted that in the patent in suit both guar gum and carboxymethyl cellulose are said to be possible additives (see paragraph [0030]) and that claim 1 of the main request covers compositions containing such additives.

In D7 the production example having the above composition is found to have undergone a weight loss of 22.82% after 400 hours at 110°C (see paragraph [0067]) and to have lost its automatic igniting function (cf. paragraph [0069]: "was hardly used directly as a gas generating agent"). When an adsorbent such as a zeolite was used in D7, the gas generating agent lost only 0.33% weight under the same conditions and was able to be used in an air bag, i.e. maintained its automatic igniting function (see paragraph [0072], last sentence).

1.5 It follows from the above that in order to maintain the automatic igniting function of the gas generating agent it is essential that the gas generating agent is contained in a composition comprising an adsorbent such as a zeolite.

1.6 The patent in suit does not mention the use of an adsorbent, let alone that the adsorbent is essential in order to maintain the automatic igniting function of the gas generating agent even if it has been kept at 105°C for 400 hours. Thus, there is an information gap.

1.7 The question of whether this gap could have been filled by the common general knowledge of the skilled person must therefore be answered.

1.7.1 D7 was published on 18 September 2002, i.e. more than 18 months after the date of filing of the patent in suit. Therefore, the information contained in D7 was not available to the skilled person at the effective date of the patent in suit. Also, it cannot be said that the content of D7 is proof of common general knowledge at the date of its filing, 24 November 2000, in particular because a single patent document does not

normally suffice to prove common general knowledge (cf. T 1641/11 of 3 May 2012, Reasons 3.6).

1.7.2 The appellant also referred to document AP2 as representing common general knowledge. It is, however, questionable whether AP2 represents common general knowledge.

Common general knowledge is represented by basic handbooks and textbooks on the subject in question; it does not normally include scientific articles (T1641/11, *loc.cit.*). The Board considers AP2 to be a scientific article rather than a basic handbook or a textbook (cf. Abstract of AP2, "...the decomposition behavior of nitroguanidine (nigu), especially in the low temperature range, has not been investigated fundamentally in the past"; and section 2 of AP2: "the purpose of this study...").

What is more, AP2 does not teach the use of adsorbents in order to maintain the automatic igniting function. AP2 only teaches that apart from water ammonia is responsible for inducing an autocatalytic decomposition of nitroguanidine (see page 670, first paragraph, and page 673, section 6 "summary", fourth and last paragraphs), but is silent on the use of adsorbents. Thus, AP2 cannot be used to fill the information gap since it neither represents common general knowledge nor teaches the use of adsorbents, let alone the use of adsorbents in order to maintain the automatic igniting function of a gas generating agent comprising nitroguanidine.

1.7.3 The appellant also referred to AP1. This document is an excerpt from Wikipedia dated 6 July 2010, i.e. more than nine years after the filing date of the patent in

suit. For this reason alone, AP1 cannot be used to prove common general knowledge available at the effective date of the patent in suit.

The Board nevertheless agrees with the appellant in so far as at the effective date of the patent in suit zeolites were known for their capacity for adsorbing various molecules such as water. However, AP1 does not contain any teaching that zeolites should be used for maintaining the automatic ignition function of gas generating agents comprising nitroguanidine.

1.7.4 The appellant also submitted that the skilled person would be aware of the fact that nitroguanidine needed to be as dry as possible and therefore the skilled person would have used an adsorbent.

The Board agrees with the appellant only insofar as the skilled person would be aware of the fact that nitroguanidine needs to be as dry as possible. The skilled person would thus have dried the gas generating agent before use in order be sure that no water remained in the composition. But since the automatic igniting function was required at 105°C after 400 hours, i.e. above the boiling point of water at atmospheric pressure, the skilled person would not have thought that it was essential to combine the gas generating agent with an adsorbent in order to adsorb any remaining water.

As discussed at 1.4 *supra*, drying of the gas generating agent before use is, however, insufficient for maintaining the automatic igniting function at a temperature of 110°C, i.e. at about the temperature of 105°C required in claim 1 of the main request.

1.7.5 The Board thus concludes that the information gap could not have been filled by the common general knowledge of the skilled person.

1.8 For the above reasons, the patent as amended according to the main request does not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Articles 83 and 100(b) EPC).

2. Admissibility of the auxiliary requests under Article 12(4) RPBA

2.1 Auxiliary request 1 corresponds to the main request on which the impugned decision was based, with the exception that the alternative relating to nitroguanidine as a fuel has been deleted. Auxiliary requests 2 to 4 correspond to auxiliary requests 1 to 3 on which the impugned decision was based, with the exception that the alternative relating to nitroguanidine as a fuel has been deleted.

Auxiliary requests 1 to 4 were filed for the first time with the statement of the grounds of appeal.

2.2 Article 12(4) RPBA gives the Board the discretion to hold inadmissible requests that could have been presented in the first instance proceedings. Hence, the Board needs to establish whether auxiliary requests 1 to 4 could have been presented in the proceedings before the opposition division.

2.3 In the annex to the oral proceedings held before the opposition division, the opposition division informed the parties that in its preliminary opinion the requirement of sufficiency of disclosure was complied

with for all requests. As is apparent from the impugned decision, the opposition division changed its opinion and found that there was a lack of sufficiency of disclosure with respect to the first alternative in the claims, i.e. nitroguanidine as a gas generating agent. Nothing in the minutes of the oral proceedings indicates that the opposition division had informed the parties, before the announcement of the decision, that it had changed its opinion. It must thus be concluded that the appellant became aware of this change of opinion only when the chairman of the opposition division pronounced the decision to revoke the patent. Therefore, the appellant cannot be expected to have foreseen this change of opinion when he was asked by the chairman for any further requests prior to the deliberation of the opposition division.

The Board thus concludes that the appellant could not have presented auxiliary requests 1 to 4 in the first instance proceedings.

2.4 The Board also considers it a legitimate reaction to remove from the independent claim the alternative relating to nitroguanidine which the opposition division found to be insufficiently disclosed, and to this extent therefore the Board considers these requests to relate to the case under appeal within the meaning of Article 12(4) RPBA.

2.5 For the above reasons, the auxiliary requests are admissible.

Since, as stated above, the auxiliary requests could not have been filed in the proceedings before the opposition division, the respondent's argument that these requests were *prima facie* not allowable in view

of the *obiter dictum* contained in the decision under appeal is irrelevant for the question of their admissibility under Article 12(4) RPBA. Moreover, the Board observes that an *obiter dictum* generally does not have any legal effect by virtue of its very nature, i.e. it does not form part of the *ratio decidendi* of the decision.

3. Request to remit the case to the department of first instance for further prosecution, in particular in regard to Article 123(2) EPC.

3.1 Article 111(1) EPC confers upon the Board the discretionary power either to exercise any power within the competence of the department which was responsible for the decision appealed or to remit the case to that department for further prosecution.

Therefore, the EPC does not guarantee the parties an absolute right to two instances in the sense that parties are entitled to have had every aspect of fact or of law on which a board of appeal bases its decision examined previously by the first instance (see J 6/98 of 17 October 2000, Reasons 4; T 214/04 of 31 July 2007, Reasons 3; T 105/09 of 30 November 2010, Reasons 2.6).

3.2 In the case at hand, the opposition division, as indicated in the annex to the summons to oral proceedings to be held before it, was of the preliminary opinion that Article 123(2) EPC was not complied with for the then main request corresponding to the main request before the Board. The amendments objected to by the opposition division are also contained in auxiliary request 1 before the Board. Auxiliary requests 2 to 4 correspond to auxiliary

requests 1 to 3 filed before the opposition division in an attempt to overcome the objections under Article 123(2) EPC raised by the opposition division.

3.3 The Board thus exercised its discretionary power and decided to examine the auxiliary requests for compliance with Article 123(2) EPC.

4. Auxiliary requests 1 to 4 - Article 123(2) EPC

4.1 The amendments in auxiliary requests 1 to 4 are based on the embodiment depicted in Figure 1 and the corresponding passages of the description (i.e. paragraphs [0015] to [0042] of the patent specification and pages 5 to 18 of the application as filed).

As is evident from a comparison between claim 1 of each of auxiliary requests 1 to 4 and the passages of the application as filed relating to the embodiment depicted in Fig. 1, numerous features thereof have not been incorporated into claim 1.

4.2 From the entirety of the passages in the application as filed relating to this embodiment, it appears that the seal tape (11) as well as its specific function and interaction with, in particular, the gas generating agents (9a) and (9b) in the first and second combustion chambers (5a,5b) are essential for the functioning of this embodiment. More specifically, it is essential that the gas generating agent (9b) stored in the second combustion (5b) chamber burns simultaneously with or with a delay after the gas generating agent (9a) stored in the first combustion chamber (5a) and that the seal tape (11) is not broken by combustion of the first gas generating agent (9a) but is broken only by combustion

of the second gas generating agent (9b) (see page 9, first full paragraph, page 7, first paragraph).

It follows from the above that at least the combination of

(i) a first gas generating agent in a first combustion chamber, with
(ii) a second gas generating agent in a second gas generating chamber, and
(iii) the seal tape

are presented in the application as filed as essential for the embodiment on which the amendments are based.

The application as filed thus does not disclose an embodiment in which one or more of the features (i) to (iii) have been omitted.

Conversely, in claim 1 of

auxiliary requests 1 to 3

the seal tape (11) is missing, i.e. claim 1 of these requests covers embodiments wherein feature (iii) above is missing. The argument by the appellant that the seal tape is not essential for the above embodiment as it could also be replaced by other means such as a wax or plastic closure cannot be accepted by the Board.

Firstly, claim 1 of auxiliary requests 1 to 3 now covers embodiments wherein the through-hole is not closed at all, i.e. not even by a wax or plastic closure.

Secondly, it might be obvious to replace the seal tape by a wax or plastic closure, but there is no direct and unambiguous disclosure in the application as filed that the seal tape in the embodiment depicted in Fig. 1 could be replaced by other closure means.

With respect to

auxiliary request 4,

claim 1 does not comprise the first gas generating agent. This means that the first combustion chamber (5) in claim 1 of auxiliary request 4 does not necessarily contain a gas generating agent. Such an embodiment, i.e. an embodiment which does not comprise the feature (i) above, is clearly not derivable from the application as filed.

Also, as is clear from the first paragraph of page 7 of the description as filed, the material and the thickness of the seal tape (11) are to be chosen such that it is not ruptured by the combustion of the gas generating agent (9a), but is ruptured by the combustion of the gas generating agent (9b), i.e. rupture of the seal tape is caused by its intrinsic properties and the combustion of the gas generating agent. This feature, however, is absent from claim 1 of auxiliary request 4.

In fact, the wording "is ruptured only when" is used, but this does not necessarily require that the seal tape is ruptured due to its intrinsic properties and to the combustion of the gas generating agent (9b). For instance, claim 1 of auxiliary request 4 now also covers embodiments wherein the seal tape is actually ruptured by the combustion of the gas generating agent

(9a) at the point in time when the gas generating agent (9b) is ignited, but is not ruptured by the combustion of gas generating agent (9b). Such an embodiment is, however, not derivable from the application as filed.

Thus, claim 1 of each of auxiliary requests 1 to 4 covers embodiments which are not directly and unambiguously derivable from the application documents as filed. It follows from the above that auxiliary requests 1 to 4 do not meet the requirements of Article 123(2) EPC.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

C. Vodz G. Raths

Decision electronically authenticated