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D E C I S I O N
of 24 January 2006

Case Number: T 0672/03 - 3.3.05

Application Number: 91901121.3

Publication Number: 0557275

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Language of the proceedings: EN

Title of invention:
Fire Extinguishing process

Patentee:
E.I. DU PONT DE NEMOURS AND COMPANY

Opponent:
Solvay Fluor GmbH

Headword:
Fire preventing/DU PONT DE NEMOURS

Relevant legal provisions:
EPC Art. 123(3)

Keyword:
"Extension of the protection conferred (yes) "

Decisions cited:

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Catchword:

-



Case Number: T 0672/03 - 3.3.05

D E C I S I O N
of the Technical Board of Appeal 3.3.05
of 24 January 2006

Appellant: E.I. DU PONT DE NEMOURS AND COMPANY
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 17 April 2003
revoking European patent No. 0557275 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: M. Eberhard
Members: J.-M. Schwaller
H. Preglau

Summary of Facts and Submissions

- I. The appeal lies from the decision of the opposition division revoking European patent No. 0 557 275 on the ground of novelty.
- II. In the decision, the opposition division held in particular that the subject-matter of claim 1 of the main request and claim 1 of the auxiliary request then on file lacked novelty under Article 54(1) and (3) EPC over D1 (WO 91/04766) in the light of the content of D4 (US-A-3715438), referred to in D1.
- III. With the grounds of appeal, the appellant (patentee) filed a set of 2 claims as the main request. With a letter dated 23 December 2005, it further submitted an amended set of claims as a main request replacing the previous one and three single claims as 1st to 3rd auxiliary requests.
- IV. With letters dated 17 October 2003 and 23 December 2005, the respondent (opponent) raised objections under Articles 54, 56, 83, 84 and 123(2) EPC against the claims filed with the grounds of appeal. With fax of 20 January 2006, the respondent argued inter alia that the claims of the auxiliary requests did not meet the requirements of Article 123(3) EPC and lacked clarity.
- V. During the oral proceedings, which took place on 24 January 2006, the appellant filed two further auxiliary requests. The issues of clarity, construction of the expression "preventing fire" and allowability of the amendments were in particular discussed. The appellant finally withdrew all the requests except the

one filed as the second auxiliary request with letter of 23 December 2005. The unique claim of this request reads as follows:

"1. A process for preventing fire in an enclosed air-containing area which contains combustible materials of the non-self-sustaining type, which comprises introducing into the air in said enclosed area an amount of CF_3-CHF_2 in conjunction with at least 1 % of at least one halogenated hydrocarbon selected from difluoromethane (HFC-32), chlorodifluoromethane (HCFC-22), 2,2-dichloro-1,1,1-trifluoroethane (HCFC-123), 1,2-dichloro-1,1,2-trifluoroethane (HCFC-123a), 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124), 1-chloro-1,1,2,2-tetrafluoroethane (HCFC-124a), 3,3-dichloro-1,1,1,2,2-pentafluoroethane (HCFC-225ca), 1,3-dichloro-1,1,2,2,3-pentafluoroethane (HCFC-225cb), 2,2-dichloro-1,1,1,3,3-pentafluoropropane (HCFC-225aa), 2,3-dichloro-1,1,1,3,3-pentafluoropropane (HCFC-225da), 1,1,1,2,2,3,3-heptafluoropropane (HFC-227ca), 1,1,1,2,3,3,3-heptafluoropropane (HFC-227ea), 1,1,1,2,3,3-hexafluoropropane (HFC-236ea), 1,1,1,3,3,3-hexafluoropropane (HFC-236a), 1,1,1,2,2,3-hexafluoropropane (HFC-236cb), 1,1,2,2,3,3-hexafluoropropane (HFC-236ca), 1,2-dichloro-1,2-difluoroethane (HFC-132), 1,1-dichloro-1,2-difluoroethane (HFC-132c), 3-chloro-1,1,2,2,3-pentafluoropropane (HCFC-235ca), 3-chloro-1,1,1,2,2-pentafluoropropane (HCFC-235cb), 1-chloro-1,1,2,2,3-pentafluoropropane (HCFC-235cc), 3-chloro-1,1,1,3,3-pentafluoropropane (HCFC-225fa), 3-chloro-1,1,1,2,2,3-hexafluoropropane (HCFC-226ca), 1-chloro-1,1,2,2,3,3-hexafluoropropane (HCFC-226cb),

*2-chloro-1,1,1,3,3,3-hexafluoropropane (HCFC-226da),
3-chloro-1,1,1,2,3,3-hexafluoropropane (HCFC-226ea),
2-chloro-1,1,1,2,3,3-hexafluoropropane (HCFC-226ba),
sufficient to impart a heat capacity per mole of total
oxygen of at least 40 cal/°C per mole of oxygen so as
to suppress combustion of the combustible materials
while maintaining environmentally safe conditions in
said enclosed area, with the proviso that no
trifluoromethane is used."*

- VI. The appellant argued that claim 1 of this unique request did not contravene the requirements of Article 123(3) EPC, since it was clear from the whole description of the patent in suit, in particular from the passages at page 3, lines 22-47 and at page 4, lines 16-19, that it was a mixture of $\text{CF}_3\text{-CHF}_2$ with at least 1% of at least one of the compounds listed at page 3, lines 33-47 which should satisfy the condition defined in said claim for the heat capacity, namely an amount *"sufficient to impart a heat capacity per mol of total oxygen of at least 40 cal/°C per mole of oxygen so as to suppress combustion of the combustible materials in said enclosed area"*.
- VII. Concerning the allowability under Article 123(3) EPC of claim 1 of this request, the respondent argued that in the granted claim 1, the amount of $\text{CF}_3\text{-CHF}_2$ had to be sufficient to suppress combustion. This minimum amount of $\text{CF}_3\text{-CHF}_2$ as defined in the granted claim 1 is no longer a requisite in claim 1 of the present request, which requires that it is the mixture of $\text{CF}_3\text{-CHF}_2$ in conjunction with specific halogenated alkanes which should satisfy the requirement of imparting a heat

capacity per mol of total oxygen of at least 40 cal/°C per mole of oxygen.

VIII. The appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of claim 1 filed as second auxiliary request with letter of 23 December 2005 (main and sole request).

The respondent requested that the appeal be dismissed.

Reasons for the Decision

Allowability of the amendments under Article 123(3) EPC

1. Claims 1-4 of the granted patent read as follows:

"1. A process for preventing, controlling and extinguishing fire in an enclosed air-containing area which contains combustible materials of the non-self-sustaining type, which comprises introducing into the air in said enclosed area an amount of at least one fluoro-substituted ethane selected from the group of CF_3-CHF_2 , CHF_2-CHF_2 and CF_3-CH_2F sufficient to impart a heat capacity per mol of total oxygen that will suppress combustion of the combustible materials in said enclosed area, while maintaining environmentally safe conditions in said enclosed area.

2. A process as claimed in claim 1 wherein the amount of said fluoro-substituted ethane in said enclosed area is maintained at a concentration of at least 10 and less than 80 volume percent.

3. *A process as claimed in claim 2 wherein the amount of said fluoro-substituted ethane in said enclosed area is maintained at about 20 volume percent.*

4. *A process as claimed in claim 1 or 2 wherein the fluoro-substituted ethane is present in a concentration which is sufficient to impart a heat capacity of at least 40 cal/°C per mole of oxygen."*

2. According to claim 1 as granted, at least one of the three fluoro-substituted ethanes $\text{CF}_3\text{-CHF}_2$, $\text{CHF}_2\text{-CHF}_2$ and $\text{CF}_3\text{-CH}_2\text{F}$ has to be introduced into the air in the enclosed area and claim 1 further requires that the amount of the said compound(s) introduced into the air be *"sufficient to impart a heat capacity per mol of total oxygen that will suppress combustion of the combustible materials in said enclosed area, while maintaining environmentally safe conditions in said enclosed area"*. This means that in the alternative where all the three fluoroethanes are present, the minimum total amount of $\text{CF}_3\text{-CHF}_2$, $\text{CHF}_2\text{-CHF}_2$ and $\text{CF}_3\text{-CH}_2\text{F}$ should be such as to impart the minimum heat capacity per mol of total oxygen required to suppress combustion of the combustible materials present in the enclosed area. In the case where only one of the three fluoroethanes is used, in particular $\text{CF}_3\text{-CHF}_2$, its amount should also be sufficient to impart a heat capacity as defined above. Furthermore, claim 1 also encompasses the case where $\text{CF}_3\text{-CHF}_2$ is used in combination with one of the two other fluoro-substituted ethanes $\text{CHF}_2\text{-CHF}_2$ and $\text{CF}_3\text{-CH}_2\text{F}$, and again in this case it is the total amount of $\text{CF}_3\text{-CHF}_2$ together with one of these other fluoroethanes which should meet the requirement concerning the heat capacity per mole

of total oxygen. However, neither granted claim 1 nor the dependent claims 2 to 4 as granted disclose the said heat capacity requirement in connection with the total amount of $\text{CF}_3\text{-CHF}_2$ and an halogenated hydrocarbon other than the tetrafluoroethanes $\text{CHF}_2\text{-CHF}_2$ and $\text{CF}_3\text{-CH}_2\text{F}$ stated in claim 1.

3. The appellant argued that claim 1 as granted was not to be construed in this way because the possibility of using the fluoro-substituted ethanes $\text{CF}_3\text{-CHF}_2$, $\text{CHF}_2\text{-CHF}_2$ and $\text{CF}_3\text{-CH}_2\text{F}$ in conjunction with as little as 1% of at least one further halogenated hydrocarbon selected from a list of specific compounds was foreseen at page 3, lines 33 to 47 of the patent in suit. While acknowledging the presence of this passage in the description, the board observes that in the paragraph preceding the said passage, namely in the lines 27 to 32 at page 3 of the patent in suit, the invention is described using the same wording as in granted claim 1, and nothing in the said passages allows the skilled reader to construe the claims as granted in a way different from that indicated in item 2 *supra*. The passage referred to by the appellant indeed discloses using at least 1% of at least one of said further halogenated hydrocarbons in conjunction with the said partially fluoro-substituted ethanes $\text{CF}_3\text{-CHF}_2$, $\text{CHF}_2\text{-CHF}_2$ and/or $\text{CF}_3\text{-CH}_2\text{F}$, however this passage is silent as to which components are, in this alternative, to be taken into consideration for fulfilling the heat capacity requirement. Under these circumstances, there is no reason to assume that the amount as defined in granted claim 1 and in the paragraph at page 3, lines 27 to 32 of the patent in suit does not apply. Thus it cannot be understood from these passages on page 3 that the total

amount of both the said partially fluoro-substituted ethane and at least one of the additional halogenated hydrocarbons listed there should be sufficient to impart the required heat capacity per mole of total oxygen.

The appellant also referred to the passage at page 4, lines 16 to 19 of the patent in suit which reads "To eliminate the combustion-sustaining properties of the air in the confined space situation, the gas or gases should be added in an amount which will impart to the modified air a heat capacity per mole of total oxygen present sufficient to suppress or prevent combustion of the flammable, non self-sustaining materials present in the enclosed environment". It argued that the above reference to "gases" constituted evidence that the halogenated hydrocarbons stated in the list at page 3, lines 33-47 were considered in the patent in suit as being included in the minimum amount of agent necessary to impart the required minimum heat capacity per mole of total oxygen that will suppress combustion of the combustible materials in the enclosed area. This argument does not convince the board because it is more likely that the reference to the "gases" addresses the compounds HFC-125, HFC-134 and HFC-134a (i.e. the three compounds defined in claim 1 of the granted patent) which are described in the preceding paragraphs at page 4, lines 4-15 of the patent in suit, said compounds being described therein as having boiling points at normal atmospheric pressure of less than -12°C and as being gases which will not liquefy at any low environmental temperature likely to be encountered. Furthermore, as argued by the respondent and confirmed by the appellant, some of the halogenated hydrocarbons

referred to at page 3, lines 33-47, for instance HCFC-123 and HFC-132, are in the liquid state at room temperature. This fact also renders more likely that the "gases" referred to at page 4, line 16 are those discussed in the preceding paragraph of the description part headed "Preferred embodiments" rather than the halogenated compounds defined in the passage at page 3, lines 33-47, located in another part of the description.

4. Since the description of the patent in suit does not allow an interpretation of the granted claims different from that indicated in point 2. above, the subject-matter of claim 1 of the present request has to be compared with that of the claims as granted to assess whether the scope of protection was extended by the amendments carried out.

Claim 1 of the present request differs from claim 1 as granted *inter alia* in that the amount of $\text{CF}_3\text{-CHF}_2$ in conjunction with at least 1% of at least one of the 27 halogenated hydrocarbons defined in claim 1 is sufficient to impart a heat capacity per mol of total oxygen that will suppress combustion of the combustible materials in said enclosed area, whereas in claim 1 as granted it was the total amount of the three partially fluoro-substituted ethanes which had to be sufficient to meet the heat capacity requirement (see point 2. above). Therefore present claim 1 now covers the case where the amount of $\text{CF}_3\text{-CHF}_2$ in conjunction with at least 1 % of at least one of the 27 halogenated hydrocarbons selected from the list, for example 2,2,-dichloro-1,1,1,3,3-pentafluoropropane (HCFC-225aa), is sufficient to impart the required heat

capacity per mole of oxygen. Such an alternative where the total amount of $\text{CF}_3\text{-CHF}_2$ and HCFC-225aa must be sufficient to meet the heat capacity requirement was not encompassed by claim 1 as granted. The same remark applies to the total amount of $\text{CF}_3\text{-CHF}_2$ with each of the halogenated hydrocarbons listed in claim 1. Therefore claim 1 of the present request is directed to embodiments which were not covered by claim 1 as granted, thus extending the scope of protection conferred by the patent in suit. It follows therefrom that claim 1 of the sole request contravenes the requirements of Article 123(3) EPC. The present request is thus rejected.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

A. Wallrodt

M. Eberhard