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**D E C I S I O N**  
**of 9 December 1998**

**Case Number:** T 0357/96 - 3.3.1

**Application Number:** 89306574.8

**Publication Number:** 0349298

**IPC:** C07C 19/08

**Language of the proceedings:** EN

**Title of invention:**  
Gas-phase hydrofluorination process

**Patentee:**  
E.I. Du Pont de Nemours and Company

**Opponent:**  
Ausimont S.p.A.

**Headword:**  
Fluorination/DU PONT DE NEMOURS

**Relevant legal provisions:**  
EPC Art. 54(3), (4)

**Keyword:**  
"Novelty (no) - disclaimer not suitable for establishing  
novelty"

**Decisions cited:**  
T 0004/80, T 0124/90, G 0001/93

**Catchword:**  
-



Case Number: T 0357/96 - 3.3.1

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.1  
of 9 December 1998

**Appellant:**  
(Opponent) Ausimont S.p.A.  
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**Representative:** Simeoni, Lucio, Dr.  
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**Respondent:**  
(Proprietor of the patent) E. I. Du Pont de Nemours and Company  
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**Representative:** Jones, Alan John  
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**Decision under appeal:** Interlocutory decision of the Opposition Division  
of the European Patent Office posted 26 February  
1996 concerning maintenance of European patent  
No. 0 349 298 in amended form.

**Composition of the Board:**

**Chairman:** A. J. Nuss  
**Members:** P. P. Bracke  
R. E. Teschemacher

## Summary of Facts and Submissions

- I. The appeal lies from the Opposition Division's interlocutory decision, announced orally on 14 February 1996, with the reasoned decision being issued on 26 February 1996, that, account being taken of the amendments made by the Patentee during the opposition proceedings, European patent No. 0 349 298 and the invention to which it relates were found to meet the requirements of the EPC.

The only independent claim of the set of 6 claims underlying the contested decision read as follows:

"1. A process for the preparation of 1,1,1-trifluorodichloroethane and/or 1,1,1,2-tetrafluorochloroethane by fluorination of a pentahaloethane of the formula  $C_2HX_{5-n}F_n$ , wherein X is selected from Cl and Br and wherein  $n=0$  to 3, comprising

contacting in the gaseous phase at 250°C to 450°C said pentahaloethane and HF with a catalyst composition comprising at least one metal in an oxidation state greater than zero,

said metal selected from chromium, manganese, nickel, rhodium, and cobalt,

said metal in combination with an aluminum-containing compound consisting essentially of aluminum and fluorine in such proportions that the fluorine content corresponds to an AlF<sub>3</sub> content of at least 90% by weight of the catalyst composition exclusive of said metal,

calculated as metal fluoride, **provided the pentahaloethane reactant is not an intermediate obtained in the reaction of a haloethylene with hydrogen fluoride.**" (emphasis added)

II. The Opposition Division considered that, due to the disclaimer in Claim 1, the claimed process was novel vis-à-vis *inter alia* document

(1) EP-A-0 298 662,

considered to form state of the art pursuant to Article 54(3) and (4) EPC.

III. During oral proceedings before the Board of Appeal, which took place on 9 December 1998, the Respondent (Proprietor) filed a set of 6 claims titled "First auxiliary request", with the only independent claim reading:

"1. A process for the preparation of 1,1,1-trifluorodichloroethane and/or 1,1,1,2-tetrafluorochloroethane by fluorination of a pentahaloethane of the formula  $C_2HX_{5-n}F_n$ , wherein X is selected from Cl and Br and wherein  $n=0$  to 3, comprising

**providing said pentahaloethane,**

contacting in the gaseous phase at 250°C to 450°C said pentahaloethane and HF with a catalyst composition comprising at least one metal in an oxidation state greater than zero,

said metal selected from chromium, manganese, nickel, rhodium, and cobalt,

said metal in combination with an aluminum-containing compound consisting essentially of aluminum and fluorine in such proportions that the fluorine content corresponds to an  $AlF_3$  content of at least 90% by weight of the catalyst composition exclusive of said metal, calculated as metal fluoride, **provided that said step of providing does not comprise reacting a haloethylene with hydrogen fluoride in the presence of said catalyst composition.**" (emphasis added)

- IV. The Appellant (Opponent) disputed that the disclaimer in any of the sets of claims was suitable to make the claimed process novel over document (1), because this document taught that the pentahaloethanes obtained as intermediates in the hydrofluorination of tetrahaloethylenes could be recycled to the reactor for the production of additional 1,1,1-trifluorodichloroethane ( $CF_3CHCl_2$  or FC-123) and 1,1,1,2-tetrafluorochloroethane ( $CF_3CHClF$  or FC-124) and because it was unlikely that such pentahaloethanes were distinguishable from those obtained by a different process.
- V. The Respondent submitted that the disclaimer in Claim 1 according to both the set of claims underlying the contested decision and the set of claims titled "First auxiliary request" restored the novelty vis-à-vis document (1) in that not a substance however made was disclaimed but a substance when made in a particular manner.
- VI. The Appellant requested that the decision under appeal be set aside and that the European patent No. 0 349 298 be revoked.

The Respondent requested that the appeal be dismissed and that the patent be maintained on the basis of

Claim 1 submitted during the oral proceedings before the Opposition Division and Claim 2 to 6 as granted - main request or

Claim 1 submitted during the oral proceedings before the Board and Claims 2 to 6 as granted - auxiliary request.

### Reasons for the Decision

1. The appeal is admissible.
2. *Novelty*
  - 2.1 Document (1) describes a process for preparing 1,1,1-trifluorodichloroethane and 1,1,1,2-tetrafluorochloroethane by reacting a tetrahaloethylene,  $C_2Cl_{4-x}F_x$ , wherein  $X = 0$  to 3, with HF in the gaseous phase at 300°C to 450°C in the presence of a chromium-, manganese-, nickel-, rhodium- or cobalt catalyst on a support, wherein the metal is in an oxidation state greater than zero and the support comprises aluminum and fluorine in such proportions that the fluorine content corresponds to an  $AlF_3$  content of at least 90% by weight of the catalyst composition exclusive of the metal (page 2, lines 43 to 50).

Moreover, on page 3, lines 48 to 51, it is taught that:

"Intermediates formed during the course of the reaction, such as  $\text{CHF}_2\text{CClF}_2$ ,  $\text{CHClFCClF}_2$ ,  $\text{CHCl}_2\text{CClF}_2$ ,  $\text{CClF=CCl}_2$ , and  $\text{CHCl}_2\text{CCl}_2\text{F}$ , can be recycled to the reactor for the production of additional FC-123 and FC-124. In addition, FC-123 can be recycled to the reactor for the production of additional FC-124 when this is desired."

- 2.2 The Respondent argued that a skilled person would have interpreted the teaching that the intermediates can be recycled to the reactor in a restrictive way, namely that **only the intermediates formed during the fluorination of tetrahaloethylenes can be recycled to the reactor**. The teaching thus clearly excluded the possibility of introducing in the reactor pentahaloethanes which were not obtained as intermediates in the fluorination reaction of a tetrahaloethylene. Furthermore, he submitted that, according to the principle laid down in decision T 4/80 (OJ EPO 1982, 149), by disclaiming starting materials prepared by a specific method the claimed process is distinguished from analogous processes, wherein starting materials prepared by other methods are used. Therefore, he was of the opinion that, due to the disclaimer in Claim 1 according to any of the main and auxiliary requests, the claimed process was novel over the teaching of document (1).

Additionally, the Respondent made reference to the principles described in G 1/93 (OJ EPO 1994, 541) and in T 124/90 of 23 January 1993 (unpublished).

- 2.3 However, the disclosure on page 3, lines 48 to 51, of document (1), that in particular compounds of formula  $\text{CHClFCClF}_2$ ,  $\text{CHCl}_2\text{CClF}_2$  and  $\text{CHCl}_2\text{CCl}_2\text{F}$  are formed as intermediates during the course of the reaction described in document (1) and that, if desired, they

can be recycled to the reactor for the production of additional FC 123 and FC 124, is not restricted to the possibility of recycling the said pentahaloethanes obtained in the fluorination of tetrahaloethylenes to the reactor, which according to the Respondent means that what is recycled is a mixture of pentahaloethanes obtained in the fluorination reaction. Rather, the relevant information contained in document (1) is that any of the cited pentahaloethanes **as such** can be used as starting material for preparing FC 123 and FC 124 in the reaction with HF in the presence of a catalyst, as described in document (1), and under the circumstances wherein tetrahaloethylenes are converted to FC 123 and FC 124 and that even FC 123 **as such** can be recycled, ie used as starting material, to produce additional FC 124 if desired.

What counts for assessing novelty in the present case is that in document (1) **some specific pentahaloethanes are explicitly described as suitable compounds for producing further fluorinated pentahaloethanes**, namely FC 123 and/or FC 124, and not that these pentahaloethanes are formed as intermediate products in the reaction described in document (1). The person skilled in the art would thus realise that the fact that the cited pentahaloethanes can be used as starting material for preparing FC 123 and/or FC 124 does not depend on their origin.

The Respondent pointed to the fact that the invention concerns a process. He argued that in a process claim a disclaimer for a process feature is appropriate to establish novelty. This argument fails to take into account that the disclaimer does not relate to process features but to the definition of the starting material for the process. The starting material is defined as a specific substance the identity of which is not changed by the process for its preparation.



2.4 It is thus plain from the above that document (1) teaches that, by reacting a compound of formula  $\text{CHClFCClF}_2$ ,  $\text{CHCl}_2\text{CClF}_2$  or  $\text{CHCl}_2\text{CCl}_2\text{F}$  with HF in the gaseous phase at 300°C to 450°C in the presence of a catalyst, FC 123 and/or FC 124 may be prepared, and that the catalyst described therein is not distinguished from the one used according to the claimed process, which has never been contested by the Respondent.

Consequently, in assessing novelty it remains to be decided whether the disclaimer in Claim 1 according to the main or auxiliary request is suitable for establishing novelty of the claimed process in respect of the disclosure contained in document (1).

The disclaimer in **Claim 1 according to the main request** only excludes pentahaloethanes as reactants which are "not an intermediate obtained in the reaction of an haloethylene with hydrogen fluoride" ie an exclusion on the basis of the origin of the pentahaloethanes (see the emphasised part of the claim) and the disclaimer in **Claim 1 according to the auxiliary request** only excludes those pentahaloethanes which are obtained by reacting a haloethylene with hydrogen fluoride in the presence of a catalyst as defined in Claim 1 (see the emphasised part of the claim). Since none of the disclaimers excludes those processes wherein any of the specified chemical substances **as such**, namely  $\text{CHClFCClF}_2$ ,  $\text{CHCl}_2\text{CClF}_2$  or  $\text{CHCl}_2\text{CCl}_2\text{F}$  are used as reactants, the Board must conclude that none of the disclaimers is suitable for rendering the claimed process novel over the process known from document (1).

2.5 In T 4/80 the competent Board did not have to decide on any matter under Article 54(3) EPC in connection with the introduction of a disclaimer in a claim. In that case, as in the case T 124/90, the competent Board had

only to decide on the allowability of defining claimed subject-matter in a negative way (disclaimer) instead of defining it in positive terms. However, since the allowability of a disclaimer as such has not been contested in the present case, the question is rather whether the technical content of the disclaimer can establish novelty. Therefore, the principles underlying both decisions are not relevant for the present decision.

Moreover, the principle laid down in G 1/93 cannot be considered to be of any relevance in the present case, since the Enlarged Board of Appeal had to decide in that case what to do in a situation where, before grant, there was added to a claim an undisclosed limiting, technically meaningful feature, which cannot be deleted or replaced by any other feature properly disclosed in the application as filed without extending the protection conferred by the patent as granted in contradiction to Article 123(3). This is not the question to be answered in the present case.

2.6 Consequently, neither the set of claims according to the main request nor the set of claims according to the auxiliary request meets the requirement of novelty.

**Order**

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

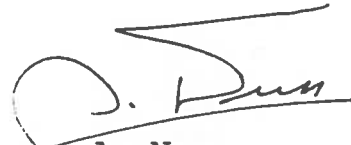
1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:



E. Görgmaier

The Chairman:



A. Nuss

