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D E C I S I O N
of 16 June 2005

Case Number: T 0412/03 - 3.3.1

Application Number: 97941030.5

Publication Number: 0927185

IPC: C07F 9/14

Language of the proceedings: EN

Title of invention:

Phosphorus-containing fluoromonomers and polymers thereof

Applicant:

E.I. DU PONT DE NEMOURS AND COMPANY

Opponent:

-

Headword:

Fluoromonomers/DU PONT DE NEMOURS

Relevant legal provisions:

EPC Art. 84

EPC R. 88

Keyword:

"Main and first auxiliary requests: clarity (no) -
contradiction between independent claim and a dependent claim"

"Second auxiliary request: clarity (yes)"

"Remittal for further prosecution (yes)"

Decisions cited:

G 0003/89, G 0011/91, T 0002/80, T 0051/87, T 0532/95,
T 1129/97, T 0172/02, T 0412/02

Catchword:

-



Case Number: T 0412/03 - 3.3.1

D E C I S I O N
of the Technical Board of Appeal 3.3.1
of 16 June 2005

Appellant:

E.I. DU PONT DE NEMOURS AND COMPANY
1007 Market Street
Wilmington,
Delaware 19898 (US)

Representative:

Matthews, Derek Peter
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Decision under appeal:

Decision of the Examining Division of the
European Patent Office posted 22 November 2002
refusing European application No. 97941030.5
pursuant to Article 97(1) EPC.

Composition of the Board:

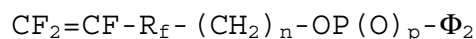
Chairman: A. J. Nuss
Members: P. F. Ranguis
S. C. Perryman

Summary of Facts and Submissions

I. This appeal lies from the decision of the Examining Division to refuse the European application No. 97 941 030.5 (publication No. 927 185) on the ground that the then pending request did not comply with the requirement of Article 84 EPC.

II. The request refused by the Examining Division contained nineteen claims. Independent Claim 1 and dependent Claims 2 to 4 read as follows:

"1. A compound having the formula



wherein n is 1-3, p is 0 or 1, R_f is perfluoroalkylene or perfluoroalkyleneoxy having 1-20 carbon atoms, Φ is bromine, chlorine, or OM, and M is H, NH₄ or alkali metal."

"2. The compound of Claim 1, wherein n=1."

"3. The compound of Claim 2, wherein R_f is O-(CF₂)_m and m is 2-4."

"4. The compound of Claim 2, wherein R_f is -[O-CF₂CF(CF₃)]_k-O-CF₂CF₂- and k is 1-5."

III. In its decision, the Examining Division accepted as the correction of an obvious error the replacement of the term "perfluoroalkoxy" by "perfluoroalkyleneoxy" for defining the bivalent group R_f in Claim 1. However the Examining Division held that bivalent R_f group as

defined in Claim 4 did not fit the definition of perfluoroalkyleneoxy of Claim 1. It followed that the compounds of Claim 4 were not encompassed within the scope of Claim 1 rendering unclear the back reference of Claim 4 to Claim 1. Moreover, examples provided in the description corresponded to the definition given in Claim 4 but were not encompassed within Claim 1 rendering further unclear the scope of Claim 1.

IV. With the statement of grounds of appeal, the Appellant submitted in support of the clarity of Claim 4 in relation to Claim 1 the following patent documents, i.e.

- (1) US-A- 5 059 720
- (2) US-A- 6 359 089
- (3) US-A- 5 378 759
- (4) EP-A- 0 928 673
- (5) EP-A- 0 490 562
- (6) US-A- 5 081 192
- (7) US-A- 6 255 535

V. In a communication dated 3 March 2005 accompanying the summon to oral proceedings, the Board informed the Appellant that it tended to share the opinion of the Examining Division (see point III above). It seemed, in particular, that the term "perfluoroalkyleneoxy" related to a fluorocarbon unit having one oxygen atom at the right end, whereas R_f in Claim 4 seemed to relate to a perfluoroalkylpolyether chain having multiple -O- linkages. Further references to other patents were not considered to be likely to be of assistance.

VI. In a response dated 16 May 2005, the Appellant submitted further documents, i.e.

- (8) Principles of polymerization, third edition, 1991, "Basic principles", 1.1, page 1,
- (9) Polymer Chemistry, second edition, 1990, "Basic principles", 1.2 Definitions,
- (10) Handbook of Applied Surface and Colloid Chemistry, Vol 1-2, 2002, Chapter 17, pages 393 to 395 and

refiled as main request the set of claims refused by the Examining Division (see point II above), filed a first auxiliary request (abandoned at the oral proceedings) and filed as second auxiliary request the set of claims attached to the communication of the Examining Division according to Rule 51(4) EPC dated 5 March 2002 that the Appellant had not approved by submitting an amended Claim 1 in response.

VII. By a second communication, the Board introduced into the proceedings as common general knowledge document

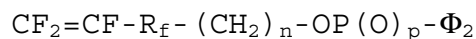
- (11) Encyclopedia of Chemical Technology, fourth edition, Vol. 11, pages 530 to 533.

VIII. Oral proceedings before the Board took place on 16 June 2005. At the oral proceedings, the Appellant filed two sets of claims as first and second auxiliary requests.

The first auxiliary request was the set of claims attached to the communication of the Examining Division according to Rule 51(4) EPC dated 5 March 2002 that the Appellant had not approved by submitting an amended Claim 1 in response (see point VI above).

The set of claims according to this first auxiliary request contained nineteen claims. Claims 1 to 4 read as follows:

"1. A compound having the formula



wherein n is 1-3, p is 0 or 1, R_f is perfluoroalkylene or perfluoroalkyleneoxy having 1-20 carbon atoms, or R_f is -[O-CF₂CF(CF₃)]_k-O-CF₂CF₂- and k is 1-5, Φ is bromine, chlorine, or OM, and M is H, NH₄ or alkali metal."

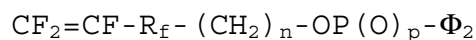
"2. The compound of Claim 1, wherein n=1."

"3. The compound of Claim 2, wherein R_f is O-(CF₂)_m and m is 2-4."

"4. The compound of Claim 2, wherein R_f is -[O-CF₂CF(CF₃)]_k-O-CF₂CF₂- and k is 1-5."

The set of claims according to the second auxiliary request contained nineteen claims. Claims 1 to four read as follows:

"1. A compound having the formula



wherein n is 1-3, p is 0 or 1, R_f is perfluoroalkylene having 1-20 carbon atoms, or [O-CF₂CF(CF₃)]_k-O-CF₂CF₂ wherein k = 1-5 or O-(CF₂)_m and m is 2-20, Φ is bromine, chlorine, or OM, and M is H, NH₄ or alkali metal."

"2. The compound of Claim 1, wherein n=1."

"3. The compound of Claim 2, wherein R_f is $O-(CF_2)_m$ and m is 2-4."

"4. The compound of Claim 2, wherein R_f is $-[O-CF_2CF(CF_3)]_k-O-CF_2CF_2-$ and k is 1-5."

IX. The Appellant's arguments in the course of the written proceedings and during the oral proceedings may be summarized as follows:

The term "alkoxy" originally in the application was formally incorrect and needed to be corrected to "alkyleneoxy" to reflect the bivalent nature of the group. This was acknowledged by the Examining Division.

It was however wrong to require the Applicant (now Appellant), without citing any handbooks, to shrink the scope of alkoxy from one of its recognized meanings within the art, namely containing additional oxygen atoms, when making a formal correction. Indeed, the term "alkoxy" and its corrected form "alkyleneoxy" could mean $RO-$ where R was an organic group, and this breadth of definition could also apply to alkyleneoxy when the group is correspondingly divalent.

In view of the description and the examples, the term "alkyleneoxy" needed to be construed more broadly as it was commonly understood in this art, to include the groups of Claim 4, i.e. containing a plurality of units $-(O-CH_2CH_2)-$. Documents (1) to (7) and (10) showed that this broader terminology used in the application as originally filed had been also adopted in the relevant technical art.

Nor was the distinction made in the decision between **polyoxyalkylene** for defining groups containing several oxygen atoms in contrast to alkyleneoxy to reflect a group containing only one oxygen atom of any relevance. As shown by documents (8) and (9), the suffix "poly" did not apply to the group R_f according to Claim 4 containing low numbers of oxygen atoms.

It followed that the reasoning of the Examining Division was deficient in that the situation was not as clear cut as the decision made out and that the context in which "alkoxy" and "alkyleneoxy" were used was critical to determining their meaning.

- X. The Appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of Claims 1 to 19 of the main request submitted on 16 May 2005, or as first auxiliary request on the basis of the claims underlying the Communication under Rule 51(4) EPC of 5 March 2002 in its entirety, or as second auxiliary request on the basis of Claims 1 to 19 and of amended pages 1 and 2 of the description, filed at the oral proceedings on 16 June 2005 and the other pages of the description as filed.

- XI. At the end of the oral proceedings the decision of the Board was announced.

Reasons for the Decision

1. The appeal is admissible.

Main request

2. Article 84 EPC

- 2.1 Claim 4 is drafted as a product claim related to Claim 2 itself related to Claim 1. Claim 4 is thus a dependent claim incorporating the features of the product Claims 1 and 2.

In Claim 1, the divalent chain R_f is defined *inter alia* as perfluoroalkyleneoxy having 1-20 carbon atoms and in Claim 4, R_f is $-[O-CF_2CF(CF_3)]_k-O-CF_2CF_2-$, with k is 1-5 (see point II above).

- 2.2 In order to understand the origin of the term "perfluoroalkyleneoxy" found in the present Claim 1, but not in the application as originally filed which uses the term "perfluoroalkoxy", the Board finds it necessary to briefly refer to the file history.

- 2.2.1 The IPEA had already objected under Article 6 PCT (Article 84 EPC) to the term "perfluoroalkoxy" in that it did not fit the definition of R_f since in the compound of formula (I) R_f was a divalent group (see IPER, Item VIII). The Examining Division had taken up this objection in its first communication.

- 2.2.2 The Appellant had filed in response an amended Claim 1, wherein *inter alia* "perfluoroalkoxy" was replaced with "perfluoroalkyleneoxy". A communication under Rule 51(4)

EPC followed (see point VI above), suggesting, therefore, that the replacement had been accepted by the Examining Division. In the decision under appeal, the Examining Division stated that this change was due to the correction of an obvious error (see page 2, third paragraph). The Board can only conclude therefrom that the correction was made under Rule 88 EPC which provides that errors may be corrected on request provided that the correction is obvious in the sense that it is immediately evident that nothing else would have been intended than what is offered as the correction.

- 2.2.3 In its decision dated 22 November 2002, the Examining Division offered a definition of the term "perfluoroalkyleneoxy" in the following terms:

"The bivalent group R_f as defined in the only remaining request represents perfluoroalkylene or perfluoroalkyleneoxy moieties having 1 to 20 carbon atoms. This means a divalent carbon chain bearing only fluorine atoms, and, in the second alternative being linked at the "right end" of the R_f group in the formula of Claim 1 to the "right part" of said formula through the oxygen atom".

- 2.3 In appeal, the Appellant contested however the definition given by the Examining Division on the ground that the situation was not as clear cut as the decision made out and that the correct context in which alkoxy and the alkyleneoxy are used was critical to determine their meanings.

2.4 It has to be, therefore, investigated in the present case whether or not the definition of R_f according to Claim 4, i.e. $-[O-CF_2CF(CF_3)]_k-O-CF_2CF_2-$, wherein k is 1-5 is within the general definition of R_f given in Claim 1, i.e. perfluoroalkyleneoxy.

2.4.1 First, the Appellant argued that in view of the description of the European patent application, the term "alkyleneoxy" should be construed more broadly as usual to include the groups of Claim 4. It was clear, in particular, that in view of page 2 of the application as originally filed perfluoroalkoxy (subsequently corrected to perfluoroalkyleneoxy) included $-[O-CF_2CF(CF_3)]_k-O-CF_2CF_2-$, with k is 1-5.

However, such an approach is not in line with the clarity requirement of Article 84 EPC. That clarity requirement in fact relates only to the claims, and consequently, as the Boards of Appeal of the European Patent office have consistently ruled, it demands that these be **clear per se** for a person skilled in the art with common general knowledge of the technical field in question, without the need to refer to the description of the patent application (see T 2/80, OJ EPO 1981, 431, point 2; T 1129/97, OJ EPO 2001, 273, point 2.1.2; T 172/02, point 4.1 and T 412/02 point 5.6).

For this reason the Appellant cannot rely on the description of the European patent application and his argument in that respect is not accepted.

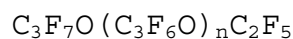
2.4.2 The claims must be read by a skilled reader. The Board, therefore, does not reject *prima facie* any piece of information in the form of common general knowledge

greatest importance in the present case in view of the non symmetrical nature of the compound of formula (I).

- (b) Secondly, R_f according to Claim 4 having possibly a plurality of oxygen atoms interrupting the alkylene chain, it cannot also for this reason fit the definition of the term "alkyleneoxy".

That finding confirms the definition given by the Examining Division (see point 2.2.3 above) and it turns out that far from supporting the Appellant's position, it leads to the conclusion that the term perfluoroalkyleneoxy of Claim 1 cannot be reconciled with the formula of Claim 4 in view of document (10).

- 2.4.4 According to the document (11) cited by the Board in its second communication, the perfluoropolyethers with the linear perfluoropropoxy repeat units have the formula:



In the present case, the divalent unit C_3F_6O is named perfluoropropoxy (perfluoropropyleneoxy after correction) and it derives therefrom that the term "perfluoropropyleneoxy" must be read from left to right and consists of a structure composed of three uninterrupted methylene radicals having on the **right** end **one** oxygen atom. It follows from that document that the radical R_f of formula $-[O-CF_2CF(CF_3)]_k-O-CF_2CF_2-$ wherein k is 1-5 cannot fit the generic definition of perfluorolakyleneoxy since the oxygen atom is on the

left end of the chain inside of which a plurality of oxygen atoms are present.

2.4.5 The Appellant also relied on the seven patent documents (1) to (7). However patents are not part of the common general knowledge of the skilled reader, in contrast to textbooks. The sole exception in that respect being the case where there are no available textbooks due to the recent character of the field of research (see T 51/87, OJ EPO 1991, 177). Handbooks are available in the present case and, therefore, the exception does not apply.

2.4.6 The Appellant also argued relying upon documents (8) and (9) that the term "perfluoroalkyleneoxy" included groups containing low numbers of oxygen atoms. The Examining Division was, therefore, wrong to consider that the group R_f is $[O-CF_2CF(CF_3)]_k-O-CF_2CF_2-$ wherein k is 1-5 was to be defined as a **polyoxyalkylene** not included in the generic term "perfluoroalkyleneoxy". The term "poly" was used to denote "many" which was not the case for the group R_f according to Claim 4.

The Board does not deny that the suffix "poly" means "many" (see document (8), page 3, bottom paragraph). This does not alter the fact that the group $[O-CF_2CF(CF_3)]_k-O-CF_2CF_2-$ is a low-molecular-weight **polymer** group (emphasis added by the Board) made of repeating units $[O-CF_2CF(CF_3)]$ as it derives clearly from document (9), page 8, lines 1 to 11. It follows that the group $[O-CF_2CF(CF_3)]_k-O-CF_2CF_2-$ is a **polyperfluoroalkyleneoxy** not included in the generic definition of perfluoroalkyleneoxy.

The Board concludes for this reason also that the definitions of R_f of Claims 1 and 4 cannot be reconciled.

- 2.4.7 In view of the above, the Board finds that the definition given by the Examining Division is convincing (see point 2.2.3 above) and that there is a contradiction between Claim 1 which relates to a compound of formula (I) wherein R_f may be perfluoroalkyleneoxy and Claim 4 wherein R_f is $-[O-CF_2CF(CF_3)]_k-O-CF_2CF_2-$ wherein k is 1-5.
- 2.5 However, according to Article 84 EPC the claims must be clear and concise and define the matter for which protection is sought. The clarity requirement of Article 84 EPC demands that the claims must be free of contradiction as such. A clear wording of the claims is for legal certainty indispensable. That requirement serves the purpose of ensuring the public is not left any doubt as to which subject-matter is covered by any particular claim (see T 2/80, OJ EPO 1981, 431, point 2 and T 172/02, point 4.1).
- 2.6 Since this requirement is not met by the claims, the present request must be refused.
- 2.7 This leads the Board to observe, as a final remark, that this finding casts doubt on the allowability of the correction under Rule 88 EPC (see point 2.2.2 above). Indeed, a correction under Rule 88 EPC is only to be accepted if it is immediately evident to a skilled person that a) an error occurred and b) how it should be corrected which implies that such a correction must not raise any contradiction liable to contravene the requirement of Article 84 EPC. This is

however the case here. According to the Appellant's own words the situation generated was not so "clear cut as the decision made out". In the Board's judgement, a correction under Rule 88 EPC must lead, on the contrary, to a clear cut situation generating no contradiction.

First auxiliary request

3. Claim 3 is drafted as a product claim related to Claim 2 itself related to Claim 1. Claim 3 is thus a dependent claim incorporating the features of the product Claims 1 and 2.

In Claim 1, the divalent chain R_f is defined *inter alia* as perfluoroalkyleneoxy having 1-20 carbon atoms, or -
[O-CF₂CF(CF₃)]_k-O-CF₂CF₂- and k is 1-5 and in Claim 3 R_f is O-(CF₂)_m and m is 2-4 (see point VIII above).

- 3.1 In the present case, the question arises whether or not the definition of R_f according to Claim 3 is within the general definition of R_f given in Claim 1, i.e. perfluoroalkyleneoxy.
- 3.2 In view of documents (10) and (11) as common general knowledge (see points 2.4.3 and 2.4.4 above), it turns out that a perfluoroalkyleneoxy chain is a divalent carbon chain bearing only fluorine atoms and being linked at the "right end" of the R_f group, in the formula of Claim 1 to the "right part" of said formula, through the oxygen atom". It follows that a divalent group O-(CF₂)_m cannot be considered as a perfluoroalkyleneoxy radical. This distinction is of the greatest importance in view of the non symmetrical nature of the compound of formula (I). There is,

therefore, a contradiction between Claims 1 and 3 contrary to the requirement of Article 84 EPC (see point 2.5 above).

- 3.3 Since the clarity requirement is also not met by these claims, this request must be refused as well.

Second auxiliary request

4. *Article 123(2) EPC - Rule 88 EPC*

- 4.1 Compared to Claim 1 as originally filed, present Claim 1 was, first, amended to replace perfluoroalkyl by perfluoroalkylene and to delete the term perfluoroalkoxy.

There is no support in the application as originally filed for amending perfluoroalkyl to perfluoroalkylene.

However R_f is a **bivalent** radical. According to IUPAC, **univalent** radicals derived from saturated unbranched acyclic hydrocarbons by removal of hydrogen from a terminal carbon atom are named by replacing the ending "ane" of the name of the hydrocarbon by "yl". (see IUPAC, Organic Chemistry Division, Nomenclature of Organic Chemistry, 1979 edition, J. Rigaudy and S.P. Klesney, page 5, paragraph 1.2). An error must thus have occurred in the application as filed since R_f cannot be an univalent radical.

It is generally known in chemistry that names of **bivalent** radicals derived from normal alkanes by removal of a hydrogen atom from each of the two terminal carbon atoms of the chain are ethylene,

propylene, tetramethylene, pentamethylene, etc (see IUPAC, Organic Chemistry Division, Nomenclature of Organic Chemistry, 1979 edition, J. Rigaudy and S.P. Klesney, page 14, paragraph 4.2).

It derives therefrom that the replacement of the term "perfluoroalkyl" by "perfluoroalkylene" is an obvious correction allowable under Rule 88 EPC in the sense that it is immediately evident that nothing else would have been intended than what is offered as the correction (see T 532/95, point 3.2.1). Such a correction does not contravene furthermore Article 123(2) EPC (see G 3/89 and G 11/91, OJ EPO 1993, 117 and 125, Order).

4.2 The added feature in Claim 1, i.e. R_f is or $-[O-CF_2CF(CF_3)]_k-O-CF_2CF_2-$ wherein $k = 1-5$ or $O-(CF_2)_m$ wherein m is $= 2-20$, finds support in the description as originally filed (see page 2, lines 28-29).

4.3 The subject-matter of Claims 2 to 16, 18 and 19 corresponds to Claims 2 to 16, 18 and 19 as originally filed respectively. The subject-matter of Claim 17 finds support in the description as originally filed (see page 10, lines 26 to 29 and page 11, lines 10-11).

4.4 There is, therefore, no objection under Article 123(2) EPC.

5. *Article 84 EPC*

5.1 The phrase " R_f is perfluoroalkoxy" having been deleted, the objection raised against the claims of the main and first auxiliary requests (cf. points 2 and 3 above)

does not apply any longer. Indeed, the subject-matter of Claim 1 relates to compounds of formula (I) wherein R_f may have three distinct alternative meanings and the subject-matter of Claims 3 and 4 is without any doubt within that of Claim 1. The definitions of the compounds according to Claims 1 to 19 are furthermore clear.

5.2 There is, therefore, no objection under Article 84 EPC.

6. *Remittal to the first instance - Article 111(1) EPC*

6.1 The Board has come to the conclusion that the subject-matter of Claims 1 to 19 according to the second auxiliary request complied with the clarity requirement overcoming, therefore, the sole reason for revoking the European Patent relied on by the first instance.

6.2 Given that the function of the Boards of Appeal is primarily to give a judicial decision upon the correctness of the earlier decision taken by the first instance, the Board exercises its discretion under Article 111(1) EPC to remit the case to the first instance for further prosecution.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance for further prosecution on the basis of the second auxiliary request.

The Registrar:

The Chairman:

N. Maslin

A. Nuss