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Datasheet for the decision of 10 December 2007

Case Number: T 0405/05 - 3.3.10

Application Number: 95919208.9

Publication Number: 0760809

IPC: C07C 43/12

Language of the proceedings: EN

Title of invention:
Application of omega-hydrofluoroalkyl ethers

Patentee:
MINNESOTA MINING AND MANUFACTURING COMPANY

Opponent:
SOLVAY SOLEXIS S.p.A.

Headword:
-

Relevant legal provisions
EPC Art. 123(2)

Keyword:
"Main request and auxiliary requests 1 to 3: Amendments (not allowable) - combination of features not originally disclosed"
"Auxiliary request 4: Amendment (not allowable) - reformatio in peius"

Decisions cited:
G 0009/92, G 0001/99

Catchword:
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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0405/05 - 3.3.10

D E C I S I O N
of the Technical Board of Appeal 3.3.10
of 10 December 2007

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Decision under appeal:
Interlocutory decision of the Opposition Division of the European Patent Office posted 17 February 2005 concerning maintenance of European patent No. 0760809 in amended form.

Composition of the Board:

Chairman: R. Freimuth
Members: P. Gryczka
J.-P. Seitz

Summary of Facts and Submissions

I. A notice of opposition was filed in which entire revocation of European patent 0 760 809 based on the International patent application PCT/US95/06110 was requested on the grounds of insufficiency of disclosure and lack of novelty and inventive step (Article 100(a), and (b) EPC).

II. In an interlocutory decision issued in writing on 17 February 2005, the Opposition Division found that the European patent could be maintained in amended form on the basis of claims 1 to 8 of the then pending second auxiliary request. Claim 1 of said request read as follows:

"1. A method of removing a contaminant from an article comprising contacting said article with a composition comprising at least one omega-hydrofluoroalkylether compound having a saturated perfluoroaliphatic chain of 4 to 30 carbon atoms interrupted by one or more ether oxygen atoms, the chain carbon atom at one end, the proximal end, of the chain being that of a difluoromethyl group which is bonded to another chain carbon atom or to a said ether-oxygen atom, the carbon atom at the other end, the distal end, of the chain being part of a distal group selected from the group consisting of difluoromethyl, difluorochloromethyl, a straight-chain perfluoroalkyl, a branched-chain perfluoroalkyl, and a perfluoroalkyl substituted with a saturated perfluoroalicyclic moiety, with the proviso that where said difluoromethyl group at the proximal end is bonded to a said ether-oxygen atom, then said straight-chain perfluoroalkyl has at least 6 chain

carbon atoms and said branched-chain perfluoroalkyl has at least 4 carbon atoms."

The Opposition Division came to the conclusion that the amended claims fulfilled the requirements of Articles 123(2) and (3) EPC, that the invention was sufficiently disclosed and that the claimed method was novel and involved an inventive step.

III. The Opponent (Appellant) lodged an appeal against the above decision.

IV. At the oral proceedings which took place in front of the Board on 10 December 2007, the Respondent (Proprietor of the patent) filed four sets of amended claims as auxiliary requests.

Claim 1 of the first auxiliary request differed from claim 1 as maintained by the opposition division (present main request) by the indication that the omega-hydrofluoroalkylether compound was "normally liquid under ambient conditions of temperature and pressure".

Claim 1 of the second auxiliary request differed from claim 1 of the main request by the indication that the omega-hydrofluoroalkylether compound was "normally liquid" and was "represented by formula I

$$X\text{-}R_f\text{-}O\text{-}(R_f'\text{-}O)_n\text{-}R_f''\text{-}H \qquad I$$

wherein:
H is a primary hydrogen atom;

X is a fluorine atom, a primary hydrogen atom, or a primary chlorine atom bonded to a difluoromethylene (of R_f);
n is an integer of 0 to 7,
R_f, R_f', and R_f" are the same or different perfluoroalkylene (linear or branched) groups, which are unsubstituted or substituted with a perfluoro organo group which can contain ether oxygen,

with the proviso that when X is H or Cl, R_f has 1 to 18 chain carbon atoms, R_f' has 1 to 12 chain carbon atoms, and R_f" has 2 to 12 chain carbon atoms;
and with the further proviso that when X is F, then R_f has at least 4 chain carbon atoms, R_f' has 1 or more chain carbon atoms, and R_f" has 2 or more chain carbon atoms, or

the omega-hydrofluoroalkylether compound is represented by the following formula:

$$X\text{-}R_f\text{-}O\text{-}(R_f'\text{-}O)_n\text{-}R_f''\text{-}H$$

wherein:
H is a primary hydrogen atom;
X is a fluorine atom, a primary hydrogen atom, or a primary chlorine atom;
n is an integer of 0 to 7; and
R_f, R_f', and R_f" are independently selected from the group consisting of linear or branched, unsubstituted perfluoroalkylene groups; linear or branched, perfluoroalkyl- or perfluorocycloalkyl-substituted perfluoroalkylene groups; and linear or branched perfluoroalkylene groups substituted with an ether oxygen-containing moiety;

with the proviso that when X is H or Cl, R_f has 1 to 18 chain carbon atoms and each of R_f' and R_f" independently has 1 to 12 chain carbon atoms;
and with the further proviso that when X is F, then R_f has at least 4 chain carbon atoms and each of R_f' and R_f" independently has 1 or more chain carbon atoms;
and with the still further proviso that when n is zero, then R_f is a perfluorocycloalkyl-substituted perfluoroalkylene group."

Claim 1 of the third auxiliary request differed from claim 1 of the main request by the indication that the "at least one omega-hydrofluoroalkylether compound" was "normally liquid" and was represented by the same formula I as in claim 1 of the second request or "by formula II

$$X\text{-}R_f\text{-}O\text{-}(CF_2CF_2\text{-}O)_m\text{-}R_f\text{"-}H$$

where m is an integer of 0 to 7, and H, X, R_f, and R_f" are as defined for formula (I) in claim 1
or formula III

$$F\text{-}R_f\text{-}O\text{-}(R_f\text{'-}O)_p\text{-}R_f\text{"-}H$$

where p is an integer of 0 to 2, and H, R_f, R_f', and R_f" are as defined for formula I, except R_f has 4 to 12 chain carbon atoms, R_f' has 1 to 12 chain carbon atoms, and R_f" has 2 to 12 chain carbon atoms."

Claim 1 of the fourth auxiliary request differed from claim 1 of the main request by the suppression of the limitation to "4 to 30 carbon atoms", by the indication

that the omega-hydrofluoroalkylether compound was "normally liquid under ambient conditions of temperature and pressure" and was "represented by the following formula

$$X\text{-}R_f\text{-}O\text{-}(R_f'\text{-}O)_n\text{-}R_f''\text{-}H$$

wherein:
H is a primary hydrogen atom;
X is a fluorine atom, a primary hydrogen atom, or a primary chlorine atom;
n is an integer of 0 to 7; and
R_f, R_f', and R_f'' are independently selected from the group consisting of linear or branched, unsubstituted perfluoroalkylene groups; linear or branched, perfluoroalkyl- or perfluorocycloalkyl-substituted perfluoroalkylene groups; and linear or branched perfluoroalkylene groups substituted with an ether oxygen-containing moiety;

with the proviso that when X is H or Cl, R_f has 1 to 18 chain carbon atoms and each of R_f' and R_f'' independently has 1 to 12 chain carbon atoms;
and with the further proviso that when X is F, then R_f has at least 4 chain carbon atoms, and each of R_f' and R_f'' independently has 1 or more chain carbon atoms;
and with the still further proviso that when n is zero, then R_f is a perfluorocycloalkyl-substituted perfluoroalkylene group."

V. According to the Appellant the amendments to claim 1 of all requests introduced a lack of clarity and extended the subject-matter beyond the content of the application as filed. Document

(17) Journal of Fluorine Chemistry 98 (1999), 41-54

disclosed a compound which had only three carbon atoms and was nevertheless liquid. Therefore, by the suppression of the limitation "4 to 30 carbon atoms" the subject-matter of claim 1 of the fourth auxiliary request, although being defined by the feature "normally liquid under ambient conditions of temperature and pressure", was broader than the subject-matter of the claims maintained by the opposition division and, thus, violated the principle of prohibiting *reformatio in peius*. Therefore, all requests had to be refused.

VI. According to the Respondent any fluorinated compound disclosed in the patent application as filed including those having a saturated perfluoroaliphatic chain of 4 to 30 carbon atoms was described as being suitable for the removal of a contaminant from an article. Therefore, the restriction to omega-hydrofluoroalkylether compound having a saturated perfluoroaliphatic chain of 4 to 30 carbon atoms combined with the specific method of removing a contaminant from an article was not subject-matter extending beyond the content of the application as filed. Thus, amended claim 1 of the main request and of the first, second and third auxiliary requests fulfilled the requirements of Article 123(2) EPC. Omega-hydrofluoroalkylether compounds which were "normally liquid under ambient conditions of temperature and pressure", as specified in claim 1 of the fourth auxiliary request, had inherently a saturated perfluoroaliphatic chain with "4 to 30 carbon atoms" since compounds with a chain of less than three

or more than 30 carbon atoms were not liquid. Thus, the suppression of the requirement that the saturated perfluoroaliphatic chain had "4 to 30 carbon atoms" did not extend the subject-matter of claim 1 of the fourth auxiliary request beyond that of the claims maintained by the opposition division and did not offend against the principle of prohibition of *reformatio in peius*.

VII. The Appellant requested that the decision under appeal be set aside and that the patent be revoked.

The Respondent requested that the appeal be dismissed (main request), alternatively, that the decision under appeal be set aside and that the patent be maintained on the basis of one of the four auxiliary requests filed during the oral proceedings before the Board.

VIII. 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, first, second and third auxiliary requests

2. *Amendments (Article 123(2) EPC)*

2.1 Claim 1 as maintained by the opposition division (main request) and claim 1 of the first, second and third auxiliary requests comprise all the substantial amendment in that the omega-hydrofluoroalkylether compound used in the claimed process for removing a

contaminant from an article has been defined as having a saturated perfluoroaliphatic chain of "4 to 30 carbon atoms". However, in the application as filed the method of removing a contaminant was only disclosed in combination with specific omega-hydrofluoroalkylether compounds represented by a specific general formula which is not reflected in present claim 1 and which in addition did not contain the feature defining the compounds as having a saturated perfluoroaliphatic chain of "4 to 30 carbon atoms" (original claim 7 in combination with claim 1). The compositions disclosed in the application as filed on page 25, lines 30 to 32 as being useful as solvents for cleaning and drying applications, which according to the Respondent is a use corresponding to a method for removing a contaminant, are only generally defined as "omega-hydrofluoroalkylether compositions" and are not characterized by the feature of having a chain with "4 to 30 carbon atoms" added to claim 1 in suit.

2.2 Therefore, the combination of the specific method of removing a contaminant with the omega-hydrofluoroethers having a chain of 4 to 30 carbon atoms as now required by amended claim 1 of the main request and the first, second and third auxiliary requests is not directly and unambiguously derivable from the content of the application as filed.

2.3 According to the Respondent any fluorinated compound disclosed in the patent application as filed including those having a saturated perfluoroaliphatic chain of 4 to 30 carbon atoms was described as being suitable for any use or method envisaged therein, including for the removal of a contaminant from an article. Therefore,

the claimed method of removing a contaminant from an article and involving the omega-hydrofluoroalkylether compounds having a saturated perfluoroaliphatic chain of 4 to 30 carbon atoms was not subject-matter extending beyond that of the application as filed.

However, the application as filed discloses on the one side several classes and subclasses of omega-hydrofluoroalkylethers (page 5, lines 4 to 33; page 8, line 27; page 9, lines 26 and 33; page 10, line 7; claims 1 and 2) and, on the other side, a long list of possible applications of very different nature (page 6, line 36 to page 7, line 16). A direct link between the particular claimed method and the particular compounds now defined in claim 1 is not disclosed. On the contrary, the claimed method is only described in combination with specific compounds defined by a general formula (claim 7 in combination with claim 1) conveying to the skilled person merely the disclosure to use these specific compounds in the method of removing a contaminant. In order to arrive at the claimed subject-matter the skilled person has thus firstly to select within all the compounds disclosed in the application as filed the omega-hydrofluoroalkylethers specifically having a saturated perfluoroaliphatic chain of 4 to 30 carbon atoms, then in a second step to choose, from the numerous applications described, specifically the method for removing a contaminant from an article, and finally to combine the selected compounds with the selected application. For these reasons the Board arrives at the conclusion that the specific omega-hydrofluoroalkylethers now defined in the amended claim 1 are not directly and unambiguously disclosed in

the application as filed in combination with the method of removing a contaminant.

2.4 Hence, claim 1 according to the main request and the first, second and third auxiliary requests does not fulfil the requirements of Article 123(2) EPC and these requests must therefore be refused.

Fourth auxiliary request

3. *Reformatio in peius*

3.1 In principle, a claim amended in opposition appeal proceedings, which would put the opponent and sole appellant in a worse situation than if it had not appealed, must be rejected. Furthermore, if the opponent is the sole appellant against an interlocutory decision maintaining a patent in amended form, the patent proprietor is primarily restricted during the appeal proceedings to defending the patent in the form in which it was maintained by the Opposition Division in its interlocutory decision. Amendments proposed by the patent proprietor as respondent, non appellant i.e. a party to the proceedings as of right under Article 107, second sentence, EPC, may be rejected as inadmissible by the Board of Appeal if they are neither appropriate nor necessary (see decisions G 9/92, OJ EPO, 1994, 875; G 1/99, OJ EPO, 2001, 381).

3.2 In the claims as maintained by the Opposition Division, the omega-hydrofluoroalkylether compounds were defined as having a saturated perfluoroaliphatic chain of 4 to 30 carbon atoms. This restriction was introduced during the opposition proceedings in particular in order to

overcome novelty objections (see written decision under appeal, point 10). However, in claim 1 of the fourth auxiliary request now pending before the Board, the feature of having "4 to 30 carbon atoms" has been deleted and the omega-hydrofluoroalkylether compounds are now defined, *inter alia*, by the introduction in the claim of a general chemical formula and the feature of being "normally liquid under ambient conditions of temperature and pressure".

3.2.1 These amendments are designed to overcome objections under Articles 84 and 123(2) EPC raised during the appeal proceedings. Therefore, said amendments can be considered to be appropriate and necessary. However, since the limitation to "4 to 30 carbon atoms" introduced in the opposition proceedings was removed, the question arises whether this amendment put the Appellant in a worse situation than if it had not appealed and offended thus against the principle of prohibition of "*reformatio in peius*".

3.2.2 Claim 1 as maintained by the opposition division was restricted to a method involving omega-hydrofluoroalkylether compounds having a saturated perfluoroaliphatic chain of 4 to 30 carbon atoms. However, claim 1 of the fourth auxiliary request does not contain any more this restriction and the formula introduced in the claim encompasses omega-hydrofluoroalkylether compounds having less than 4 and more than 30 carbon atoms (see the general formula in claim 1, n=1, R_f, R_f' and R_f" can have only one carbon atom; n can be 7, R_f, R_f' and R_f" can have an unlimited number of carbon atoms). Thus, the claimed method is extended in a way as to involve hydrofluoroalkylether

compounds having a saturated perfluoroaliphatic chain of less than 4 and more than 30 carbon atoms, which were explicitly excluded from the patent maintained by the opposition division.

3.2.3 Consequently, said amendments result in an extension of the subject-matter now claimed over the subject-matter as maintained by the first instance, such that the Appellant as a result thereof is in a worse situation than if it had not appealed contrary to the principle of prohibition of "*reformatio in peius*". Since, the Appellant had other possibilities of limiting the claimed subject-matter, for example to a method involving specific individual compounds disclosed in the application as filed, the amended claim 1 must be rejected (G 1/99 (*supra*)).

3.2.4 The Respondent submitted that since the omega-hydrofluoroalkylether compounds were defined as being "normally liquid under ambient conditions of temperature and pressure" they had inherently a saturated perfluoroaliphatic chain with "4 to 30 carbon atoms" only, compounds having a chain of less than 4 or more than 30 carbon atoms not being normally liquid. Thus, the omission of the then superfluous requirement that the saturated perfluoroaliphatic chain had "4 to 30 carbon atoms" did not extend the subject-matter claimed.

However, the Respondent neither substantiated nor submitted any evidence for this allegation although the burden of proof in this respect lies on his side. In addition, as argued by the Appellant and not contested by the Respondent, document (17) discloses an omega-

hydrofluoroalkylether having a chain of only three carbon atoms and presenting nevertheless a boiling point of 35°C (compound "HG-10" in table 1, page 42). This compound with a chain of three carbon atoms is consequently also "normally liquid under ambient conditions of temperature and pressure" in the sense of the patent in suit. In the presence of such indicia and in the absence of evidence to the contrary, the Board is not convinced that the feature "normally liquid under ambient conditions of temperature and pressure" intrinsically restricts the omega-hydrofluoroalkylether necessarily to those having a saturated perfluoroaliphatic chain with "4 to 30 carbon atoms" as alleged by the Respondent. Therefore, this line of argumentation of the Respondent must be rejected.

3.3 The Board thus arrives at the conclusion that the fourth auxiliary request must be refused for violating the principle of prohibition of "*reformatio in peius*."

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chairman:

P. Cremona R. Freimuth