

Internal distribution code:

- (A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

**Datasheet for the decision
of 16 July 2014**

Case Number: T 2045/12 - 3.3.10

Application Number: 00926297.3

Publication Number: 1240125

IPC: C07C41/18, C07C41/24,
C07C43/17, C07C43/313,
C07C41/48

Language of the proceedings: EN

Title of invention:
FLUORINE CONTAINING VINYL ETHERS

Patent Proprietor:
3M Innovative Properties Company

Opponent:
Solvay Specialty Polymers Italy S.p.A.

Headword:

Relevant legal provisions:
EPC Art. 54(2), 56

Keyword:
Novelty - (yes) - after amendment
Inventive step - (yes) - after amendment

Decisions cited:

Catchword:



**Beschwerdekammern
Boards of Appeal
Chambres de recours**

European Patent Office
D-80298 MUNICH
GERMANY
Tel. +49 (0) 89 2399-0
Fax +49 (0) 89 2399-4465

Case Number: T 2045/12 - 3.3.10

**D E C I S I O N
of Technical Board of Appeal 3.3.10
of 16 July 2014**

Appellant: 3M Innovative Properties Company
(Patent Proprietor) 3M Center
P.O. Box 33427
Saint Paul, MN 55133-3427 (US)

Representative: Kurz, Arnd
3M Deutschland GmbH
3M Office of Intellectual Property Counsel
Carl-Schurz-Strasse 1
41453 Neuss (DE)

Respondent: Solvay Specialty Polymers Italy S.p.A.
(Opponent) Via Lombardia, 20
20021 Bollate (MI) (IT)

Representative: Benvenuti, Federica
Solvay S.A.
Département de la Propriété Intellectuelle
Rue de Ransbeek, 310
1120 Bruxelles (BE)

Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 20 July 2012
revoking European patent No. 1240125 pursuant to
Article 101(3) (b) EPC.**

Composition of the Board:

Chairman P. Gryczka
Members: R. Pérez Carlón
F. Blumer

Summary of Facts and Submissions

- I. The appellant (patent proprietor) lodged an appeal against the decision of the opposition division to revoke European patent No. 1 240 125.
- II. Notice of opposition had been filed, on the ground that the subject-matter of the patent as granted was not novel and did not involve an inventive step (Article 100(a) EPC). This opposition was subsequently withdrawn.
- III. The documents cited during the opposition proceedings include the following:
- D3: WO 99/48939
D5: US 4,981,727
D10: Experimental report filed during examination proceedings.
- IV. The opposition division considered that the subject-matter of claim 1 of the then pending main request and auxiliary request 1 was not novel. With respect to the then pending auxiliary request 2, document D5 was the closest prior art, the problem underlying the claimed invention was providing fluoroelastomers with enhanced low temperature properties and the solution, which were fluoroelastomers obtainable by using a perfluorovinyl-ether comonomer having the formula $RfOCF_2OCF=CF_2$ wherein Rf is $-CF_2CF_3$ (perfluoroethyl) or $-CF_3$ (perfluoromethyl), was not inventive in view of D5 alone or in combination with D3.
- V. During the oral proceedings before the board, which took place on 16 July 2014, the appellant requested that the patent be maintained upon the basis of claim 1

of its main request, which had been filed as auxiliary request 3 with the statement setting out the grounds for appeal, and which reads as follows:

"A fluoroelastomer obtainable by using a perfluorovinylether comonomer having the formula $RfOCF_2OCF=CF_2$ wherein Rf is $-CF_2CF_3$ or $-CF_3$."

VI. The arguments of the appellant relevant for the present decision were the following:

Document D3 disclosed a fluoroelastomer comprising a comonomer which differed from those subject-matter of claim 1 in that Rf was $-CF_2CF_2CF_3$. Document D5 disclosed fluoroelastomers which could not be obtained by using a vinyl ether comonomer, but by using an epoxide. The subject-matter of claim 1 was therefore novel.

Document D5, which disclosed fluoroelastomers with low temperature T_g (brittle to rubber transition temperature), was the closest prior art. The claimed fluoroelastomers differed from those disclosed in D5 at least in that they could not be obtained by using a vinyl ether comonomer. The problem underlying the claimed invention was providing further fluoroelastomers which could be used at low temperature and the solution, which were fluoroelastomers obtainable by using a vinyl ether comonomer, was not obvious having regard at any of the documents on file with the consequence that the subject-matter of claim 1 was inventive.

VII. The final request of the appellant was that the decision under appeal be set aside and that the patent be maintained on the basis of the main request (claim 1), filed as auxiliary request 3 with the

statement setting out the grounds of appeal or, subsidiarily, on the basis of any one of auxiliary requests 1-8, filed respectively as main request and auxiliary requests 1, 2 and 4-8 with the statement setting out the grounds of appeal.

Reasons for the Decision

1. The appeal is admissible.

Novelty:

2. Claim 1 is directed to a fluoroelastomer obtainable by using a perfluorovinylether comonomer having a residue perfluoroethyl or perfluoromethyl (Rf is $-\text{CF}_2\text{CF}_3$ or $-\text{CF}_3$).
3. Document D3 discloses fluoroelastomers obtainable by using a vinyl ether comonomer (page 4, line 6-8) which differ from those subject-matter of claim 1 since said vinyl ether has a perfluoropropyl residue (Rf is $-\text{CF}_2\text{CF}_2\text{CF}_3$, see page 5, line 8).
4. Document D5 describes in column 28, lines 42-48 polymers with a low Tg (brittle to rubber transition temperature). In the light of their Tg value, these polymers are fluoroelastomers in the sense of claim 1. Said fluoroelastomers differ from those subject-matter of claim 1 at least in that are not obtainable by using a vinyl ether comonomer but require, instead, an epoxide, see compounds VI in column 8, line 32 and the experimental details in column 10, lines 34-57.

5. The subject-matter of claim 1 is, hence, novel in the sense of Article 54(2) EPC.

Inventive step:

6. Closest prior art:

The opposition division considered document D5 as the closest prior art, and the board sees no reason to differ from this finding.

D5 discloses fluoroelastomers having low brittle to rubber transition temperature (Tg) which differ from those subject-matter of claim 1 at least in that they are not obtainable by using a vinyl ether comonomer but require a vinyl ether epoxide comonomer, instead.

7. Technical problem underlying the invention:

The problem underlying the claimed invention can be formulated as providing alternative fluoroelastomers suitable for low temperature application (see paragraph [1] of the patent in suit).

8. Solution:

The solution are fluoroelastomers obtainable by using a perfluorovinylether comonomer having the general formula $RfOCF_2OCF=CF_2$ wherein Rf is $-CF_2CF_3$ or $-CF_3$.

9. Success:

The appellant has provided evidence (D10) showing that a copolymer containing a vinyl ether comonomer as required by claim 1 having Rf $-CF_2CF_3$ has low brittle to rubber transition temperature (Tg). The Tg of the

corresponding homopolymer, calculated using the Fox Equation, is -51°C , which indicates that the use of said compound as comonomer contributes to the low temperature T_g of a fluoroelastomer. This result can also be extrapolated to the embodiment of claim 1 according to which R_f is $-\text{CF}_3$ in the light of their close structural relationship.

The problem as formulated above is, hence, considered as credibly solved.

10. Finally, it remains to be examined whether the claimed solution was obvious for the person skilled in the art.

The fluoroelastomers of D5 comprise a polyether backbone which is obtainable by polymerising an epoxide comonomer. Although said epoxides are the result of the oxidation of the corresponding perfluorovinyl ethers, the respective backbones of these polymers are very different and it could not be expected that they shared the same properties. For this reason, document D5 alone does not hint to the claimed solution.

Document D3 discloses fluoroelastomers which can be obtained by using a perfluorovinyl ether comonomer having a residue R_f containing one $-\text{CF}_2-$ group more than required by the general formula of claim 1 (see page 4, lines 4-7 and page 5, line 8), but neither discloses nor hints that these fluoroelastomers were suitable for low temperature application and, hence, does not provide any indication which could have led the skilled person to the features of claim 1.

For these reasons, the board concludes that the skilled person could not have found any motivation to modify the backbone of the compounds disclosed in document D5

and choose a fluoroelastomer obtainable by using the perfluorovinyl ether comonomers required by claim 1 in order to solve the problem as defined in point 7. above, with the consequence that the subject-matter of claim 1 of the main request is inventive in the sense of Article 56 EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the opposition division with the order to maintain the patent on the basis of the main request (claim 1), filed as auxiliary request 3 with the statement setting out the grounds of appeal, and a description yet to be adapted.

The Registrar:

The Chairman:



C. Rodríguez Rodríguez

P. Gryczka

Decision electronically authenticated