

**Internal distribution code:**

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

**D E C I S I O N**  
**of 3 June 2003**

**Case Number:** T 1072/98 - 3.3.1

**Application Number:** 90916377.6

**Publication Number:** 0461262

**IPC:** C10M 169/04

**Language of the proceedings:** EN

**Title of invention:**

Use of refrigerator oil composition for Hydrofluorcarbon  
refrigerant

**Patentee:**

IDEMITSU KOSAN COMPANY LIMITED

**Opponent:**

Cognis Deutschland GmbH & Co. KG

**Headword:**

Refrigerator oil/IDEMITSU KOSAN

**Relevant legal provisions:**

EPC Art. 56, 83, 100(a)(b), 114

**Keyword:**

"Late-filed documents - admitted (yes)"

"Sufficiency of disclosure (yes) - no relevant evidence to the  
contrary"

"Inventive step (yes) - non obvious solution"

**Decisions cited:**

T 0536/88

**Catchword:**

-



Case Number: T 1072/98 - 3.3.1

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.1  
of 3 June 2003

**Appellant:** Cognis Deutschland GmbH & Co. KG  
(Opponent) Postfach 130164  
D-40551 Düsseldorf (DE)

**Representative:** -

**Respondent:** IDEMITSU KOSAN COMPANY LIMITED  
(Proprietor of the patent) 1-1, Marunouchi 3-chome  
Chiyoda-ku  
Tokyo 100-0005 (JP)

**Representative:** Hrabal, Ulrich, Dr  
Gille Hrabal Struck  
Neidlein Prop Roos  
Brucknerstrasse 20  
D-40593 Düsseldorf (DE)

**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 11 September 1998  
rejecting the opposition filed against European  
patent No. 0461262 pursuant to Article 102(2)  
EPC.

**Composition of the Board:**

**Chairman:** P. P. Bracke  
**Members:** P. F. Ranguis  
S. C. Perryman

## Summary of Facts and Submissions

- I. This appeal lies from the decision of the Opposition Division to reject the opposition filed against the European patent No. 0 461 262 (European patent application No. 90 916 377.6) pursuant to the provisions of Article 102(2) EPC.
- II. The patent was granted with twelve claims, independent Claims 1, 11 and 12 reading:

"1. Use of a refrigerator oil composition which comprises at least one compound selected from (A) a polyoxyalkylene glycol derivative, and (B) polyester compounds having a kinematic viscosity at 40°C of 5 to 1000 cSt and at least two ester linkages, which are compounded with (a) an aliphatic acid partially esterified with a polyhydric alcohol, and (b) at least one compound selected from among phosphate compounds and phosphite compounds for hydrogen-containing hydrofluorocarbon refrigerant."

"11. A method for effecting lubrication in a compression-type refrigerator using a hydrogen-containing hydrofluorocarbon as a refrigerant characterized in that the lubrication is effected by the use of said refrigerator oil composition as defined in Claim 1."

"12. A compression-type refrigeration system using hydrogen-containing hydrofluorocarbon as a refrigerant and said refrigerator oil composition as defined in Claim 1."

III. The opposition sought revocation of the patent in suit on the grounds that its subject matter did not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 100(b) EPC) and did not involve an inventive step (Article 100(a) EPC). In support of lack of inventive step the following documents were cited:

(1) C.A. 104: 8154q and JP 85/173 097

(1a) translation into English of document JP 85/173 097

(2) GB-A- 1 028 402

(3) C.A. 95: 117635p and JP 81/36570

(4) C.A. 99: 7306g and JP 83/61171

(5) US-A- 4 454 052

(6) US-A- 2 807 155

IV. In its decision, the Opposition Division found that in view of the patent as a whole the person skilled in the art had enough information to carry out the invention. In particular, it was held that the definition of the feature (a) as "an aliphatic acid partially esterified with a polyhydric alcohol" could not justify an objection under Article 100(b) EPC, since the general description and the examples gave sufficient instructions to the person skilled in the art to carry out the invention. Although the patent was silent as to the degree of esterification of this compound, this was not crucial to the invention.

Regarding the inventive step, the Opposition Division held that document (5) was the closest state of the art and the technical problem to be solved was to provide a refrigerator oil which was excellent in lubrication performance as well as being miscible with hydrogen-containing hydrofluorocarbon refrigerants and at the same time effective for improving wear resistance, especially wear resistance between aluminium material and steel material. In view of document (5) and the other prior art cited, the Opposition Division found that it would not have been obvious to arrive at the claimed invention.

V. Oral proceedings took place on 3 June 2003.

VI. In the written proceedings and during the oral proceedings, the Appellant argued that a claimed invention was open to objection under Article 100(b) EPC, if its subject-matter could not be carried out by a person skilled in the art within its whole area. It was not denied that the examples disclosed in the specification were enabling. However, the claimed invention encompassed not only the use of compositions illustrated by the examples, namely compositions containing a partially esterified polyhydric alcohol, but also compositions containing a partially esterified aliphatic acid. In the latter case, that would mean that free carboxylic acids were present in the refrigerator oil composition. Their presence could however, due to their chemical reactivity with other components of the composition, have a negative influence on the refrigerating machine. As evidence of

this detrimental effect, the Appellant submitted with the statement of grounds of appeal document

(7) Römpps Chemie-Lexikon, Band 5, pages 3106 to 3109, Franckh'sche Verlagshandlung 1975.

which on page 3106, column 2 explicitly mentioned the detrimental influence of acids in oils.

The amount of free acids in the composition was, therefore, a critical aspect of the teaching of the patent. However, no information was set out in the patent in that respect. Therefore, the person skilled in the art was required to carry out numerous experiments to determine the range of free acids which was acceptable in order for the invention to be implemented. This was an undue burden contrary to the requirements of Articles 100(b) and 83 EPC.

Furthermore, there was an overlap between the definition of component (a) and polyester (B).

Regarding inventive step, the Opposition Division erred in selecting document (5) as the closest state of the art. Document (5) related to absorption type refrigerators, the working of which was quite different from a compression-type refrigerator which the patent-in-suit related to. Absorption-type refrigerators differed from compression-type refrigerators in that they worked without rotative elements and only through difference of temperature. Thus no assistance in solving the problem of minimizing the wear resistance between aluminium material and steel material, one of the problems encountered with compression-type

refrigerators, could be expected to be derived from document (5), and this document was not suitable as a starting point.

Although in the written proceedings, the Appellant had relied upon document (1a) as the closest state of the art, he submitted at the oral proceedings that document

(8) US-A- 4 755 316

was to be considered as the closest state of the art. This document aimed indeed at the same objective as the patent in suit, i.e. providing lubricants for compression-type refrigerators for use with tetrafluoroethane. Furthermore, the claimed subject-matter differed from the disclosure of document (8) only by the combined use of features (a) and (b). Given that the technical problem to be solved in view of document (8) was to provide a lubricating composition effective for improving wear resistance (minimizing the friction) between aluminium material and steel material, the person skilled in the art would have found without inventive ingenuity the claimed solution in view of document (1a) which taught that a mixture of phosphate compounds and polyolesters improved the wear resistance for numerous oils. The claimed subject-matter was, therefore, obvious over the disclosure of document (8) in combination with the disclosure of document (1a).

VII. The Respondent, first, contested the admissibility of document (7) as late-filed, since the Opponent was able to submit this document at an earlier time as the meaning of the wording of the feature (a) had been

extensively discussed in the opposition proceedings. In case the Board would admit this document into the proceedings, he argued that this document confirmed that the sole reasonable interpretation of the feature (a), i.e. "an aliphatic acid partially esterified with a polyhydric alcohol" was that a polyhydric alcohol is partially esterified with an aliphatic, preferably mono-basic acid. This meaning was supported by the examples relating to sorbitan monooleate or glycerol monooleate. By contrast, the other interpretation was unrealistic since that would mean that a mixture of fully esterified polyols together with free aliphatic acids would be present. However, feature (a) did not refer to a mixture of two components.

The specification, in particular the examples, gave the person skilled in the art sufficient information for selecting the suitable compounds and no further experiments were necessary.

In conclusion, the objection raised by the Appellant allegedly based on Article 83 EPC was in fact an objection under Article 84 EPC, which, however, was no ground of opposition.

Regarding inventive step, the Respondent contested, first, the admissibility of document (8) as late-filed. In case the Board would admit this document into the proceedings, he argued that comparative example No. 2 of the patent, relating to a lubricating oil comprising no sorbitan monooleate, showed that the claimed invention provided refrigerating oils exhibiting a better wear resistance. There was no hint in



document (8) to improve the wear resistance in the way claimed in the patent in suit. Moreover, the person skilled in the art would have had no reason to transfer the teaching of document (1a), which referred to lubricating compositions for hydraulic transmissions, brakes, tractors or cars, i.e. a quite different technical field, to solve the technical problem. No relevant information could be found in document (5), either.

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

The Respondent requested that the appeal be dismissed.

IX. At the end of the oral proceedings, the decision of the Board was announced.

### **Reasons for the Decision**

1. The appeal is admissible.

2. *Article 114 EPC - Late-filed evidence*

2.1 Documents (7) and (8) are new evidence submitted for the first time by the Appellant with the statement of grounds of appeal. The admissibility of both documents was contested by the Respondent on the ground of being belated submissions.

2.2 The Appellant submitted document (7) in support of his objection under Article 100(b) EPC. This document is part of a textbook and, therefore, belongs to the

general technical knowledge of the person skilled in the art. The citation of this document was put forward in response to the finding of the Opposition Division that the degree of esterification of the compound defined by the feature (a) was not crucial to the invention (cf. point IV above).

- 2.3 In the Board's judgment, the submission of a new document furnishing proof of common general knowledge and aiming at reinforcing a line of attack already made before the first instance and discussed in the decision under appeal, is to be considered as the normal behaviour of a losing party. It follows that document (7) is admitted into the appeal proceedings.
- 2.4 At the oral proceedings, document (8) was put forward by the Appellant as the closest state of the art (cf. point VI above).
- 2.5 Document (8) relates to the technical field of compression refrigeration equipment using tetrafluoroethane as a working fluid and discloses to this end a lubricating composition comprising polyoxyalkyleneglycol as lubricating oil and additives to enhance performance such as antiwear additives (cf. column 3, lines 33 to 55, column 9, lines 56 to 68). This document aims at the same objective as the patent in suit and has the most relevant technical feature in common with it.
- 2.6 The Board does acknowledge that this document was late filed and that the Appellant provided no reason why it could not have been filed earlier in the opposition proceedings. However, the disclosure of this document

is highly relevant in that it aims at the same objective as the patent in suit and the sole distinguishing feature between the claimed invention and this document is the feature (a) (cf. point II above). Furthermore, this document was well-known to the Respondent since it was the sole document acknowledged in the patent in suit and the problem to be solved as set out in the patent in suit was clearly defined in view of the state of the art represented by this document (cf. page 2, lines 16 to 28 and lines 32 to 45). A document of this kind forms part of the opposition or opposition appeal proceedings even if it was not expressly cited within the opposition period (cf. T 536/88, OJ EPO 1992, 638, point 2.1 of the reasons). It follows that document (8) is admitted into the appeal proceedings.

3. *Article 100(b) EPC - Article 83 EPC*

3.1 The question to be decided is whether the claimed subject-matter as defined in Claim 1 of the patent-in-suit complies with the requirements of Article 83 EPC or gives rise to objections pursuant to Article 100(b) EPC.

3.2 That requires determination of whether there is evidence that not all oil compositions defined in Claim 1 can be actually used in compression-type refrigerators without detrimental effect.

3.3 Since both parties have a different understanding of the meaning of the feature (a), i.e. "an aliphatic acid partially esterified with a polyhydric alcohol", it is appropriate, in the present case, to construe what is actually claimed within the wording of Claim 1.

3.4 The patent-in-suit mentions on page 5, lines 38 to 42 the following definition:

"By the term "an aliphatic acid partially esterified with a polyhydric alcohol" as used herein is meant a partially esterified product formed from a polyhydric alcohol such as glycol, glycerol, trimethylol propane, pentaerythritol, sorbitan, sorbitol or the like and a saturated or unsaturated straight-chain or branched chain aliphatic acid having 1 to 24 carbon atoms, preferably from glycerol, sorbitan or sorbitol and an aliphatic acid having 8 to 22 carbon atoms. In particular, an monobasic aliphatic acid ester is most suitable".

3.5 Contrary to the interpretation of the Respondent, the Board considers in agreement with the Appellant that the above definition (cf. point 3.4 above) does not exclude that acids be present in the partially esterified product. Indeed, an aliphatic acid partially esterified by a polyhydric alcohol matches this definition.

3.6 Document (7) teaches that suitable lubricating oils should be acid-free and produce no acids in the long run (cf. right-hand column, page 3106). However, this very general teaching does not give any indication as to the type of acid which is detrimental to the

satisfactory working of a machine using lubricating oils. Document (7) is silent as to whether inorganic or organic acid or both are envisaged and the Appellant did not file any argument in that respect.

- 3.7 Furthermore, document (8) casts doubts on the argumentation of the Appellant. Indeed, this document relates to the specific technical field of lubricating oils for use in compression-type refrigerators and describes among other additives enhancing performance, organic acids as corrosion inhibitors (cf. column 10, line 32).

The Board is, therefore, not convinced as alleged by the Appellant, that the presence of aliphatic acids renders the lubricating compositions unusable for compression-type refrigerators.

- 3.8 The second argument of the Appellant relates to the lack of instructions in the patent-in-suit as to the amount of free aliphatic acids in the composition, this silence imposing on the person skilled in the art an undue burden for carrying out the invention. However, since the Appellant has not demonstrated the detrimental effect of organic acids in the use of oil compositions as defined in Claim 1, this argument is irrelevant.

- 3.9 Furthermore, the possible overlapping between the definition of features (a) and (b) addresses a clarity objection only and cannot be argued as an objection under Article 100(b) EPC.

3.10 In conclusion, in the absence of convincing evidence showing the contrary, the Board holds that the patent-in-suit discloses the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art. The ground of opposition under Article 100(b) EPC is rejected.

4. *Article 100(a) EPC*

4.1 The patent-in-suit as reflected by Claim 1 as granted (cf. point II above) relates to the use of a refrigerator oil composition for hydrogen-containing hydrofluorocarbon refrigerant. As set out in the description, this lubricating oil is to be employed for effecting lubrication in a compression-type refrigerator using a hydrofluorocarbon as a refrigerant (cf. page 2, lines 46 to 47), namely a type of refrigerator where the metal surfaces of different elements of the device are in moving contact with each other causing a wear effect.

4.2 In accordance with the "problem-solution approach", it is necessary to establish the closest state of the art to determine in the light thereof the technical problem which the invention addresses and solves. The "closest prior art" is normally a prior art document disclosing subject-matter aiming at the same objective as the claimed invention and having the most relevant technical features in common.

4.3 The Opposition Division and the Respondent elected document (5) as the closest state of the art. Document (5) relates to **absorption-type** refrigerators, the working of which is quite different from a

**compression-type** refrigerator which the patent-in-suit relates to. Absorption-type refrigerators differ from compression-type refrigerators in that they work without rotative elements and only through difference of temperature. Therefore, as submitted by the Appellant, the problem of minimizing the wear resistance between aluminium material and steel material, one of the problems encountered with compression-type refrigerator, was not one which arose for the subject-matter of document (5). For these reasons, document (5) cannot qualify as the closest state of the art.

- 4.4 As stated above (cf. point 2.5 above), document (8) relates to the technical field of compression refrigeration equipment using tetrafluoroethane as a working fluid and discloses to this end a lubricating composition comprising polyoxyalkyleneglycol as lubricating oil and additives to enhance performance such as antiwear additives (cf. column 3, lines 33 to 55, column 9, lines 56 to 68). This document aims at the same objective as the patent in suit and has the most relevant technical feature in common with it. This document is, thus, considered as the closest state of the art for defining the technical problem to be solved.
- 4.5 In view of this state of the art the problem underlying the patent in suit as formulated in the specification of this patent is to provide the use of a refrigerator oil which is excellent in lubrication performance as well as miscibility with hydrofluorocarbon and, at the same time, effective for improving wear resistance of the friction surfaces of a compression-type refrigerator, especially wear resistance between

aluminium material and steel material (cf. page 2, lines 20 to 25 and 32 to 34).

- 4.6 As the solution to this problem the patent in suit proposes the use of an oil composition which comprises at least one compound selected from (A) a polyoxyalkylene glycol derivative, and (B) polyester compounds having a kinematic viscosity at 40°C of 5 to 1000 cSt and at least two esters linkages, which are compounded with (a) an aliphatic acid partially esterified with a polyhydric alcohol, and (b) at least one compound selected from among phosphate compounds and phosphite compounds.
- 4.7 Examples Nos. 1 to 18 relate to lubricating compositions comprising polyoxypropylene glycol polymers or polyoxypropylene glycol/polyoxyethylene glycol copolymers as oils showing excellent performances in terms of wear resistance, stability and miscibility in mixture with tetrafluoroethane. Examples Nos. 19 to 33 relating to lubricating compositions comprising various polyester compounds show similar good performances. Furthermore, it can be derived from comparative examples Nos. 2 and 6 that the absence of sorbitan monooleate as compound (a) of Claim 1 leads to lubricating compositions having an insufficient wear-resistance effect. For these reasons the Board is satisfied that the problem underlying the patent in suit has been successfully solved. Nothing relevant was submitted by the Appellant in that respect.



4.8 It remains to be decided whether or not the claimed solution is obvious in view of the cited prior art.

The relevant question is whether the person skilled in the art guided by the technical problem to be solved would have been directed in order to improve the wear-resistance effect of a lubricating composition for effecting lubrication in a compression-type refrigerator using a hydrofluorocarbon as a refrigerant to propose the claimed solution (cf. point 4.6 above).

4.9 When starting from the lubricating compositions disclosed in document (8), the person skilled in the art is aware of the fact that, in addition polyoxyalkylene glycols such as polyoxypropylene glycols (cf. Table A), additives may be used to enhance performance such as extreme pressure and anti-wear agents (cf. column 9, lines 61 to 63). Among those additives phosphates or phosphites corresponding to compounds (b) according to the claimed invention are mentioned (cf. column 10, lines 19 to 20). However, document (8) is completely silent about the use of a component (a) as defined in Claim 1 (cf. point II above).

4.10 Document (1a) discloses lubricating compositions comprising as base oils mineral oils or synthetic oils and, as anti-friction agents, mixtures of phosphate esters and polyolesters corresponding to component (a) according to present Claim 1, such as sorbitan monooleate. It is, in particular, stated that these mixtures offer excellent anti-friction properties in the long run along with good oxidation stability and anti-corrosion properties (cf. page 2, point 3, first

paragraph and sixth paragraph; page 3, last paragraph; page 4, first paragraph).

These oils are designed to be used for automatic transmissions, hydraulic brakes in tractors and front-wheel driven cars (cf. page 2, point 3 and page 6, third and fourth paragraph).

However, the person skilled in the art seeking to solve the above defined technical problem would have turned his attention to documents belonging to the same technical field. In absence of any documents teaching the possibility to transfer the teaching of documents related to the domain of automatic transmissions and brakes in cars to that of compression-type refrigerators, it is to be concluded that document (1a) would not have been considered by the skilled person, because it belonged to a different technical field, and the skilled person had no reason to believe that beneficial lubricating properties in that field would also mean beneficial properties when used in compression-type refrigerators.

- 4.11 At the oral proceedings, the Appellant did in fact abandon all other lines of argument involving the disclosures of documents (2), (3), (4), (5) and (6). The Board sees on its own no reason to raise objections in that respect. Indeed:

Document (2) relates to lubricating oils for lubrication of aviation turbines or in the preparation of greases and other lubricating compositions intended for high temperature use (cf. page 1, lines 12 to 18). This document relates to a different technical

field not relevant for solving the above defined technical problem (cf. point 4.5 above).

As acknowledged by the Appellant, document (5) addresses a different technical problem (cf. point 4.3 above), namely the provision of a liquid absorbent for absorption-type refrigerator. Document (4) also relates to absorption cooling agents. These documents would not have been considered by the skilled person for solving the above defined technical problem, either.

Document (3) discloses a lubricating Freon-resistant ester oil mixed with phosphates. Document (6) discloses an oil for use in refrigeration apparatus including a compressor consisting of an organic ester of pentaerythritol (cf. column 1, lines 15 to 50). Those documents give no hint to the claimed solution.

4.12 Since starting from document (8) and in the light of the other documents cited, the person skilled in the art would not have been directed in an obvious manner to the claimed solution in order to solve the technical problem defined above (cf. point 4.5 above), the subject-matter of Claim 1 meets the inventive step requirement. The same applies to dependent Claims 2 to 9.

4.13 Independent Claims 11 and 12 relating, respectively to a method for effecting lubrication in a compression-type refrigerator and to a compression-type refrigerator system involving the refrigerator oil composition as defined in Claim 1, are based on the same inventive concept and derive their patentability on the same basis as does Claim 1.

**Order**

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

The appeal is dismissed.

The Registrar:

The Chairman:

N. Maslin

P. P. Bracke