

Internal distribution code:

- (A) Publication in OJ
(B) To Chairmen and Members
(C) To Chairmen

D E C I S I O N
of 21 September 1999

Case Number: T 0279/97 - 3.3.1

Application Number: 90308076.0

Publication Number: 0468109

IPC: C10M 107/10

Language of the proceedings: EN

Title of invention:
Biodegradable lubricants and functional fluids

Patentee:
Ethyl Petroleum Additives Limited

Opponent:
Mobil Oil Corporation

Headword:
Biodegradable oligomers/ETHYL

Relevant legal provisions:
EPC Art. 54(2), (3), 111(1)

Keyword:
"Novelty (yes, after amendments)"
"Remittal to the first instance"

Decisions cited:
T 0629/90

Catchword:
-



Case Number: T 0279/97 - 3.3.1

D E C I S I O N
of the Technical Board of Appeal 3.3.1
of 21 September 1999

Appellant: Ethyl Petroleum Additives Limited
(Proprietor of the patent) London Road
Bracknell
Berkshire RG12 2UW (GB)

Representative: Woods, Geoffrey Corlett
J.A. Kemp & Co.
14 South Square
Gray's Inn
London WC1R 5LX (GB)

Respondent: Mobil Oil Corporation
(Opponent) 3225 Gallows Road
Fairfax, Virginia 22037-0001 (US)

Representative: Kadour, Ulrich, Dr.
Kadour & Partner
Corneliusstrasse 15
81469 München (DE)

Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 14 January 1997
revoking European patent No. 0 468 109 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: J. M. Jonk
Members: P. P. Bracke
S. C. Perryman

Summary of Facts and Submissions

I. The appeal lies from the Opposition Division's decision, announced orally on 12 December 1996, with the reasoned decision being issued on 14 January 1997, revoking European patent No. 0 468 109 due to lack of novelty of the claimed subject-matter then on file over the teaching of any of documents

(1) EP-A-0 004 425 and

(2) EP-B-0 288 777

and over the combined teaching of document (1) and document

(5) US-A-4 041 098.

II. During the written appeal proceedings the Respondent (Opponent) additionally contested that the claimed subject-matter then on file was novel over document

(A) EP-A-0 449 257,

which was cited as prior art according to Article 54(3) EPC.

III. With a letter of 12 August 1999 the Respondent withdrew his opposition.

IV. At oral proceedings before the Board, which took place on 21 September 1999, the Appellant (Proprietor) filed a set of 15 claims with the independent claims reading:

"1. Use of a lubricating oil composed of at least one liquid hydrocarbon which has a viscosity at 100°C of 8.0 cSt or less and which is formed by oligomerisation of a linear 1-alkene hydrocarbon having 6 to 10 carbon atoms in the molecule to give a liquid oligomer containing at least 50% dimer, trimer and/or tetramer and hydrogenation of the liquid oligomer, to lubricate a machine the operation of which involves the non-accidental release of the lubricating oil into the environment, wherein the lubricating oil and the liquid hydrocarbon have a biodegradability of at least 20% when tested and reported in accordance with test method CEC L-33-T-82 and wherein the lubricating oil is composed of at least 10 percent by volume of the liquid hydrocarbon."

"5. Use of a functional fluid composed of at least one liquid hydrocarbon which has a viscosity at 100°C of 8.0 cSt or less and which is formed by oligomerisation of a linear 1-alkene hydrocarbon having 6 to 10 carbon atoms in the molecule to give a liquid oligomer containing at least 50% dimer, trimer and/or tetramer and hydrogenation of the liquid oligomer, as a solvent and/or carrier for a herbicide or plant growth regulator, wherein the functional fluid and the liquid hydrocarbon have a biodegradability of at least 20% when tested and reported in accordance with test method CEC L-33-T-82 and wherein the functional fluid is composed of at least 10 percent by volume of the liquid hydrocarbon."

"6. Use of a functional fluid, other than a lubricating oil, composed of at least one liquid hydrocarbon which has a viscosity at 100°C of 8.0 cSt or less and which is formed by oligomerisation of a linear 1-alkene hydrocarbon having 6 to 10 carbon atoms in the molecule to give a liquid oligomer containing at least 50% dimer, trimer and/or tetramer and

hydrogenation of the liquid oligomer, in operating a machine the operation of which involves release of the functional fluid into the environment, wherein the functional fluid and the liquid hydrocarbon have a biodegradability of at least 20% when tested and reported in accordance with test method CEC L-33-T-82 and wherein the functional fluid is composed of at least 10 percent by volume of the liquid hydrocarbon."

V. The Appellant essentially argued that the claims met the requirements of Article 123(2) and (3) EPC and that the claimed subject-matter was novel over the cited prior art.

VI. The Appellant requested that the Opposition Division's decision be set aside and that the matter be remitted to the first instance for further prosecution on the basis of the claims submitted at the oral proceedings on 21 September 1999.

Reasons for the Decision

1. The appeal is admissible.

2. *Procedural questions*

2.1 In the present case, in which the Opponent was the Respondent and withdrew his opposition during these appeal proceedings, the Board of Appeal must in accordance with the jurisprudence of the Boards of Appeal examine the appeal on the basis of the request by the Appellant for the contested decision to be set

aside. In this context, the Board also observes that in examining the appeal the Board may take into account evidence submitted by the Respondent prior to withdrawal of his opposition (see decision T 629/90 (OJ EPO 1992, 654)).

3. *Allowability under Article 123(2) and (3) EPC*

3.1 Present Claim 1 is supported by Claim 1 in the application as filed and by

- (i) the examples disclosing various viscosities of at most **8.0 cSt at 100°C** (example 3) concerning the feature that the liquid hydrocarbon has a **viscosity at 100°C of 8,0 cSt or less;**
- (ii) the disclosure on page 6, lines 19 to 21, of the application as filed, concerning the feature that the 1-alkene used to prepare the liquid hydrocarbon is **linear**, and examples 1 to 9 and 11 disclosing the use of 1-decene as linear 1-alkene hydrocarbon, concerning the feature that the 1-alkene has up to 10 carbon atoms;
- (iii) the teaching on page 6, lines 9 to 14, of the application as filed, concerning the feature that the liquid oligomer contains **at least 50% dimer, trimer and/or tetramer;**
- (iv) the disclosure on page 3, line 26 to page 4, line 5 of the application as filed, disclosing that the biodegradability of the lubricating oil and the liquid hydrocarbon is **at least 20% when tested and reported in accordance with test method CEC L-33-T-82;** and

(v) the teaching on page 2, lines 21 to 26, page 21, lines 4 to 11, and Claim 10 of the application as filed of the use of a lubricating oil to lubricate a machine the operation of which involves the non-accidental release of the lubricating oil into the environment.

Present Claim 6 differs from present Claim 1 in that it relates to the use of a functional fluid, other than a lubricating oil, and that such fluid is intended to operate a machine the operation of which involves the release of the functional fluid into the environment. Therefore, Claim 6 is supported as to its composition by passages (i), (ii), (iii) and (iv) indicated above with respect to present Claim 1, and regarding said operation involving release of functional fluid by page 2, lines 21 to 26, page 21, lines 4 to 11, and Claim 10 of the application as filed.

Present Claim 5 differs essentially from present Claim 6 by the use of the functional fluid as a solvent and/or carrier for a herbicide or plant growth regulator. This distinguishing feature is supported by page 4, lines 5 to 8, and page 21, lines 3 and 4, of the application as filed.

Present Claims 2 to 4 and 7 to 9 are supported by Claims 2 to 4 and 3 to 5 respectively as originally filed.

Present Claims 10, 12 and 13 are supported by the teaching on page 6, lines 9 to 19, of the application as filed.

Present Claim 11 is supported by examples 1 to 9 and 11, of the application as filed.

Present Claims 14 and 15 are supported by examples 1 and 2, of the application as filed.

Consequently, the subject-matter of all Claims 1 to 15 meets the requirement of Article 123(2) EPC.

3.2 Compared to Claim 1 of the patent in suit as granted, which claim read as follows:

"The use of a lubricating oil or functional oil or functional fluid at least 10 percent by volume of which is composed of a least one liquid hydrocarbon of lubricating viscosity formed by oligomerisation of a linear 1-alkene hydrocarbon having 6 to 20 carbon atoms in the molecule to give a liquid oligomer containing at least 50% dimer, trimer and/or tetramer and hydrogenation of the resultant oligomer, in an operation wherein a biodegradable lubricating oil or functional fluid having a biodegradability when tested and reported in accordance with test method CEC L-33-T-82 of at least 20%, is required."

present Claims 1, 5 and 6 are restricted in that the liquid hydrocarbons have a viscosity at 100°C of 8.0 cSt or less and in that they are formed by oligomerising a linear 1-alkene having 6 to 10 carbon atoms.

In addition to these restrictions, the subject-matter of present Claim 1 is further restricted to the lubrication of a machine the operation of which involves the non-accidental release in the environment, the subject-matter of present Claim 6 is further restricted to the use of functional fluids other than a lubricating oil, and the subject-matter of present Claim 5 is further restricted to the use of a functional fluid as a solvent and/or carrier for a herbicide or plant growth regulator.

Consequently, the subject-matter of all Claims 1 to 15 also meets the requirement of Article 123(3) EPC.

4. *Novelty*

4.1 The substantive issue to be dealt with is whether the present use claims are novel in view of document (1), (2) or (A), or in view of document (1) in combination with document (5).

4.2 Document (1) discloses biodegradable fluids (i) comprising hydrogenated poly- α -olefins formed by oligomerising α -olefins having from 6 to 12 carbon atoms, (ii) having a kinematic **viscosity at 210°F (98.89°C) of 22 cSt or less** and (iii) having a number average molecular weight between 280 and 1400 (page 3, last paragraph and page 4, second and third paragraph). It also discloses that these fluids are suitable as transformer fluids (page 3, last paragraph).

Whereas document (1) is silent about the minimum required viscosity of the poly- α -olefins, it teaches in view of their use as transformer fluids that **they should have an excellent balance of both thermal properties, such as flash and fire point, and physical properties, such as viscosity** (page 4, third paragraph). In this context, it discloses in particular that the fluids should preferably have fire points of at least 300°C (572°F) and flash points of at least 277°C (530°F) (see page 4, second paragraph).

Furthermore, it follows from the examples of document (1) that hydrogenated poly- α -olefins meeting these requirements have **viscosities of 12.0 to 21.9 cSt at 98,9°C** (see Table I).

It is true, that - as submitted by the Respondent - in the specifications of the examples in document (1) lower viscosity values are indicated than in Table I. However, these lower viscosities relate to intermediate poly- α -olefins products from which lower boiling components are removed by distillation in order to obtain such poly- α -olefins products which are suitable as transformer fluids, i.e. products having the required high flash and fire points (see e.g. Example I, and also page 7, second paragraph, of document (1)).

Furthermore, the respondent submitted that in examining for novelty the combined teaching of documents (1) and (5) had to be used, since document (1) stated (see page 5, second paragraph, lines 1 to 3) that the poly- α -olefins to be hydrogenated are preferably prepared as described in document (5), and that this meant that the disclosure of said document (5) had been incorporated in said document (1) by reference.

Document (5) relates to a novel catalyst system for oligomerising α -olefins and a process in which this catalyst system is used to obtain lubricating oils, hydraulic fluids and the like, which are particularly useful at low temperature (see column 1, lines 7 to 11). No mention is made in document (5) that the oligomerised products are biodegradable

While it is true, that according to the established jurisprudence of the Boards of Appeal where there is a specific reference in one prior art document to a second prior art document, when construing the disclosure of the first document, i.e. determining what it teaches to the skilled person, the presence of a specific reference may necessitate part or all of the disclosure of the second document being considered as part of the disclosure of the first document. However,

in the Board's judgment, it can only be allowable in examining for novelty to combine the disclosure of the first document with that of the second document insofar as the skilled person would have directly and necessarily made the combination when reading the documents.

Therefore, in the circumstances of the present case wherein document (1) - as indicated above - specifically refers to document (5) only with respect to the preparation of the poly- α -olefins, and wherein the poly- α -olefin products obtained in accordance with the process of document (5) are according to the teaching of document (1), as stated in all the examples, further modified in order to render them suitable as transformer fluids, the skilled reader would combine the teaching of document (1) with that of document (5) only with respect to the particular method of preparing the poly- α -olefins.

Thus, the disclosure of document (1), taken alone or in combination with document (5), does not directly and unambiguously disclose the use of a functional fluid as defined in present Claim 6 having a viscosity at 100°C of 8.0 cSt or less, let alone, the use of such fluids as a lubricating oil as claimed in present Claim 1, or as a solvent and/or carrier for herbicides or plant growth regulators as claimed in present Claim 5.

4.3 Document (2) discloses multigrade engine oils, which are mixtures of conventional oligomers of 1-decene with higher 1-decene oligomers (see page 2, line 58 to page 3, line 2). As admitted by the Respondent, these 1-decene oligomer mixtures fall under the scope of the liquid hydrocarbons as defined in present Claims 1, 5 and 6. However, document (2) only discloses the use of the 1-decene oligomer mixtures for incorporating them in multigrade engine oils suitable for use in gasoline

or diesel engines and as universal engine oils (see page 3, second paragraph). Since in such applications normally all precautions are taken in order to prevent the lubricating oil from being released to the environment, there is no direct and unambiguous disclosure in document (2) of using the known 1-decene oligomer mixtures in accordance with present Claim 1, i.e. for lubricating machines the operation of which involves the **non-accidental** release of the lubricating oil into the environment. Moreover, since the disclosure of document (2) only relates to lubricant oils, it does not disclose the use of the known 1-decene oligomer mixtures as functional fluids in accordance with present Claims 5 and 6 either.

- 4.4 . Document (A) discloses non-polluting, substantially non-toxic drilling fluids with continuous phases composed of synthetic hydrocarbon oils (i) having a **viscosity of from 1.0 to 6.0 cSt** and (ii) consisting of branched chain oligomers synthesised from one or more **olefins containing a C₂ to C₁₄ chain length** wherein the oligomers have an average molecular weight of from 120 to 1000 (see page 5, lines 46 to page 6, line 1). The synthetic hydrocarbon oils can be prepared by oligomerising **α-olefins or other olefins** (see page 6, lines 8 and 9), and may be **hydrogenated (saturated), partially hydrogenated or non-hydrogenated** (see page 6, lines 1 and 2). The use of said synthetic hydrocarbon oils as drilling fluids encompasses the **lubrication** of a machine the operation of which involves the **non-accidental** release of the oils into the environment as claimed in present Claim 1 of the patent in suit (see in this context also document (A), page 3, lines 14 and 15; and page 7, lines 56 to 58).

In view of this document, the Respondent submitted that the non-polluting synthetic hydrocarbon oils as disclosed in document (A) corresponded to the liquid hydrocarbons as defined in present Claim 1 of the patent in suit and that therefore the subject-matter of present Claim lacked novelty.

In this context, the Respondent submitted in particular that, although document (A) only specifically mentions the non-polluting property of the synthetic hydrocarbon oils, it implicitly also disclosed that said hydrocarbon oils were biodegradable, since it would not be possible that products are simultaneously non-polluting and non-biodegradable. In this respect he argued by referring to the specification of document (A) indicating that the high interfacial tension between oil and water ensured a separation of the oil phase and the water phase when ceasing agitation (see page 7, lines 43 and 44, of document (A)), that an oil spill would always give rise to surface sheen or film whose only rapid mechanism of disappearance would be biodegradation.

However, the Board cannot accept this point of view, because it belongs to the common general knowledge of the skilled person that the term "**biodegradable**" relates to the degradation and assimilation of polymers or other compounds by the **action of living organisms** such as fungi and bacteria, and that the degradation of polymeric substances making them environmentally compatible may not only result from microorganisms, but also from exposure to the **combined environmental effects** of i.a. sunlight, heat, water, oxygen, and mechanical forces such as wind, rain and wave action (see Kirk-Othmer, Encyclopedia of Chemical Technology, third Edition (1984), Supplement Volume, page 626, under "Definitions"). Moreover, the Board observes that the specification of document (A) does not give any

pointer to the skilled person that the term "**non-polluting**" has been used in the sense that the synthetic hydrocarbon oils would be biodegradable, but rather suggests that said term has been used in the sense of "environmentally compatible", i.e. avoiding for instance sheen, film or discolouration of surface water (see page 3, line 55 to 57; page 5, lines 18 to 20, and lines 34 and 35; and page 6, lines 27 to 31). In addition, the Board notes that according to document (A) the synthetic hydrocarbon oils mandatorily contain emulsifiers, and that such components also will reduce the polluting sheen and/or film forming (see page 8, lines 4 to 6). Therefore, it is the Board's position that document (A) does not directly and unambiguously disclose the biodegradability of the synthetic hydrocarbon oils as a specific property in the sense of present Claim 1 of the patent in suit.

The Respondent also submitted with respect to his novelty objection (i) that mixtures comprising dimeric, trimeric and tetrameric oligomers of 1-decene from Emery, Mobil, Ethyl and Chevron Corporations were stated in document (A) to be suitable synthetic hydrocarbon oils (see page 7, lines 24, 25 and 29 to 40), (ii) that the products HITEC 162 and HITEC 164 being indicated in the patent in suit as suitable hydrocarbon liquids (see column 3, lines 42 to 47) were mixtures originating from Ethyl and thus referred to in document (A), and (iii) that mixtures originating from Mobil, namely MCP-1063 and MCP-1060, were used in the Examples 9 and 10 of document (A) respectively.

However, the products HITEC 162 and 164 referred to by the Respondent are not mentioned in document (A) and therefore cannot represent a novelty objection as such. Furthermore, said products MCP-1063 and MCP-1060, which

are indeed used in the Examples 9 and 10 of document (A), have been indicated therein as being 50% **hydrogenated** and **unhydrogenated** respectively (see page 15, lines 28 and 29, and page 16, lines 3 and 4).

Therefore, under the circumstances of the present case wherein the scope of present Claim 1 is restricted to the use of **hydrogenated**, i.e. substantially saturated (see column 3, lines 49 to 51, of the patent in suit), oligomer products **having a specific biodegradability**, the novelty objections as put forward by the Respondent are not made out and for this reason cannot be accepted by the Board. Furthermore, having regard to the fact that the Respondent withdrew his opposition, the Board does not consider itself obliged to carry out any further investigation.

Since document (A) only discloses that the synthetic hydrocarbon oils are used as a **lubricating drilling fluid**, it does not give rise to an objection of lack of novelty of the subject-matter of present Claims 5 and 6 of the patent in suit.

5. The decision to refuse the patent in suit was solely based on lack of novelty. Therefore, and having regard to the fact 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 makes use of its power under Article 111(1) EPC and remits the case to the first instance for further prosecution.

Order

For these reasons it is decided that:

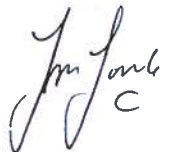
1. The decision under appeal is set aside.
2. The case is remitted to the Opposition Division for further prosecution.

The Registrar:



E. Görgmaier

The Chairman:



J. M. Jonk