BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

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 18 November 2005

Case Number: T 0215/03 - 3.3.06

Application Number: 96903973.4

Publication Number: 807155

IPC: C10L 1/14

Language of the proceedings: EN

Title of invention:
Additives and fuel oil compositions

Patentee:
ExxonMobil Chemical Patents Inc. et al.

Opponents:
01: Ethyl Corporation
02: The Associated Octel Comp. Ltd.

Headword:
Lubricity additives/EXXONMOBIL

Relevant legal provisions:
EPC Art. 123(2)(3), 114(2), 100(b), 84, 54(3), 56
EPC R. 55(c)

Keyword:
"Late-filed material - admitted (no): abuse of procedure and violation of the principles of fairness (1.2 to 1.4 and 1.8)
"Late-filed material - admitted (yes): mentioned in patent as relevant prior art or occasioned by contested decision or point raised by a party (1.5 to 1.7)"
"Main request and first to third auxiliary requests: inventive step (no)"
"Fourth auxiliary request: added subject-matter (no), clarity (yes), enabling disclosure (yes), novelty (yes), inventive step (yes)"

Decisions cited:
G 0004/92, T 0536/88, T 0951/91, T 0201/92,T 0389/95

Catchword:
-

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0215/03 - 3.3.06

D E C I S I O N
of the Technical Board of Appeal 3.3.06
of 18 November 2005

Appellants: (Opponent I)
Ethyl Corporation
330 South Fourth Street
Richmond
Virginia 23219 (US)

Representative:
Colmer, Stephen Gary
Mathys & Squire
120 Holborn
London EC1N 2SQ (GB)

(Opponent II)
The Associated Octel Comp. Ltd., of Berkeley Square House
Berkeley Square
London W1X 6DT (GB)

Representative:
Matthews, Derek Peter
Frank B. Dehn & Co.
European Patent Attorneys
179 Queen Victoria Street
London EC4V 4EL (GB)

(Proprietor of the patent) ExxonMobil Chemical Patents Inc.
1900 East Linden Avenue
P.O. Box 710
Linden
NJ 07036-0710 (US)

Infineum USA L.P.
1900 East Linden Avenue
Linden, New Jersey
07036 (US)

Representative: UEXKÜLL & STOLBERG
Patentanwälte
Beselerstrasse 4
D-22607 Hamburg (DE)

Decision under appeal: **Interlocutory decision of the Opposition Division of the European Patent Office posted 19 December 2002 concerning maintenance of European patent No. 807155 in amended form.**

Composition of the Board:

Chairman: P. Krasa
Members: G. Dischinger-Höppler
A. Pignatelli

Summary of Facts and Submissions

I. This appeal is from the interlocutory decision of the Opposition Division concerning maintenance of the European patent No. 0 807 155 in amended form on the basis of the then pending 5th auxiliary request (Set E), the independent Claim 1 reading:

"1. The use of an additive composition comprising (a) an ashless dispersant comprising an acylated nitrogen compound and (b) an ester of a polycarboxylic acid and a polyhydroxy alcohol wherein the acid has from 2 to 50 carbon atoms and the alcohol has more than one carbon atom, wherein the ratio of component (a) : component (b), calculated on a weight : weight basis is in the range of 1 : 2 to 2 : 1, in a diesel fuel oil containing not more than 0.05% by weight of sulphur and having a 95% distillation point of not greater than 350°C, such that the lubricity performance thereof is improved relative to that achieved by the use of component (b) alone, wherein the improvement in lubricity is in the injection pump of a compression-ignition internal combustion engine."

II. Two notices of opposition had been filed against the granted patent, wherein the Opponents sought revocation of the patent on the grounds of Article 100(b) EPC for insufficiency of disclosure (Article 83 EPC) and Article 100(a) EPC for lack of novelty and lack of inventive step (Articles 52(1), 54 (3) and 56 EPC). An objection made by Opponent I that the subject-matter of Claim 1 as granted was not entitled to enjoy the claimed priority was withdrawn during the oral proceedings before the Opposition Division. The

oppositions were based, amongst others, on the following documents

D1 WO-A-95/03377,

D2 WO-A-94/17160,

D3 WO-A-94/20593 and

D9 US-A-3 273 981.

III. In its decision, the Opposition Division held that the subject-matter claimed in accordance with the fifth auxiliary request fulfilled the requirements of the EPC. The higher ranking requests were held to be not allowable for lack of inventive step in view of D3 as the closest prior art since it was clear that not all claimed embodiments achieved the effect of improved lubricity or solubility.

IV. This decision was appealed by the Patent Proprietor (hereinafter Appellant-Proprietor) and both Opponents (hereinafter Appellant-Opponents I and II).

In the course of the appeal proceedings, the Appellant-Opponent II filed, amongst others,

under cover of a the letter dated 29 April 2003 setting out its Grounds of Appeal

D18 US-A-4 325 827,

with a letter dated 23 January 2004

D19 an expert report by Mr V. Burgess, accompanied by 26 documents relating to the technical field of fuels and fuel additives (D23 to D48) which were either published between 1969 and 1995 or undated (D36, D37, D42, D45 and D46), and

with a letter dated 24 May 2004

D49 GB-A-1 310 847 (referred to in the patent in suit and the application as filed as relevant prior art) and

D51 an expert statement of Mr J. Vicente accompanied by two documents concerning a public prior use in relation to petroleum additives by DuPont termed "PLMR-7-93", both dated 1993.

During the appeal proceedings, the Appellant-Proprietor filed the following documents

D3a US-A-4 971 598 and

D55 M.J. Attfield et al., Petroleum Coal 1995, 37(3), pages 25 to 28.

Both, the Appellant-Proprietor and the Appellant-Opponent II filed several experimental tests during the opposition and appeal proceedings.

In addition, with a letter dated 29 April 2003, the Appellant-Proprietor filed four amended sets of claims in a new main request (Set I) and three auxiliary requests (Sets J, K and L). Under cover of a letter dated 21 November 2003, the Appellant-Proprietor

requested in a fourth auxiliary request that the patent be maintained on the basis of the claims of Set E and filed two further sets of amended claims in a fifth and sixth auxiliary request (Sets E-1 and E-2).

Claim 1 of the main request (Set I) reads as follows:

"1. The use of an additive composition comprising

(a) an ashless dispersant comprising an acylated nitrogen compound which has a hydrocarbyl substituent of at least 10 aliphatic carbon atoms and is made by reacting a carboxylic acid acylating agent with at least one amine compound containing at least one -NH- group, said acylating agent being linked to said amino compound through an imido, amido, amidine or acyloxy ammonium linkage, wherein the acylating agent is a substituted succinic or propionic acid and the amino compound is a polyamine or mixture of polyamines, and

(b) an ester of a dicarboxylic acid and a polyhydroxy alcohol wherein the acid has from 2 to 50 carbon atoms and the alcohol has more than one carbon atom,

wherein the ratio of component (a) : component (b), calculated on a weight : weight basis, is in the range of 1 : 2 to 2 : 1,

in a diesel fuel oil containing not more than 0.05% by weight of sulphur and having a 95% distillation point of not greater than 350°C, to improve the lubricity performance thereof in the injection pump of a compression-ignition internal engine."

Claim 1 of the first auxiliary request (Set J) differs therefrom in that items (a) and (b) have been replaced by the following terms:

"(a) an ashless dispersant comprising an acylated nitrogen compound which comprises a hydrocarbyl-substituted succinimide or a hydrocarbyl succinamide prepared by reacting a poly(isobutylene)-substituted succinic anhydride acylating agent wherein the poly(isobutylene)-substituent has between 30 and 400 carbon atoms with a mixture of ethylene polyamines having 3 to 7 amino nitrogen atoms per ethylene polyamine and 1 to 6 ethylene groups"

and

"(b) an ester of a dicarboxylic acid and a polyhydroxy alcohol wherein the acid has from 2 to 50 carbon atoms and the alcohol has more than one carbon atom and is a diol, glycol, polyglycol of a trihydroxy alcohol".

Claim 1 of the third auxiliary request (Set L) is identical with Claim 1 of the first auxiliary request.

Claim 1 of the second auxiliary request (Set K) reads as follows:

"1. The use of

(a) an ashless dispersant comprising an acylated nitrogen compound which has a hydrocarbyl substituent of at least 10 aliphatic carbon atoms and is made by reacting a carboxylic acid acylating agent with at least one amine compound containing at least one -NH-

group, said acylating agent being linked to said amino compound through an imido, amido, amidine or acyloxy ammonium linkage, wherein the acylating agent is a substituted succinic or propionic acid and the amino compound is a polyamine or mixture of polyamines,

to improve the solubility and/or lubricity performance of

(b) an ester of a dicarboxylic acid and a polyhydroxy alcohol wherein the acid has from 2 to 50 carbon atoms and the alcohol has more than one carbon atom, wherein the ratio of component (a) : component (b), calculated on a weight : weight basis, is in the range of 1 : 2 to 2 : 1,

in a diesel fuel oil containing not more than 0.05% by weight of sulphur and having a 95% distillation point of not greater than 350°C, to thereby improve the lubricity performance thereof in the injection pump of a compression-ignition internal engine."

V. Upon requests made by all parties, oral proceedings before the Board of Appeal were held on 17 and 18 November 2005 in the absence of Appellant-Opponent I as announced by letter of 17 June 2005. In the course of these proceedings, the Appellant-Proprietor filed one single amended claim in a seventh auxiliary request.

VI. At the oral proceedings the Appellant-Opponent II submitted for the first time that the subject-matter of Claim 1 of Set I was not entitled to enjoy the claimed priority.

The following further arguments were submitted orally and in writing:

– The amendments made to the claims were not allowable under the provisions of Articles 84 and 123(2) EPC. In particular, the features "to improve the lubricity performance of (b)" in Claim 1 of Set K and "such that the lubricity performance thereof is improved relative to that achieved by the use of component (b) alone" in Claim 1 of Set E were neither originally disclosed nor clear.

– The claimed subject-matter was anticipated by D1 and not inventive over D2 as the closest prior art.

The relationship between the additive concentration and the HFRR response was non-linear. Since the claims were not restricted to particular amounts of (a) and (b), it was therefore apparent that in comparison with D2 not all embodiments of Claim 1 provided a further improvement of the lubricity of the fuel oil. Moreover, there was no evidence that the lubricity performance of the fuel was improved, let alone that the effect was achieved in the injection pump of the engine. On the contrary, the Appellant-Opponent II has shown in the experiments annexed to its letter dated 24 May 2004 that no improvement was obtained by the addition of (a) and (b) as compared with the addition of (b) alone.

Therefore, the technical problem actually solved in view of D2 by the claimed use of a particular ashless dispersant (a) in combination with a particular ester (b) selected from those disclosed in D2 consisted in the provision of an alternative measure for improving the lubricity performance of light diesel fuel in the injection system of the engine.

However, the ashless dispersant (a) was already known from D3a and it was obvious from D55 to use the ester (b) in combination with (a) as another polar compound, the more so as D2 made use of mixtures of additives. Further, the same ashless dispersant (a) was used according to D49 to increase the solubility in fuels, such as diesel fuel, of esters in accordance with D2, namely esters of polyhydroxy alcohols with mono-carboxylic acids. Since D2 already indicated, amongst others, detergents as possible co-additives for combination with the esters, it was obvious for a skilled person to use the dispersant of D49 also in combination with the esters (b) derived from polycarboxylic acid mentioned in D2 too.

VII. The Appellant-Opponent I, in writing, also objected that the claimed subject-matter was not inventive in view of D3 as the closest prior art when taken in combination with the disclosure of D2 or D9 and further that the invention was not disclosed in a manner sufficient for a skilled person to ensure that improved lubricity was achieved.

VIII. The Appellant-Proprietor requested not to admit any of the Appellant-Opponents' late filed evidence including the late submission concerning validity of the priority claimed. It submitted in essence the following arguments:

- The amendments made to the claims did not introduce problems under Articles 84 EPC and met the requirements of Article 123 EPC.

- The invention was sufficiently disclosed.

- The claimed subject-matter was novel over D1 and based on an inventive step in view of D2 as the closest prior art.

  The technical problem to be solved in view of D2 consisted in a further improvement of the lubricity performance in the injection pump of a compression-ignition internal combustion engine of "low sulphur/low final boiling point diesel fuel oil" (hereinafter: light diesel) comprising an ester lubricant. In the examples of the patent in suit it was shown that this problem had actually been solved by the claimed use of a particular ashless dispersant (a) in combination with a particular lubricant (b).

  The effect provided by the claimed use on the lubricity performance of light diesel fuel containing a particular ester compound as lubricity enhancer could not have been foreseen by the skilled person or expected in the light of the cited prior art since D2 did not mention the

particular ashless dispersant as a possible co-additive in diesel fuel and D49, published some 22 years before the priority date of the patent in suit, did not concern light diesel and disclosed the use of the dispersant in mixture with an ester of different structure, namely one derived from monocarboxylic acids, for increasing the ester's solubility in the fuel oil in order to prevent accumulation of sludge in the fuel system. However, a skilled person would not have used the same detergent for esters derived from polycarboxylic acid since those had a different structure.

Hence, there was no reason for a skilled person to identify the dispersant of D49 as capable for enhancing the lubricity performance of light diesel containing the specific ester lubricant (b) amongst those disclosed in D2.

In particular it was not obvious from D49 relating to dispersants for esters derived from monocarboxylic acids to use the same dispersant for esters derived from polycarboxylic acids in the expectation of some benefit in the lubricity performance in relation to D2.

The other cited prior art was still less relevant. In particular, D3 concerned another detergent than that defined in Claim 1 of Set I as was apparent from D3a, and did not relate to the specific problem of wear in the injection pump nor suggest addition of dispersant (a). D5 and D9 neither concerned light diesel nor did they disclose a

specific dispersant for the ester lubricants which, in addition, were not the same as in the patent in suit.

IX. The Appellant-Proprietor requested that the decision under appeal be set aside and that the patent be maintained on the basis of the amended set of claims according to a new main request (Set I) or three auxiliary requests (Sets J, K, L) filed under cover of a letter dated 29 April 2003, or of the fourth auxiliary request (set as maintained by the Opposition Division) or of the fifth and sixth auxiliary request (Set E-1, E-2) as filed under cover of a letter of 21 November 2003 or of the seventh auxiliary request as filed during the oral proceedings on 17 November 2005.

The Appellant-Opponent II requested that the decision under appeal be set aside and the patent be revoked.

Reasons for the Decision

1. *Procedural issues*

The following documents, amongst others (see above points IV, VI and VIII), were filed for the first time during appeal proceedings

by the Appellant-Opponent II

- D18,

- the expert report D19 by Mr Burgess in combination with 26 documents,

– the expert statement D51 by Mr Vicente in combination with a document relating to a public prior use of petroleum additives by DuPont termed "PLMR-7-93",

– D49 and

– the submission that claimed subject-matter was not entitled to the claimed priority;

by the Appellant-Proprietor

– D3a and

– D55.

The Appellant-Proprietor requested not to admit any of the above late submissions by the Appellant-Opponent II.

1.1 New facts and evidence filed for the first time during the appeal proceedings may be disregarded by the Board by virtue of Article 114(2) EPC, if they have not been submitted in due time.

According to the established case law of the Boards of Appeal, filing of such new facts and evidence would be considered to be in due time, if the filing was occasioned by an argument or a point raised by another party or in the appealed decision, so that under the circumstances of the case, the new facts, documents and/or evidence could not have been filed earlier (see e.g. T 201/92 not published in the OJ EPO, points 3.4

to 3.6 of the reasons and T 389/95, not published in the OJ EPO, point 2.2 of the reasons).

If the Board comes to the conclusion that the new matter has not been filed in due time, the Board has to decide whether or not the new matter is to be admitted into the proceedings. Such decision is governed by Article 114(2) EPC which gives discretionary power in this respect to the Board. In exercising its discretion, the Board will have to consider in particular whether or not the late filing does amount to an abuse of procedure and therefore violates the principles of procedural economy and of fairness in relation to the other parties. Furthermore, the criterion of relevance of the new matter should be applied (see e.g. T 951/91, OJ EPO 1995, 202, points 5.5 and 5.15 of the reasons).

1.2 D18 was filed by Appellant-Opponent II with its statement of grounds of appeal (dated 29 April 2003) in relation to the claim Set E held allowable by the Opposition Division. The second paragraph on page 2 of this statement reads:

"If (sic!) is furthermore submitted that claim 1 of claim set E is in any event obvious having regard to document D2 considered during the opposition procedure and new document US-A-4325827 attached thereto. Admission of this new document into the appeal proceedings is appropriate in view of the conclusion in the decision under appeal, for the first time, that "use" claims as in claim set E may be independently valid, relative to the composition claims as originally granted."

However, the Appellant-Opponent II itself indicated that an independent "use" Claim 15 was already present in the claims as granted when it criticised the first instance decision with the argument that Claim 1 of Set E still suffered from the same defects perceived in Claim 15 as granted which was found not to be based on an inventive step (page 1, third full paragraph) and gave details concerning the defects (page 1, last paragraph to page 2, first paragraph). This confirms that the situation has not changed merely because claims for a composition are no longer contained in Set E. Therefore, D18 would have been relevant for granted Claim 15 to the same extent as for Claim 1 of Set E. Apart from that and for the same reasons, D18 would have been relevant for the composition of granted Claim 1 which is referred to in granted Claim 15 as the composition to be used.

Moreover, D18 has been published in 1982, 12 years before the priority date of the patent in suit and discloses prior art in the relevant technical field. Thus, if the Appellant-Opponent II intended to rely on it, D18 could and should have been filed from the very beginning of the opposition proceedings for the same reasons as it has been filed in the appeal proceedings.

The Board cannot see any reason justifying the late filing of D18, nor did the Appellant-Opponent II provide, orally or in writing, any further arguments in this respect. Therefore, the Board concludes that the late filing of D18 was not occasioned by the decision under appeal and thus decides on the principle of fairness not to admit D18 into the proceedings.

1.3 At the oral proceedings before the Board, the Appellant-Opponent II sought to rely on a document (D24) filed by a letter dated 23 January 2004, i.e. approximately one year after commencing the appeal proceedings, and more than four years after expiry of the opposition period, together with 25 other documents (in total about 450 pages technical literature) annexed to a report containing 102 further technical statements on around 25 pages by Mr Burgess, an employee of the Appellant-Opponent II since 1987.

In the accompanying letter, the Appellant-Opponent II stated that the report of Mr Burgess was based on an amended description and claims, the latter essentially corresponding to the Appellant-Proprietor's main request then on file, which had been filed in the parallel litigation process before the UK court and which report discussed explicitly the patentability of the amended version of the patent in suit. Since both, the "EPO main request" and the "UK amendments" were not available to the Appellant-Opponent II before mid-2003 and the report of Mr Burgess became available only in December 2003, the Appellant-Opponent II took the view that the entry of the new matter should be allowed as comment on the Appellant-Proprietor's appeal.

At the oral proceedings before the Board, the Appellant-Opponent II did not comment further on the circumstances of the filing of these documents.

Concerning the content of Mr Burgess' report and annexes, the accompanying letter only referred to the statements Nos. 87 and 91 to 94 (hereinafter paragraphs).

Referring to the contents of the Burgess report, the Board notes that none of the above paragraphs actually mentions any other prior art than D2 (in paragraph 87) which was filed in due course within the nine-month period for opposition. However, reference is made in these paragraphs to previous paragraphs and explanations, so that the filing of the report and its annexes can only be understood as an invitation to the other party and the Board, at no further guidance, to avail themselves of the whole content of the report and all the accompanying documents, the majority of which (21!) had been published between 1969 and 1995 and could have been filed easily with the Appellant-Opponent's notice of opposition in 1999. The rest of the documents do not bear a publication date so that it is not clear whether they were available at all at that time.

Under the particular circumstances of the case, the Board therefore finds that the belated submission of evidence D19 and D23 to D48 which could either have been filed much earlier or are not identifiable as prior art, is not justified.

To submerge at such a late stage of proceedings the other party and the Board in this unspecified manner under a deluge of paper amounts to an abuse of procedure. The Board thus decides not to admit this

evidence into the proceedings regardless of any possible technical relevance thereof.

1.4 The same applies to the statement of Mr Vicente and the annexed documents filed by the Appellant-Opponent II another four months later under cover of a letter dated 24 May 2004. In this letter it was argued that these documents had "only recently come to light" and that "it was only on further investigation that the additional underlying document PLMR-7-93 was extracted from the DuPont files of the time" but that "in view of the high relevance of this document to the subject-matter of claim Set I, and all other claim sets proposed by the patentees ... this document ... must be allowed in the public interest".

There is no indication let alone evidence on file that due efforts and diligence was applied to trace such documents as soon as Set E became known to the Appellant-Opponent II (Set E being one of "all the other claim sets proposed by the patentees"). In the absence of such indication or evidence, the statement that the respective documents had "only recently come to light" is of no use and not apt to justify their late filing.

Consequently, the statement of Mr Vicente D51 and the annexed documents concerning DuPont's petroleum additive PLMR-7-93 are not admitted into the proceedings.

1.5 In the same letter dated 24 May 2004, the Appellant-Opponent II further relied for the first time on D49 in relation to fuel dispersants (see 'Opposition to EP 807

155 in the European Patent Office-Part One', page 3, third full paragraph). However, this document differs from the other late filed evidence insofar as it is acknowledged in both the application as filed and the patent in suit as one of three pieces of prior art relevant to the technical problem set out in the description (see patent in suit, page 2, lines 4 to 9 and 27 to 31 and 35 to 38; application as filed, page 2, lines 28 to 22). The Board is, therefore, of the opinion that this prior art forms part of the opposition and appeal proceedings even if it was not explicitly cited within the opposition period (see e.g. T 536/88, OJ EPO, 1992, 638).

1.6 D3a is referred to in D3 as regards the preferred detergent to be used therein (page 6, lines 10 to 16) and was filed by the Appellant-Proprietor with its statement of grounds of appeal (dated 19 February 2003) with the intention to overcome, in view of the new main request, the argument in the contested decision that the detergent disclosed in D3 fell within the scope of protection of the subject-matter claimed in the patent in suit (see pages 10 to 11 of the statement and decision of the Opposition Division, page 6, point 3). Hence, the Board accepts the filing of D3a at that stage to be occasioned by the contested decision and as not belated. Therefore, D3a is admitted into the proceedings.

1.7 D55 was filed by the Appellant-Proprietor under cover of a letter dated 12 October 2005 in reaction to the Appellant-Opponent II's emphasis in 'Opposition to EP 807 155 in the European Patent Office-Part Two' filed under cover of the letter dated 24 May 2004 (see e.g.

page 1) that it was standard practise to combine different fuel additives into a single package (see letter dated 12 October 2005, pages 9 to 13, point 3.2). Hence, the document can also be accepted as filed in due time since occasioned by a point raised by the Appellant-Opponent II.

1.8 During the discussion of the Appellant-Proprietor's main request (Set I) at the oral proceedings before the Board, i.e. more than two and a half years after the Appellant-Proprietor had filed this request, the Appellant-Opponent II submitted for the first time that the subject-matter claimed in the main request was not entitled to claim the priority of the British patent application No. GB 502041.

The Appellant-Opponent II has not advanced any reason for the late submission of the priority issue but indicated that the issue had previously been raised by the Appellant-Opponent I and was, therefore, within the proceedings. However, it ensues from the decision under appeal (page 3, point 9) as well as from the minutes of the oral proceedings before the Opposition Division (page 1, point 1.2) that the Appellant-Opponent I withdrew this objection during those oral proceedings. Since Appellant-Opponent II did not object to this withdrawal, it is clear that pleading invalidity of priority for the first time at the oral proceedings before the Board is late and could and should have been made much earlier in order to prevent that the other party be taken by surprise or made to suffer the delay of an adjournment.

A finding of the invalidity of the patent's priority would have resulted in D1 becoming a prior art under Article 54(2) EPC and consequently in a change of the factual situation of the case. This amounts, according to the Enlarged Board of Appeal, to an abuse of procedure (G 4/92, OJ EPO 149, 1994, point 7 of the reasons).

Therefore, the new issue of validity of the priority of the patent in suit is not admitted.

2. *Main request (Set I)*

2.1 The Board is convinced that the amendments made to the claims do not violate the provisions of Articles 84 and 123(2) and (3) EPC. Since the Appellant-Proprietor's main request fails for the reasons set out below, no further details need to be given.

For the same reason it is not necessary in the present case to consider whether the claimed subject-matter is novel over the disclosure of D1 which is state of the art according to Article 54(3) EPC.

2.2 Inventive Step

2.2.1 The patent in suit and in particular Claim 1 relate to the use of selected compounds for improving the lubricity of light diesel, i.e. diesel fuel containing not more than 0.05% by weight of sulphur and having a distillation point of not greater than 350°C (page 2, lines 5 to 31 in combination with lines 48 to 57).

As is explained in the description of the patent in suit, environmental concerns have led to the need for light diesel fuels. However, the additional refining necessary to lower the sulphur contents often results in a product with reduced ability to lubricate the injection system of the engine which causes an increased wear and failure in the fuel pumps and injectors (page 2, lines 5 to 17). Further, reduction of the 95% distillation point lowers the presence of heavy n-alkanes in the fuel oil and reduces the solubility in the oil of common lubricity enhancers, in particular esters so that the lubricity additive does not reach its intended site of action (page 2, lines 22 to 31).

D2 also deals with the technical problem of improvement of lubricity of low sulphur diesel fuels to prevent excessive wear and pump failure of diesel engines and identifies the origin of that problem as consisting in the reduced content of sulphur, polyaromatic and/or polar compounds after refining (page 1, lines 21 to 36).

The Board agrees, therefore, with the Appellant-Proprietor and Appellant-Opponent II that D2 is a suitable starting point for the assessment of inventive step.

2.2.2 According to D2, the above mentioned technical problem of excessive wear of diesel engines has already been solved by using as lubricity enhancers ester of a mono- or polycarboxylic acid having 2 to 50 carbon atoms, in particular a dicarboxylic acid, and a mono- or polyhydroxy alcohol (Claims 1, 5 and 7 to 11, page 3,

line 30 to page 4, line 5, and page 4, lines 27 to 37), thereby including those defined as component (b) in Claim 1 of Set I. In the examples of D2 it is shown that such esters were able to improve the lubricity performance, as measured by the BOCLE test or by the HFRR test, of the light diesel containing less than 0.01 % by weight of sulphur and a 95% boiling point of 273°C (see pages 8 to 10). The esters used in the examples were glycerol monooleate and di-isodecyl adipate (page 7, lines 30 to 34), hence esters derived from either monocarboxylic acid or monohydroxy alcohol.

However, the whole disclosure of D2 indicates that an improvement is also to be expected by using a corresponding ester of a dicarboxylic acid and a polyhydroxy alcohol.

2.2.3 According to the patent in suit, it has been found that using in light diesel an ashless dispersant (a) as defined in Claim 1 in combination with the ester (b) at a weight ratio of (a) : (b) of 1 : 2 to 2 : 1 would greatly improve the lubricity performance of the diesel due to the good solubility of the ester in the fuel at low temperatures (page 2, lines 10 to 18).

2.2.4 In view of D2, so the Appellant-Proprietor argued, the technical problem to be solved can be defined to consist in further improving the lubricity performance in the injection pump of a compression-ignition internal combustion engine of light diesel comprising an ester lubricant.

The Appellant-Proprietor indicated that it was apparent from the experimental data in the patent in suit that this problem had actually been solved by the claimed subject-matter.

2.2.5 The Board agrees with the Appellant-Proprietor insofar as the experiments in the patent in suit show that the use of an ashless dispersant (a) in combination with an ester (b) in amounts of 126 ppm and 125 ppm respectively, brings the HFFR wear scar diameter of 540 µm of the untreated sample down to 250 µm, whereas the ashless dispersant at 126 ppm or the ester at 125 ppm alone reduces the wear scar diameter only to values of 475 µm or 415 µm, respectively (see Table 2). It is further shown that using 63 ppm of ashless dispersant and 150 ppm ester which corresponds to a ratio of (a) : (b) of 1 : 2.4, i.e. outside the required range, would result in a worse lubricity performance of the diesel as compared with that obtained with 150 ppm ester alone (see Table 1).

According to the patent in suit, the additive composition comprising (a) and (b) may be used in the light diesel in a concentration of 10 to 5000 ppm by weight (page 7, lines 13 to 15). However, since the subject-matter of Claim 1 is not restricted in this respect, it covers embodiments wherein the additive composition is present in an amount of only 10 ppm or even less or 5000 ppm or even more.

The Board shares the opinion of the Appellant-Opponent II that the lubricity effect is dependent on the amount of additive used in the sense that the HFRR response curve to the additive concentration was an "S-curve"

where hardly any lubricity improvement could be obtained at very low and, in particular, very high concentrations. Since the Appellant-Proprietor has not provided evidence for an effect at such concentrations, say 10 or 5000 ppm, the Board concludes that Claim 1 covers embodiments which do not provide an improvement in relation to the esters used according to D2.

Hence, the problem actually solved in view of D2 may be defined to provide an alternative measure for improving the lubricity performance of light diesel containing no lubricity improver. The Board is satisfied that this problem is solved by the addition of (a) and (b) at least in those instances where the additive concentration is high.

2.2.6 It remains to be decided whether, in view of the available prior art documents, it was obvious for someone skilled in the art to solve the above stated technical problem by the means claimed, namely by using in addition to the ester (b) an ashless dispersant (a) at the ratio specified in Claim 1.

2.2.7 D2 does not mention an ashless dispersant (a) but indicates that several classes of co-additives may be used in combination with the ester lubricants, which co-additives include detergents (page 7, lines 18 to 23).

2.2.8 However, D49 discloses a fuel additive, inter alia, for use in combination with diesel fuel (page 6, lines 68 to 72), comprising (1) an oxy compound, such as esters of glycols and polyglycols with monocarboxylic acids having up to twenty carbon atoms and (2) a fuel-soluble

dispersant wherein the weight ratio of (1) to (2) is between 1 : 10 and 10 : 1 (page 1, lines 26 to 43) for inhibiting and removing sludge and other deposits which accumulate in fuel systems of liquid fuel burning engines, such as in fuel pumps and injectors (page 1, lines 11 to 21 and page 6, lines 73 to 83). An especially preferred dispersant is the reaction product of a polyisobutylene substituted succinic acid or anhydride and at least one ethylene polyamine (sic!) having from two to six amino nitrogen atoms, at an equivalent ratio between 1 : 1 and 1 : 3 (page 5, lines 62 to 72 and Example 1). This dispersant corresponds to the definition of the dispersant (a) given in Claim 1.

It is said in D49 that the dispersants promote the solubility of the oxy compound so that a combination of dispersant and oxy compound is readily soluble in the fuel even though the oxy compound alone may not be sufficiently soluble (page 1, lines 67 to 73).

2.2.9 The Appellant-Proprietor essentially argued that D49 was an old document which did not relate to light diesel and the implications thereof in respect to reduced lubricity of the fuel and reduced solubility of lubricant in the fuel. Further, D49 suggested dispersant (a) for increasing the solubility of an ester derived from monocarboxylic acid, i.e. of an ester of different structure. Therefore, a person skilled in the art had no reason to consider the dispersant of D49 for enhancing the lubricity of light diesel containing an ester derived from polycarboxylic acid.

2.2.10 The Board is not convinced by these arguments for the following reasons:

It is true that D49 does not refer to light diesel or to esters derived from polycarboxylic acids. On the other hand, no evidence is on file showing that light diesel would require a particular dispersant or that the dispersant of D49 would not be suitable for the particular esters. Moreover, the dispersants of D49 are said to have achieved wide-spread use as ashless additives for lubrication oils (page 3, lines 43 to 46) and to be suitable for use with mineral oils like diesel fuel (page 6, lines 3 to 13 and 68 to 72). Therefore, a person skilled in the art would still have tried the dispersant of D49 and expected some solubility of the esters disclosed in D2, including those derived from polycarboxylic acids, despite the fact that the structure of such esters is different to those used in D49.

2.2.11 The Board is, therefore, of the opinion that D49 proposes a dispersant in accordance with Claim 1 for improving the solubility in diesel fuel of ester lubricants and concludes that it was, thus, obvious for those skilled in the art to try this compound - just as any other compound which possibly might also have been known to be suitable for this purpose - as dispersant of the esters of Claim 1 in the reasonable expectation of providing an alternative measure with respect to the disclosure of D2 for improving the lubricity performance of light diesel. The skilled person would thus arrive in an obvious manner at the claimed subject-matter.

2.3 For these reasons the Board finds that the subject-matter of Claim 1 is not based on an inventive step and does not comply with the requirements of Articles 52(1) and 56 EPC.

3. *First to third auxiliary requests (Sets J, L and K)*

There is no need to deal with the issues of Articles 123, 84 and 54 since the Appellant-Proprietor's first to third auxiliary requests fail on the same ground of opposition, as will be seen below.

3.1 Claim 1 of the first and third auxiliary requests differs from that of the main request in that the ashless dispersant (a) is defined to comprise a hydrocarbyl-substituted succinimide or a hydrocarbyl succinamide prepared by reacting a poly(isobutylene)-substituted succinic anhydride acylating agent wherein the poly(isobutylene)-substituent has between 30 and 400 carbon atoms with a mixture of ethylene polyamines having 3 to 7 amino nitrogen atoms per ethylene polyamine and 1 to 6 ethylene groups and the ester (b) is specified to be derived from a diol, glycol or polyglycol, or from a trihydroxy alcohol.

However, the specific dispersant defined above is also covered by the disclosure of D49. It can be derived particularly from Example 1 where a polyisobutylene succinic anhydride having a polyisobutylene radical of average molecular weight of 850 is reacted with diethylene triamine to give the dispersant. Moreover, the esters used in accordance with D49 are preferably derived also from diols, specifically glycols and

polyglycols (see page 2, lines 17 to 19 and 99 to 110 and page 3, lines 18 to 23).

Therefore, the above conclusions with respect to Claim 1 of the main request apply, mutatis mutandis, also to Claim 1 of the first and third auxiliary requests.

3.2 Claim 1 of the second auxiliary request differs from that of the main request only in that it refers to the use of (a) to improve the solubility and/or lubricity performance of (b) in the same diesel fuel oil and for the same purpose.

Apart from the fact that it might be questionable if it is possible for a person skilled in the art to determine whether the improvement of the lubricity performance of the light diesel is due to an effect of component (a) on component (b) or to its own lubricating ability, the Board notes that it is the gist of D49 to improve the solubility in fuel oil of an ester lubricant by the addition of the specific dispersant (a) (see above point 2.2.8).

The Board concludes, therefore, that the subject-matter of Claim 1 of the second auxiliary request is not based on an inventive step for the same reasons as given above with respect to Claim 1 of the main request.

4. *Fourth auxiliary requests*

4.1 Added subject-matter (Article 123 EPC)

4.1.1 The Board is satisfied that the claims meet the requirements of Article 123(2) EPC in that the subject-matter of Claim 1 is based on original Claims 1 and 10 in combination with page 2, lines 4 to 16, page 4, lines 7 to 18, page 12, lines 23 to 24, Table 2 and page 18, lines 1 to 3; dependent Claims 2, 4, 9 and 11 correspond to original Claim 10 in combination with Claims 2, 3, 5 and 7; and in that the subject-matter of dependent Claims 3, 5 to 8 and 10 is based on the description as filed page 6, lines 4 to 6, page 10, lines 1 to 15, page 11, lines 26 to 27 and page 12, lines 4 to 6 and 10 to 11. Further, the amendments made to the claims do not extent the protection conferred by the claims as granted. The requirements of Article 123(3) are, therefore, also met.

4.1.2 In particular, the Board wishes to observe that the functional feature objected to by the Appellant-Opponents under Article 123(2) EPC "such that the lubricity performance thereof is improved relative to that achieved by the use of component (b) alone" derives its basis from the discussion on page 2, lines 4 to 16 of the application as filed, which is corroborated by the results in Table 2 on page 17 of the application as filed, which show how the lubricant's solubility in the fuel oil can be improved.

4.2 Clarity (Article 84 EPC)

4.2.1 The above functional feature and the feature "wherein the improvement in lubricity is in the injection pump of a compression-ignition internal combustion engine" have been criticised by the Appellant-Opponents for lack of clarity. It was argued that it was not clear

– which was the difference between the terms "lubricity" and "lubricity performance" used in that claim;

– that an improvement "relative to that achieved by the use of component (b) alone" only included synergistic mixtures considering that both, (a) and (b) were each able to improve lubricity; and

– that the improvement would be "in the injection pump of a compression-ignition internal combustion engine" since no details were given of either the pump or the engine and since the effect has not been demonstrated by the Appellant-Proprietor.

4.2.2 In the Board's opinion however, the amendments made to the claims do not create problems under Articles 84 EPC for the following reasons:

The terms "lubricity" and "lubricity performance" were both contained in the patent as granted and it is clear from the description of the patent in suit that in the context of light diesel fuels the terms have both the same meaning of the ability of the light diesel for lubrication in the injection pump of the diesel engine (Claim 15 and 16 in combination with page 2, lines 14 to 32).

The Board - unlike Appellant-Opponent I - has no problem to understand the functional feature despite the fact that both, components (a) and (b) might be able to increase the lubricity. In particular, the Board understands that feature to indicate that

components (a) and (b) are used - within the claimed weight ratios - in amounts which guarantee an improvement of the oils lubricity superior to that achieved by using the ester (b) alone.

4.2.3 The Board does also not see a clarity problem as far as the place (injection pump of the engine) of improvement is concerned.

4.3 Sufficiency of disclosure (Article 100(b) EPC)

4.3.1 The above criticism concerning the place of improvement is rather an objection to be made under Article 100(b) EPC as is apparent from the written submission made by Appellant-Opponent I (see letter dated 16 April 2003, page 3, point 3). There it is stated that a skilled person would not get any information from the patent in suit which would enable him to ensure that the claimed use will provide an improvement of lubricity in the injection pump of the diesel engine and that it was clear that not all additive compositions covered by the claim would give an improvement.

4.3.2 However, as indicated above under point 4.2.2, the functional limitation introduced in the claim excludes embodiments which do not give the required effect and the patent in suit in the experiments, in particular in Table 2, shows how the effect can be achieved.

4.3.3 As concerns any evidence showing that the effect actually occurs in the injection pump, the Board finds credible that a skilled person would be able to draw the respective conclusions from the BOCLE test or the HFRR test which are mentioned in the patent in suit as

being suitable to demonstrate a reduction in wear and friction or an increase in electrical contact resistance and since they are both tests where loaded bodies are in relative motion under non-hydrodynamic lubrication conditions (page 3, lines 4 to 9, in combination with page 7, lines 24 to 34).

The Board, therefore, concludes that the invention is sufficiently disclosed in the patent in suit as required by Article 100(b) EPC.

4.4 Novelty (Article 54 EPC)

Lack of novelty of the subject-matter of Claim 1 has been asserted only in view of D1 under Article 54(3) EPC.

However, the Board cannot find any disclosure in D1 of a combination of components (a) and (b) at a weight ratio of 1 : 2 to 2 : 1 nor that this combination should be used in a diesel fuel having a 95% distillation point of not greater than 350°C and at the same time a sulphur content of not more than 0.05 % by weight. In particular, the table on page 24 of D1, cited with respect to the weight ratio, does not relate to combinations of (a) and (b).

The Board concludes, therefore, that the claimed subject-matter is not anticipated by the cited prior art.

4.5 Inventive step (Article 56 EPC)

4.5.1 Claim 1 differs from that of the main request in that component (a) is defined as "an ashless dispersant comprising an acylated nitrogen compound" and by adding that the use is "such that the lubricity performance" of the light diesel "is improved relative to that achieved by the use of component (b) alone". As indicated above, the Board finds that a skilled person would interpret the latter feature to indicate that components (a) and (b) are used - within the claimed weight ratios - in amounts which guarantee an improvement of the oil's lubricity superior to that achieved by using the ester (b) alone (see also point 4.2.2).

4.5.2 Example 2 of the patent in suit (see in particular Table 2) shows that using 126 ppm of ashless dispersant (a) in combination with 125 ppm of ester (b) reduces the HFRR wear scar diameter from initially 540 µm (no additive) to 250 µm. In comparison, the addition of 126 ppm ashless dispersant or of 125 ppm ester alone brings the HFRR wear scar diameter down to values of only 475 µm and 415 µm, respectively. Example 1 further shows (see in particular Table 1) that using the additive outside the claimed range of weight ratio worsens the lubricity of the diesel when compared with the use of the same amount of ester additive in the absence of any ashless dispersant (see above point 2.2.5).

4.5.3 The Appellant-Opponents have not shown that under the working conditions of Example 2 it would not have been possible to arrive at such an improvement over any of the esters disclosed in D2 when used alone. However, in

the present situation, it is the Appellant-Opponents who have the burden to prove their allegation that the working examples of the patent were not applicable within the whole scope of the claims. To this effect, it is not sufficient to show in experimental tests that no improvement is obtained under different conditions, in particular if the ashless dispersant (a) and the ester lubricant (b) are used in higher or lower amounts than in Example 2 (see experiments annexed to the Appellant-Opponent II's letter dated 24 May 2004) and also the criticism on the reliability of test results submitted by the Appellant-Proprietor is irrelevant.

As a consequence, the Board has no reason to doubt that the claimed subject-matter, in view of D2 as the starting point for the assessment of inventive step (see above point 2.2.1), actually solves the technical problem of providing a measure of improving the lubricity performance of light diesel relative to that achieved by the use of the ester lubricants of D2 alone.

4.5.4 It remains to be assessed whether, in view of the available prior art documents, it was obvious for a skilled person to solve this problem by the means claimed, i.e. by using an additive comprising component (a) and the particular ester (b) in a weight ratio of 1 : 2 to 2 : 1.

4.5.5 D2 does not give any hint to the claimed solution, but simply indicates that the ester lubricants disclosed therein may be used in combination with co-additives, such as detergents (point 2.2.7 above).

It is true that D49 discloses that ashless dispersants like dispersant (a) are able to improve the solubility in a fuel of an oxy compound like an ester of glycol or polyglycol with monocarboxylic acids (point 2.2.8 above) and that a skilled person would thus expect an improved efficiency of the ester. Considering, however, that D49 describes the solubility effect explicitly with regard to the ester derived from monocarboxylic acids, the skilled person would have used the ashless dispersant of D49 in combination with those esters disclosed in D2 which are also derived from monocarboxylic acids, e.g. with glycerol monooleate mentioned in the examples (page 7) in order to achieve an improved efficiency of the ester lubricant. Whilst the skilled person could have used the ashless dispersant (a) of D49 also in combination with one of those esters disclosed in D2 which are derived from a polycarboxylic acid and a polyhydroxy alcohol, there was no reason to do so in a reasonable expectation of an improvement over the use of the ester lubricants of D2 alone, not only because there was a specific pointer in D49 to the other group of esters, but also because the skilled person would have expected a different solubility for the different ester molecule.

4.5.6 As correctly stated by the Appellant-Proprietor, the other cited prior art is less relevant and not suitable to contribute to the proposed solution of the above identified technical problem (see above point 4.5.3).

In particular, D3 relates to the different purpose of reducing emissions in underground mining engines (page 1, lines 1 to 5) and discloses mixtures of (1) detergents falling under the definition of (a) with (2)

esters derived from a dimer acid and nonylphenol in a weight ratio ranging from 60 to 80 : 5 to 10 which corresponds to a range between 1 : 0.16 to 16 : 1 (page 6, lines 1 to 24). Hence, D3 fails to give any hint concerning component (b) and the required weight ratio.

D3a has been mentioned only in relation with the detergents used in D3 but is not useful for any further contribution.

D5 and D9, both published in 1966, do not concern light diesel and the problem involved but relate to particular carboxylic acids or esters derived therefrom, possibly in combination with co-additives including dispersants for use as lubricity enhancers in fuel, including diesel (see in D5, column 1, line 1 to column 2, line 20, in D9, column 1, lines 17 to 72 and column 4, lines 40 to 49). Dispersants of type (b) are not mentioned. Thus, D5 and D9 contain no hint to the claimed solution of the existing technical problem.

D55 does not reveal its publication date in 1995. Therefore, this document can at best be considered as an expert opinion at that time. It discloses that nitrogen containing molecules prevent wear (page 26, middle column, first full paragraph), that detergents and dispersants keep gum in solution and injector nozzles clean (Table 2 on page 27) and that additive packages containing lubricants and detergents were of particular interest for light diesel (page 27, right-hand column, last full paragraph). However, it contains nothing which might suggest that those skilled in the art, at the priority date of the patent in suit, would

have considered the claimed combination of (a) and (b), amongst all the possible combinations of additives, as particularly beneficial in light diesel.

4.5.7 The Board therefore concludes that it was not obvious from the prior art documents to select from the ester lubricants disclosed in D2 the esters (b) which are derived from polycarboxylic acids and to use those in combination with the ashless dispersant of D49 in the expectation of improving the lubricity performance of the light diesel fuel more than by using the esters of D2 alone.

Therefore, the Board is satisfied that the subject-matter of Claim 1 involves an inventive step, thus meeting the requirements of Article 52(1) and 56 EPC.

Dependent Claims 2 to 11 refer to specific embodiments of claim 1 and derive their patentability therefrom.

5. Since the claims of the fourth auxiliary request comply with the requirements of the EPC, there is no need to consider the fifth to seventh auxiliary requests.

Order

For these reasons it is decided that:

The appeals are dismissed.

The Registrar: The Chairman:

C. Eickhoff P. Krasa