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# Datasheet for the decision of 19 March 2013

**Case Number:** T 0783/10 - 3.3.01

**Application Number:** 01307423.2

**Publication Number:** 1191087

**IPC:** C10M 135/36, C10M 165/00, C10N 30/12, C10N 40/08

**Language of the proceedings:** EN

**Title of invention:**
Water containing functional fluids comprising an oil soluble dimercaptothiadiazole compound or derivative

**Patent Proprietor:**
Chevron Oronite Company LLC

**Opponent:**
Lubrizol Limited

**Headword:**
Tractor hydraulic fluid/CHEVRON ORONITE

**Relevant legal provisions:**
EPC Art. 54, 56

**Keyword:**
"Novelty (yes), combination of features not directly and unambiguously disclosed in the prior art"
"Inventive step (no), solution obvious in the light of closest prior art"

**Decisions cited:**
T 0181/82, T 0197/86, T 0623/91

**Catchword:**
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

**Case Number:** T 0783/10 - 3.3.01

# D E C I S I O N
**of the Technical Board of Appeal 3.3.01**
**of 19 March 2013**

**Appellant:** (Patent Proprietor)
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**Decision under appeal:**
**Interlocutory decision of the Opposition Division of the European Patent Office posted 8 February 2010 concerning maintenance of the European patent No. 1191087 in amended form.**

**Composition of the Board:**

**Chairman:** C. M. Radke
**Members:** L. Seymour
L. Bühler

## Summary of Facts and Submissions

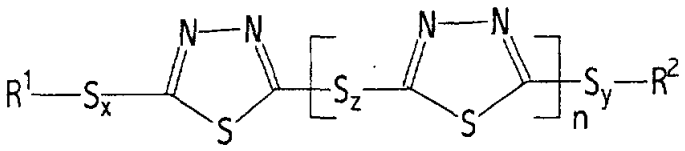
I. This appeal lies from the interlocutory decision of the opposition division maintaining the European patent No. 1 191 087 in amended form.

II. The decision under appeal was based on a main request and an auxiliary request, both filed during oral proceedings before the opposition division.

The sole independent claim 1 of the main request read as follows:

"1. Use of an oil-soluble dimercaptothiadiazole compound or derivative thereof as a copper corrosion inhibitor in a tractor hydraulic fluid when in contact with a copper-containing metal wherein the oil-soluble dimercaptothiadiazole compound or derivative thereof is employed in an amount of from 0.01 to 0.2 weight percent, based on the weight of the tractor hydraulic fluid, to protect the copper-containing metal against loss of copper when the tractor hydraulic fluid contains at least 0.25 weight percent water, and wherein the oil-soluble dimercaptothiadiazole compound or derivative thereof has the formula

**(I)**



wherein $R^1$ and $R^2$ are hydrogen or hydrocarbyl, n is 0 or 1, x is 1 or 2, y is 1 or 2 and z is 1 or 2."

The auxiliary request differed from the main request in the definition of the variables in formula (I) of claim 1 as "wherein $R^1$ and $R^2$ are each $C_8$ alkyl groups, n is 0, and x and y are each 2".

III. The following documents were cited *inter alia* during the opposition/appeal proceedings:

(1) US-A-3 923 669

(7) US-A-5 427 700

(8) EP-A-0 761 805

(26) Tribology of Hydraulic Pump Testing, 1997, Ed. G E Totten et al., ASTM STP 1310, pages 186-199

(29) R E Gapinski et al., "Improved Gear Performance through New Tractor Hydraulic Fluid Technology" in Tribology 2000-Plus, 12th International Colloquium, Technische Akademie Esslingen, Germany, January 11-13, 2000, Ed. W J Bartz, Volume 3, pages 2269-2276

(31) US-A-2 719 125

(32) US-A-3 087 932.

IV. In the decision under appeal, the main request and the auxiliary request were found to meet the requirements of Articles 123(2), 123(3) and 54 EPC.

In its analysis of inventive step, the opposition division considered document (7) to represent the closest prior art, since it related to tractor hydraulic fluids and metal passivation using tolytriazoles and dimercaptothiadiazoles.

In view of the test results provided in the patent in suit for the compound of formula (I) wherein $R^1$ and $R^2$ were each $C_8$ alkyl, n was 0, and x and y were each 2 (example 1), and for the triazole copper passivator "Nalco VX 2326" (Comparative Example A), the opposition division acknowledged that the former provided an excellent protection from copper loss in the presence of water. However, the opposition division was not satisfied that this technical effect would also be achieved for other compounds encompassed by formula (I) according to claim 1 of the main request. The opposition division therefore concluded that it would have been obvious for a person skilled in the art to follow the teaching of document (7) and use dimercapto-thiadiazole compounds in the manner claimed.

In view of the limitations introduced to formula (I) in claim 1, the opposition division acknowledged an inventive step for the auxiliary request.

V. Only the patentee appealed this decision. With its statement of grounds of appeal, the appellant submitted a main request and two auxiliary requests. In addition, test data was submitted as Annexes E to G.

The main request was identical to that considered in the decision under appeal (cf. above point II).

In auxiliary request 1, the definition of $R^1$ and $R^2$ was limited to "$C_1$ to $C_{30}$ alkyl groups", and in auxiliary request 2, the further limitation was introduced that "n is 0".

VI. The respondent (opponent) submitted test data as Annexes I and J to its letter of 4 March 2011, and as Annex K to its letter of 21 April 2011.

VII. Oral proceedings were held before the board on 19 March 2013.

VIII. The appellant's arguments, insofar as they are relevant to the present decision, may be summarised as follows:

The appellant denied that documents (1), (7) or (8) were relevant to the issue of novelty. In particular, there was no direct and unambiguous disclosure therein of all the features claimed in combination.

Turning to the issue of inventive step of the main request, the appellant started from document (7) as the closest prior art and defined the problem to be solved as lying in the provision of a tractor hydraulic fluid with excellent protection against the loss of copper in the presence of at least 0.25 weight percent of water. This problem had been solved by the use as defined in claim 1, characterised by the inclusion of an oil-soluble 2,5-dimercapto-1,3,4-thiadiazole (DMTD) compound of formula (I) in an amount of from 0.01 to 0.2 weight percent.

The data in Example 1 of the patent in suit, and in Annexes F, G, J and K (cf. above points V and VI)

confirmed that representative examples according to claim 1 of the main request did in fact provide excellent results in the JDQ 84 test. This test approximated the harsh physical conditions a tractor hydraulic fluid typically encountered during use, by blending the test oil with 1% water and subjecting it to about 200 hours in a piston pump run at high speed, pressure and temperature. According to section 2.4 of document (29), copper levels of 53 ppm were "not uncommon for a good fluid in this test". Moreover, as had been shown in the patent in suit (Comparative Example A), even higher values of 132 ppm had been obtained for the triazole copper passivator "Nalco VX 2326". There could therefore be no doubt that the results of 19 ppm or less obtained for the present compounds of formula (I) were indeed excellent.

The appellant submitted that the cited prior art did not contain any suggestion that would have led the skilled person to expect such an excellent outcome for the present DMTD derivatives in the JDQ 84 test. As demonstrated in Annex E, copper loss increased significantly when the water content was 0.25 wt% or more. It could not have been expected that the present DMTD compounds would substantially prevent copper loss under these conditions.

In particular, document (7) only taught the use of DMTD derivatives as sulfur scavengers in preventing copper corrosion by active sulfur. The test generally used for this purpose was the ASTM D-130 test, according to which the appearance of a copper strip was assessed after immersion in the test oil at elevated temperatures, in the absence of water. Thus, this type

of corrosion occurred under different conditions to that addressed in the present claims, which required the presence of water. Similarly, the requirement of "water tolerance" for tractor fluids referred to in document (7) concerned the hydrolytic effect that water might have on the components present in the functional fluid, and the potential for precipitation and blockage of the hydraulic system, and could not be equated with absence of copper corrosion in the presence of water. Therefore, document (7) did not provide any pointers as to how the problem posed was to be solved. This situation was comparable to that encountered in decision T 623/91, in which it had been concluded that a given product would not have been expected to behave similarly in two different tests, namely, the copper strip tarnish test ASTM D-130 and the hydrolytic stability test ASTM D-2619.

The appellant emphasised that, since unexpectedly good results had been achieved for the claimed compounds, comparative tests with other metal passivators disclosed in document (7) were not required in order to demonstrate an inventive step. It was therefore not relevant that good results had been obtained by the respondent in Annex I for a further metal passivator according to document (7), namely, tolytriazole (column 43, line 6). It might well be that such an additive could also be regarded as being inventive in its own right, but this was immaterial to the present case.

In the written procedure, the appellant advanced a further line of argument according to which Comparative Example A of the patent in suit should be regarded as a

fair comparison in the sense of decision T 197/86 (OJ EPO 1989, 371), since "Nalco VX 2326" represented a variant lying closer to the present DMTD derivatives in terms of oil solubility than tolytriazole as disclosed in document (7) (see appellant's submission of 21 October 2011, points 45 to 52).

Concerning the possibility of providing comparative tests with further DMTD derivatives according to document (7), the appellant argued that there was no clear point of comparison offered therein. Thus, although the passage relating to the metal passivator component B-5 in columns 43 to 48 of document (7) listed a number of DMTD derivatives, corresponding functional fluids were not disclosed. In fact, the only disclosure in document (7) of full functional fluid compositions was in Table II, which listed "DMTD/formaldehyde/heptylphenol" as one of the components. However, the exact structure of this derivative was unclear, and the corresponding general passage in column 46, lines 32 to 51, was of no help in this respect.

Turning to the auxiliary requests, the appellant submitted that formula (I) had been further limited to focus on the examples tested, so as to dispel any doubts that might arise concerning the breadth of the claims.

IX. The respondent's arguments, insofar as they are relevant to the present decision, may be summarised as follows:

The respondent submitted that the disclosures of documents (1), (7) and (8) destroyed the novelty of the subject-matter of claim 1 of the main request.

With respect to document (1), the respondent in particular referred to entry (2) of Table V, in combination with column 6, lines 29 to 33 and 52 to 65, and with column 8, lines 50 to 54, as disclosing the use of a dimercaptothiadiazole according to present formula (I) ("Amoco 150") in a use as claimed.

The respondent conceded that documents (7) and (8) did not explicitly disclose that the functional fluids contained at least 0.25 wt% of water, but argued that it was commonly known that tractor fluids would become contaminated by water to the levels claimed during use.

In its assessment of inventive step, the respondent also started from document (7) as representing the closest prior art. The data contained in Annexes I, J and K demonstrated that metal passivators according to formula (I) were no more effective in preventing copper loss in tractor hydraulic fluids when water was present than other metal passivators also disclosed in document (7). Comparative Example A provided in the patent in suit was to be disregarded, since "Nalco VX 2326" was not a metal deactivator in accordance with document (7). The problem to be solved must therefore be defined as lying in the provision of an alternative method for protecting tractor hydraulic fluids containing at least 0.25 wt% water against copper corrosion.

The solution was taught in document (7) itself, since it disclosed compounds falling within formula (I) of claim 1 of the main request, as copper corrosion inhibitors for use in tractor hydraulic fluids. With reference *inter alia* to documents (26) and (29), the respondent argued that it was common general knowledge that tractor hydraulic fluids became contaminated with water during use, and that water promoted corrosion. Document (7) itself also referred to the requirement that tractor fluids be water tolerant. Thus, no inventive merit could be associated with an arbitrary selection of corrosion inhibitors within the teaching of document (7).

The reasoning presented for the main request applied equally to the auxiliary requests.

X. The appellant (patent proprietor) requested that the decision under appeal be set aside and that the patent be maintained in amended form, on the basis of the main request, or, alternatively, on the basis of auxiliary requests 1 or 2, all filed with the statement of grounds of appeal.

The respondent (opponent) requested that the appeal be dismissed.

XI. At the end of the oral proceedings, the decision of the board was announced.

## Reasons for the Decision

1. The appeal is admissible.

2. *Novelty (Articles 52(1), 54(2) EPC)*

The respondent contested the novelty of the subject-matter of claim 1 of the main and auxiliary requests over the disclosures of documents (1), (7) and (8).

It is a general principle consistently applied by the boards of appeal that, for concluding lack of novelty, there must be a direct and unambiguous disclosure in the state of the art which would inevitably lead to subject-matter falling within the scope of what is claimed.

With respect to document (1), the respondent based its objection on the disclosure of Table V. There was no dispute between the parties that the additive "Amoco 150" used in entry (2) of said table corresponded to a DMTD derivative of present formula (I), wherein $R^1$ and $R^2$ are each a $C_8$ alkyl group, n is 0, and x and y each 2. However, the last footnote of Table V states that "formulations were **similar** to those of Table I" (emphasis added). Contrary to the contention of the respondent, the board cannot accept that the precise amount of "Amoco 150" used can be established based on the term "similar". Moreover, in order to arrive at a weight percent for "Amoco 150" falling within the claimed range of "0.01 to 0.2", the respondent further extrapolated values from different passages of document (1) relating to different embodiments disclosed separately and independently in

the description (i.e. column 6, lines 52 to 65, with column 8, lines 50 to 54). Therefore, the respondent's novelty attack based on document (1) is not considered to be convincing.

Concerning documents (7) and (8), the respondent argued that the feature relating to the levels of water in the functional fluids of at least 0.25 wt% was implicitly disclosed therein. The term "implicit disclosure" relates to subject-matter which is not explicitly mentioned in a document, but which is necessarily derivable therefrom. In this context, the respondent referred in particular to the sentence in document (26), third complete paragraph on page 193 (emphasis added), according to which "hydrostatic transmissions and hydraulic pumps found on agricultural and industrial off-highway equipment are **often** faced with the problem of water contamination from rainfall or other sources". It can be derived from this statement that water contamination will not necessarily be observed and will depend on environmental factors. Therefore, there is no direct and unambiguous disclosure in documents (7) and (8) that "the tractor hydraulic fluid contains at least 0.25 weight percent water".

Accordingly, the board concludes that the subject-matter of claim 1 of the main and auxiliary requests, and that of their remaining dependent claims, are novel over the cited prior art.

3. *Main request - Inventive step (Articles 52(1), 56 EPC)*

3.1 Claim 1 of the main request relates to the use of a DMTD derivative of formula (I), in specific amounts,

and under specific circumstances, namely, in a tractor hydraulic fluid containing at least 0.25 weight percent water, for the purpose of protecting copper-containing metal against loss of copper (cf. above point II).

3.2 The board considers, in agreement with the parties, that document (7) represents the closest state of the art.

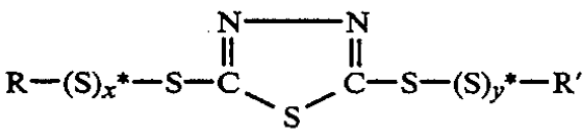
In the introductory section of document (7), it is explained that tractor fluids have specific characteristics which provide for their ability to operate within tractor equipment, and that they must in general act as a lubricant, a power transfer means and a heat transfer means, and must pass a variety of different types of tests (see column 1, lines 13 to 57).

The invention is then summarised as relating to a functional fluid, especially in the form of a tractor fluid, comprising a number of components, chosen with the object of providing a wide variety of different functional characteristics (column 3, line 15 to column 4, line 6). Amongst the specific characteristics listed are providing "improved water tolerance by including surfactants" and "corrosion inhibition particularly with respect to yellow metal (i.e., copper, brass, bronze)" (column 3, lines 44 to 45, and 59 to 66).

One of the components of the functional fluids according to document (7) is the detergent-inhibitor additive (B) (column 3, line 18). The function thereof includes that of protecting against corrosion in the multipurpose power transmission fluid, and the

corresponding component contemplated is the metal passivator B-5 (column 5, line 59 to column 6 line 4). This may be "tolytriazole or an oil-soluble derivative of a dimercaptothiadiazole", whereby DMTD derivatives are most readily available and preferred (column 43, lines 5 to 44,; claim 38). The relevant prior art disclosing such compounds is elaborated in column 43, line 45 to column 48, line 3.

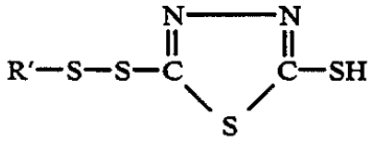
For example, with reference to document (31), document (7) discloses the following formula, wherein R and R' are the same or different hydrocarbon groups, and $x^*$ and $y^*$ are integers from 0 to about 8, and the sum of $x^*$ and $y^*$ is at least 1 (column 43, line 55 to column 44, line 19):



(XVII)

Corresponding derivatives wherein $x^*$ and $y^*$ are each 1 are disclosed in column 44, lines 20 to 35 of document (7), with reference to document (32).

Similarly, in column 46, line 61 to column 47, line 25 of document (7), the following formula is disclosed, wherein R' is a hydrocarbyl group containing from 1 to about 280 carbon atoms:



(XXIV)

Specific examples of R' are isopropyl, hexyl, and decyl (column 47, lines 15 to 17).

The amounts of the components that may be present are given in column 58, lines 17 to 45 of document (7), whereby the broadest range in parts by weight for component B-5 is 0.01 to 1.0. In Table II various functional fluids are exemplified, which all contain 0.5 parts by weight of an additive designated as "DMTD/formaldehyde/heptylphenol".

3.3 As the next step according to the problem-solution approach, it is necessary to determine the problem which the claimed invention addresses and successfully solves in the light of the closest prior art.

3.3.1 The appellant defined the problem to be solved in view of document (7) as lying in the provision of a tractor hydraulic fluid with excellent protection against the loss of copper in the presence of at least 0.25 weight percent of water.

3.3.2 The board regards this definition of the problem to be unclear, since the term "excellent" could be interpreted in a relative or absolute sense. Indeed, during the course of the proceedings the appellant employed this term in each of these senses.

Thus, on the one hand, in the patent in suit, the following is stated (page 2, lines 25 to 29; emphasis added):

"It has now been discovered that when an oil-soluble dimercaptothiadiazole compound or derivative thereof is employed in functional fluids that contain water, copper containing metals in contact with the functional fluid are protected from copper loss. This discovery was quite surprising since **other compounds known to be copper passivators or copper corrosion inhibitors do not perform nearly as well** as the dimercaptothiadiazole compounds or derivatives thereof of this invention."

Moreover, the patent in suit designates the results pertaining to "Nalco VX 2326" as being a comparative example (see paragraphs [0030], [0031]), and the appellant also argued in written appeal proceedings that this was to be seen as a fair comparison in the sense of decision T 197/86 (cf. above point VIII).

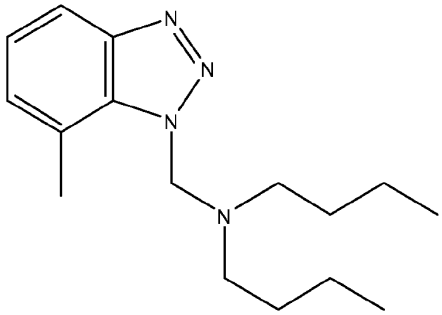
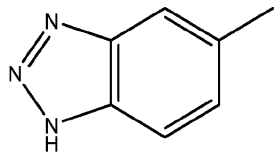
On the other hand, the appellant argued with reference to section 2.4 of document (29), that the results obtained for the present DMTD derivatives in the JDQ 84 test were below an "absolute" threshold value of 53 ppm disclosed therein, and should therefore be regarded as being "excellent".

Before each of these uses of the term "excellent" are discussed in more detail below, in points 3.3.4 and 3.3.5, the experimental results relied on by the parties will be outlined under point 3.3.3.

3.3.3 The following table summarises the data provided for additives according to present formula (I). In all these examples, n is 0, and x and y are 2.

| Cu corrosion inhibitor | Cu in used oil, ppm | flow loss, % |
|---|---|---|
| Example 1 (patent), $R^1/R^2 = C_8$ | 8 | -2 |
| Annex F (appellant), $R^1/R^2 = C_{18}$ | 5 | 0.5 |
| Annex G (appellant), $R^1/R^2 = C_2$ | 5 | 0 |
| Annex J (respondent), $R^1/R^2 = C_{18}$ | 18 | 0.46 |
| Annex K (respondent), $R^1/R^2 = C_{22}$ | 19 | 0.5 |

In addition, data was provided for further copper corrosion inhibitors, which is summarised in the following table (note: the structure for "Nalco VX 2326" is as indicated in the appellant's submission of 21 October 2011, page 7).

| Cu corrosion inhibitor | Cu in used oil, ppm | flow loss, % |
|---|---|---|
| Comparative Example A (patent), "Nalco VX 2326"  | 132 | 2.4 |
| Annex I (respondent)  | 15 | 0.5 |

The data reproduced above were obtained in the JDQ 84 test, according to which a hydraulic pump is operated with a functional fluid contaminated with 1% water, and flow rates and copper levels measured at specified

intervals (cf. patent in suit, paragraphs [0028], [0029]).

For the sake of completeness, the board wishes to note that, in the patent in suit, the remaining components of the formulations used in the examples are identified in terms of function rather than precise structure (cf. paragraphs [0027] and [0030]). Consequently, although indicated as being "formulated according to the formulation of Example 1 of the patent", the compositions used by the respondent in Annexes J, K and I are likely to differ from those employed in the patent in suit in more respects than only the copper corrosion inhibitor. This may explain the different results obtained by the appellant and the respondent for the compound wherein $R^1/R^2$ are $C_{18}$. Similarly, under point 17 of its statement of grounds of appeal, the appellant indicated that the formulations used in Annexes F and G differed with respect to several components from those used in the patent in suit. Consequently, it must be concluded that entries may only be reliably compared within the three sets of data (i.e. that provided in the patent in suit, and by the appellant and respondent, respectively).

3.3.4 In so far as "excellent protection against the loss of copper" implies an improvement over the closest prior art (cf. above points 3.3.1 and 3.3.2), the board is not convinced that the data outlined under point 3.3.3 provide adequate experimental support that this has successfully been achieved.

It is the established case law of the boards of appeal that, in order to be relevant, comparative tests have

to meet certain criteria. These include the proper choice of the structurally closest comparative compound to be taken from the closest state of the art (decision T 181/82, OJ EPO 1984, page 401, point 5 of reasons).

As outlined above in point 3.2, document (7) relates to the field of tractor fluids and specifically discloses corresponding functional fluids in Table II comprising a DMTD additive, namely, "DMTD/formaldehyde/heptyl-phenol". Such an additive would clearly have greater structural resemblance to those claimed than the benzotriazole additives reproduced above in the second table of point 3.3.3. The appellant asserted that the exact structure of said DMTD derivative was unclear, but did not provide any evidence that the skilled person would not be able to obtain this product based on the information provided in the passage in column 46, lines 32 to 51 of document (7), in combination with common general knowledge, if required. Therefore, in the absence of any evidence to the contrary, the board regards the examples of document (7) to represent an appropriate starting point for assessing inventive step. However, no comparative tests were provided with respect to these examples.

It is additionally noted that document (7) specifically discloses further DMTD-based metal passivator components B-5, as outlined above in point 3.2 (cf. formula (XXIV), R' = isopropyl, hexyl, decyl). The appellant argued in this context that there was no example in document (7) of specific functional fluids containing these compounds. However, it is noted that present claim 1 is also completely open as to the nature of the further components in the tractor

hydraulic fluid. There was therefore nothing to prevent the appellant from designing comparative tests within the meaning of decision T 197/86, such as to demonstrate that any effect had its origin in the distinguishing feature of the invention.

In any case, Comparative Example A provided in the patent in suit is not considered to be pertinent since the compound identified above as "Nalco VX 2326" is neither specifically disclosed in document (7), nor does it accurately reflect the disclosure therein with respect to the structurally closest DMTD-based corrosion inhibitors, as explained in the previous two paragraphs. This comparative example cannot therefore be used to support any improvement with respect to the closest prior art.

Finally, the additional data submitted by the respondent demonstrate that compounds falling within present formula (I) are no more effective than the metal passivator according to document (7), tolytriazole (cf. above point 3.3.3, entries for Annexes J, K and I).

Consequently, the data provided, as summarised under point 3.3.3, cannot support the superiority of the additives according to present formula (I) with respect to the closest prior art.

3.3.5 In a second line of argument, the appellant submitted that "excellent protection against the loss of copper" should be seen as defining a result lying below a particular threshold value in the JDQ 84 test (cf. above points 3.3.1 and 3.3.2). However, in this case,

the concept of "excellence" can have no other purpose than as a criterion for assessing the suitability of an additive for use as a corrosion inhibitor in a tractor hydraulic fluid contaminated with water.

The appellant cited document (29) as disclosing that copper levels of 53 ppm are "not uncommon for a good fluid in this test". However, this statement is made within the specific context of comparative tests between borated and non-borated calcium sulfonate additives. It cannot be concluded therefrom that values below the level of 53 ppm are by definition "unexpectedly good" regardless of context.

Therefore, the board considers that the inclusion of "excellence" as an absolute concept in the definition of the problem is redundant and, as such, can only lead to confusion as to its meaning.

3.3.6 Consequently, the problem as defined above by the appellant in point 3.3.1 requires reformulation.

In the light of document (7) and in view of the fact that the present claims relate to a use rather than a composition, the problem to be solved can be defined as lying in the provision of an alternative method for protecting tractor hydraulic fluids against copper corrosion.

The solution as defined in claim 1 relates to the use of a DMTD derivative of formula (I) in an amount of from 0.01 to 0.2 weight percent in the presence of at least 0.25 weight percent water.

Having regard to the data reproduced above in the first table of point 3.3.3, the board is satisfied that this problem has been solved.

3.4 It remains to be investigated whether the proposed solution would have been obvious to the skilled person in the light of the prior art.

3.4.1 As becomes evident from the analysis under point 3.2 above, document (7) is focused on the provision of tractor fluids, and the specific function thereof as a hydraulic or power transmission fluids. It is also disclosed that such fluids must provide corrosion inhibition with respect to copper, and brass and bronze, which are copper-containing alloys.

Specific functional fluids are disclosed in document (7) comprising 0.5 weight percent of a DMTD additive, namely, "DMTD/formaldehyde/heptylphenol" (see Table II, last entry). This belongs to the class of metal passivators or corrosion inhibitors B-5 disclosed in column 46, lines 32 to 51.

In seeking a solution to the problem defined above, the skilled person would have considered replacing the known component B-5 with further metal passivators envisaged in document (7), including, for example, the derivatives of formula (XVII) disclosed in column 43, line 55 to column 44, line 35. The documents (31) and (32) referred to therein both specifically disclose compounds falling within the scope of present formula (I), for example, "wherein $R^1$ and $R^2$ are each $C_8$ alkyl groups, n is 0, and x and y are each 2"

(cf. claim 5 of the main request with claim 9 of document (31) and claim 7 of document (32)).

In addition, the general disclosure in document (7) for the amounts of component B-5 in the compositions overlap with those specified in present claim 1 (see column 58, lines 33 to 44). An inventive step cannot therefore be based on the claimed concentration of the compounds of formula (I).

Finally, document (7) specifically contemplates the presence of water contamination in the tractor fluids, since one of the characteristics specified as a requirement is water tolerance (column 1, lines 44 to 46; column 3, lines 28 to 32 and 44 to 46). Several further documents cited also confirm that water is a common contaminant in such fluids under normal working conditions. Thus, document (26) states, "The hydrostatic transmissions and hydraulic pumps found on agricultural and industrial off-highway equipment are often faced with the problem of water contamination from rainfall or other sources" (page 193, third complete paragraph). Similarly, with respect to tractor fluids, document (29) refers to "the presence of 0.1 to 1.0 % water contamination levels" being common for equipment in service (page 2269, right-hand column, first complete sentence). In view of this information, the skilled person would therefore expect the metal passivators taught in document (7) to be effective in the presence water contamination in the range claimed in claim 1 of the main request, since this is a prerequisite for the proper functioning of a tractor hydraulic fluid.

Thus, the skilled person would not require any inventive skill to select compositions within the general teaching of document (7) and use them in the manner suggested therein.

3.4.2 The board cannot accept the appellant's submission that, since DMTD derivatives were known to prevent copper corrosion by active sulfur (cf. e.g. document (7), column 47, lines 5 to 7), the skilled person would have been dissuaded from using these compounds in the presence of water. It was argued in this context that the ASTM D-130 test generally used to measure such processes is conducted in the absence of water. However, this cannot detract from the fact that the requirement of "water tolerance" is taught in document (7), as outlined above in point 3.4.1. The appellant did not provide any basis for its assertion that this requirement only related to the phenomenon of hydrolytic stability, rather than generally to the maintenance of effectiveness in the presence of water.

Moreover, it was well known at the priority date of the patent in suit that both hydrolysis and corrosion may be promoted by water. This can, for example, be derived from document (26) (page 193, third complete paragraph), in which it is stated, "The reaction between the water and the additives in the hydraulic fluid tends to cause the corrosion of the softer yellow metals that make up some of the vital internal components, resulting in flow degradation and loss in volumetric efficiency" (see also document (29), first paragraph of section 2.4). The argument of the appellant that Annex E supports an inventive step is therefore not considered to be persuasive, since the results

tabulated therein merely provide confirmation of the known fact that water tends to promote corrosion.

Furthermore, it cannot be viewed as being unexpected that the tractor hydraulic fluids suggested in document (7) would successfully pass the JDQ 84 test, since this was known to be one of the standard means of assessing performance in the type of application under consideration (cf. document (26), Abstract, in particular, paragraph bridging pages 186 and 187, and page 193, third complete paragraph).

Finally, the facts of the present case differ substantially from those underlying decision T 623/91. The claims under consideration in the latter were composition claims, and comparative tests were provided with respect to the compositions of the closest prior art that rendered it plausible that the improvement in hydrolytic stability had its origin in the distinguishing feature of the invention, namely, the presence of specific triazole additives (see Reasons, points 3 and 3.1 to 3.3). This solution to the problem posed was not considered to have been rendered obvious by the cited prior art (see Reasons, point 5). In contrast, in the present case, the claims under consideration are use claims, and no comparative tests have been provided with respect to the closest prior art (cf. above point 3.3.4). Moreover, both the compositions and the circumstances of their use as defined in claim 1 are considered to have been suggested by the closest prior art document (7) (cf. above point 3.4.1).

3.4.3 In view of the above analysis, the subject-matter of claim 1 of the main request is found to represent an obvious solution to the problem posed and does not involve an inventive step.

Since a decision can only be taken on a request as a whole, none of the further claims need be examined.

Consequently, the appellant's main request is rejected for lack of inventive step of claim 1.

4. *Auxiliary requests - Inventive step (Articles 52(1), 56 EPC)*

In claims 1 of auxiliary requests 1 and 2, the definitions of the variables relating to formula (I) are more restricted than in claim 1 of the main request.

The appellant submitted that these amendments had been undertaken in order to address any concerns with respect to the breadth of the claims. However, the reasoning developed under point 3.4 was not based on the issue of breadth. Moreover, as outlined above (cf. above point 3.4.1), the corrosion inhibitors of formula (XVII) taught by document (7) in combination with documents (31) and (32) also fall within the scope of the more restricted definitions in the auxiliary requests.

Therefore, the considerations concerning inventive step set out above under point 3 with respect to the main request apply equally to the auxiliary requests 1 and 2.

Hence, the auxiliary requests are also rejected for lack of inventive step of their respective claims 1.

## Order

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

The appeal is dismissed.

The Registrar: The Chairman:

M. Schalow C. M. Radke