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D E C I S I O N
of 16 May 2003

Case Number: T 0468/99 - 3.3.6
Application Number: 94300350.9
Publication Number: 0609004
IPC: C23G 5/028
Language of the proceedings: EN

Title of invention:

Deterging solvent composition and a method for washing an article with the same

Patentee:

DISPOL CHEMICALS CO., LTD.

Opponent:

Lawrence Industries Inc.

Headword:

Solvent composition/DIPSOL

Relevant legal provisions:

EPC Art. 114(2), 54, 56
EPC R. 76(1)

Keyword:

"Admissibility of documents cited for the first time in the statement of grounds of appeal: no"
"Admissibility of experimental evidence filed with the statement of grounds of appeal: yes"
"Admissibility of amended requests filed during oral proceedings: yes"
"Respondent's request to record in the minute an alleged Appellant's statement: not granted"

"Novelty (main and first auxiliary request): yes"

"Inventive step (main request): no - solution to technical problem suggested in closest prior art"

"Inventive step (auxiliary request): yes - improved stability not to be expected in the light of the prior art"

Decisions cited:

T 0156/84, T 0502/98, T 1002/92, T 0951/91, T 0928/98,
T 0966/99, T 0472/88

Catchword:

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Case Number: T 0468/99 - 3.3.6

D E C I S I O N
of the Technical Board of Appeal 3.3.6
of 16 May 2003

Appellant: DIPSOL CHEMICALS CO., LTD.
(Proprietor of the patent) 3-2-17, Kyobashi,
Chuo-ku
Tokyo (JP)

Representative: Allard, Susan Joyce
BOULT WADE TENNANT
Verulam Gardens
70 Gray's Inn Road
London WC1X 8BT (GB)

Respondent: Lawrence Industries Inc.
(Opponent) P.O. Box 5052
Alameda
California 94501-8852 (US)

Representative: Schmidt-Evers, Jürgen, Dipl.-Ing.
Patentanwälte Mitscherlich & Partner
Sonnenstrasse 33
D-80331 München (DE)

Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 18 March 1999
revoking European patent No. 0609004 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: P. Krasa
Members: L. Li Voti
M. B. Tardo-Dino

Summary of Facts and Submissions

- I. The present appeal is from the from the decision of the Opposition Division to revoke European patent No. 0 609 004, concerning a deterging solvent composition.
- II. A notice of opposition was filed against the patent, wherein the Respondent (Opponent) sought revocation of the patent on the grounds of Articles 100(a) EPC, in particular because of the alleged lack of both novelty and inventive step of the claimed subject-matter, and 100(b) EPC.

The following documents were cited *inter alia* in support of the opposition:

(2): US-A-4056403

(3): US-A-3730904

- III. In its decision, the Opposition Division found that all the requests submitted by the Appellant complied with the requirements of Article 83 EPC. However, they lacked novelty in the light of document (3) or an inventive step in the light of documents (3) and/or (2).

As regards novelty the opposition division found in particular that document (3) disclosed a composition comprising butyl bromide, an amine salt of a specific surface active agent, water and a stabilizer and the wording of claim 1 of the patent in suit did not

exclude the presence of small amounts of a surface active agent and water.

As regards inventive step it found that

- it was obvious for the skilled person to combine brominated hydrocarbons and ether as suggested in document (2) in order to provide a substitute for flons (chlorofluorohydrocarbons) or chlorine solvents having excellent detergency;
- moreover, it was also obvious to use brominated hydrocarbon solvents in combination with a stabilizer in presence of metals like aluminium, as suggested in document (3);
- the tests contained in the patent in suit showed that at least some of the stabilizers encompassed by the claims did not provide the desired solvent stability and therefore that not all the claimed compositions solved the technical problem addressed in the patent in suit;
- finally, no inventive step could be seen in the replacement of the butyl bromide specifically used in document (3) with the structurally similar propyl bromide.

IV. An appeal was filed against this decision by the Appellant (Patent Proprietor).

The Appellant filed with the statement of the grounds of appeal three sets of claims according to a main request and to first and second auxiliary request.

The statement of the grounds of appeal cited moreover *inter alia* four new documents identified as (9) to (12) and included Mr Tanaka's declarations nos. 1 and 2 containing experimental evidence and a videotape.

- V. During the written procedure the Appellant filed a copy of the Japanese industrial standard JIS-K 1600, upon which the evaluation method (1) of the patent in suit for testing the corrosion of aluminium pieces by the claimed solvent had been based, together with an explanation of the way the tests had been carried out in the patent in suit and in the experimental evidence filed with the statement of the grounds of appeal.

Moreover, following the Board's communication dated 30 December 2002, it filed amended requests under cover of a letter dated 17 March 2003.

- VI. During the discussion at the oral proceedings held before the Board on 16 May 2003, the Appellant modified the requests filed under cover of a letter of 17 March 2003.

The **main request**, consisting of 3 claims, corresponds to the first auxiliary request filed with the statement of the grounds of appeal (see point IV above). Claim 1 of this request reads as follows:

"1. A non-chlorofluorocarbon or chlorine solvent containing deterging solvent composition which consists essentially of (A) n-propyl bromide or isopropyl bromide, at least 0.1% by weight of a stabilizer selected from nitroalkanes, ethers and epoxides, and an

optional assistant stabilizer selected from phenols, amino alcohols, acetylene alcohols and triazoles."

Claim 2 relates to a particular embodiment of the claimed composition and claim 3 to a method of washing an article with said composition.

The **first auxiliary request**, consisting of 4 claims, corresponds to the second auxiliary request filed with the statement of the grounds of appeal (see point IV above) but with a more restricted claim 3.

This set of claims differs from that of the main request insofar, as ethers are no longer among the selected stabilizers of claim 1 and it contains a new claim 3 reading:

"3. A non-chlorofluorocarbon or chlorine solvent containing deterging solvent composition which consists essentially of (A) n-propyl bromide or isopropyl bromide, at least 0.1% by weight of (B) a stabilizer which is at least one stabilizer selected from nitromethane, nitroethane and nitropropane and at least one stabilizer selected from alkyl cellosolves and dioxane, and an optional assistant stabilizer selected from phenols, amino alcohols, acetylene alcohols and triazoles."

Claim 4 corresponds to the method claim 3 of the main request.

The set of claims according to the **second auxiliary request** differs from that of the first auxiliary request insofar, as it does not contain said claim 3.

The Respondent withdrew its objections as to Article 83 EPC.

Moreover, it requested that a statement in regard to document (12), allegedly made by the Appellant during oral proceedings, be recorded in the minutes of oral proceedings. The Appellant, however, disputed that its submissions had been correctly understood.

VII. The Appellant submitted in writing and during oral proceedings that

- the amended requests of 17 March 2003 and the further amendments to the requests carried out during oral proceedings had been filed as a response to the Board's communication of 30 December 2002; furthermore, the amendments did not introduce any new matter of discussion;
- the experimental evidence filed during appeal did not introduce new facts, showed how the claimed invention worked and illustrated in detail the meaning of the test results already contained in the patent specification;
- documents (9) to (12) showed that there was still a need to look for suitable alternatives to chlorine or flon solvents and illustrated how the skilled person would have considered the teaching of the prior art;

- the claimed subject-matter was novel over the cited prior art, since document (3) did not disclose the use of propyl bromides and document (2) did not contain any direct and unambiguous disclosure of a composition comprising both propyl bromides and ethers.

As regards inventive step it argued that

- document (2), suggesting the use of mixtures of ethers and halogenated hydrocarbons for cleaning a polyurethane foam generating equipment, did not suggest that the ether would stabilize the propyl bromides and reduce their propensity to corrode metals; moreover, since the cleaning method of that document was carried out at room temperature, it did not address the problem underlying the claimed invention of stabilizing propyl bromides at elevated temperatures;
- there was a prejudice in the prior art against the use of propyl bromides as solvents because of their poor stability and high reactivity to metals;
- the compositions of document (3) contained a surfactant and possibly water which were excluded from the wording of claim 1; moreover, this document did not teach the use of propyl bromides but only of butyl bromide or dibromomethane and did not suggest that the propyl bromides could be stabilized by means of nitroalkanes, epoxides or ethers;

- therefore, in the light of the teaching of document (2) or (3), the skilled person would have not used a composition as claimed in the patent in suit for solving the technical problem underlying the claimed invention;

- the tests contained in the patent in suit and in Mr Tanaka's declarations filed with the statement of the grounds of appeal showed that nitroalkanes, epoxides and ethers reduced the propensity of propyl bromides to corrode aluminium at elevated temperatures and that a combination of specific nitroalkanes and ethers brought about a synergistical improvement of their stability; in regard to stability, a period of 48 hours was suitable for long term uses, whilst a stability of 6 hours could be considered to be sufficient for other uses;

- as regards the evaluation methods used in the patent in suit and in the experimental evidence filed with the statement of the grounds of appeal, the evaluation method (1) was carried out for 48 hours at the boiling point of the solvent without scratching the metal by using the method described in point 3.11 of JIS-K 1600 with the aluminium stripes as prepared according to the method of point 3.10 of that standard, whilst evaluation method (2) involved the scratching of the metal after a two hours treatment under reflux conditions.

VIII. The arguments submitted by the Respondent can be summarized as follows:

- the amended requests were late filed and should be dismissed;
- the documents (9) to (12), as well as the experimental evidence filed with the statement of the grounds of appeal, were late filed and not relevant and should be dismissed; in particular, it was not clear under which conditions the experiments of Mr Tanaka's declarations had been carried out;
- the claimed subject-matter lacked novelty in the light of document (2) disclosing a combination of propyl bromides and ethers;
- as regards inventive step document (2) or document (3) represented the best starting point for evaluating inventive step;
- document (2) suggested the use of propyl bromides in combination with ethers for cleaning an article; since there did not exist any prejudice in the prior art against the use of propyl bromides and the stabilizing properties of the ethers were suggested in documents (2) and (3), the claimed subject-matter lacked an inventive step;

- document (3) suggested the use of other stabilizers which the skilled person would have tried in order to find alternatives to the ethers used in document (2);
- the alleged improved stability at elevated temperatures had to be disregarded for the evaluation of inventive step since the claimed composition could also be used at room temperature, as explained in the patent in suit;
- document (3) taught the use of halogenated hydrocarbon solvents such as butyl bromide for removing grease and oils from a substrate and that stabilizers would have to be used if the hydrocarbon solvent was found to be unstable in the presence of metal articles such as aluminium;
- it was thus obvious for the skilled person to use the structurally similar propyl bromides instead of the butyl bromide specifically disclosed in document (3), since propyl bromides were suggested in document (2) as cleaning agents; moreover, it was obvious to try the stabilizers disclosed in document (3) and to select those giving the best results;
- the results evidenced in the experiments of the patent in suit and in Mr Tanaka's declarations were not clear and no conclusion could thus be derived therefrom.

IX. The Appellant requests that documents (9) to (12), the experimental evidence and the videotape, all of them filed with the statement of the grounds of appeal, be admitted into the proceedings; that the Respondent's request to record in the minutes of oral proceedings one of its supposed statement be dismissed; that the decision of the first instance be set aside and the patent be maintained on the basis of any of the main request or of the first or second auxiliary request, all of them filed during oral proceedings.

The Respondent requests that the appeal be dismissed and that a statement of the Appellant given during oral proceedings be recorded in the minutes.

X. At the end of the oral proceedings, the chairman announced the decision of the Board.

Reasons for the Decision

1. *Admissibility issues.*

1.1 New facts, documents and evidence filed for the first time during the appeal proceedings may be disregarded in virtue of Article 114(2) EPC, if they have not been submitted in due time. It is thus established case law of the Boards of Appeal of the EPO that the Board has first to evaluate if they can be considered to have been filed in due time or late, if a decision upon their admissibility has to be taken.

Such facts, documents and evidence would be considered to be filed in due time if they have been filed in accordance with the principle of procedural economy, e.g. when they have been filed in response to an argument or in order to overcome a point raised by another party during the opposition proceedings or/and discussed in the appealed decision and could have not been filed before under the circumstances of the case (see e.g. T 156/84, OJ EPO 1988, 372, point 3.11 of the reasons for the decision and T 502/98, unpublished in the OJ EPO, point 1.5 of the reasons for the decision).

The Board has in such a case to check, e.g., the relevant relationship between the new filed matter and the points it is alleged to overcome.

If the Board comes to the conclusion that it has not been filed in due time, it has then the discretionary power under Article 114(2) EPC to decide if it can be admitted into the proceedings.

In such a case, the main criteria to be taken into account is the relevance of the late filed matter, except in the cases where the filing party has an adequate and valid excuse for its filing at such a late stage, or when such a late filing amounts to an abuse of procedure (see e.g. T 1002/92, OJ EPO 1995, 605, point 3.4 of the reasons for the decision).

This criteria of relevance should be, however, applied taking into account the necessity of procedural economy of concluding swiftly the proceedings against the necessity for the Board to be convinced of the validity of the patent at issue and the principles of fairness

and good faith in relation to the other parties (see e.g. T 951/91 OJ EPO 1995, 202, point 5.15 of the reasons for the decision).

- 1.2 Documents (9) to (12) have been cited for the first time by the Appellant in the statement of the grounds of appeal.

In the present case the Appellant did not supply the Board with specific reasons or circumstances to explain why these documents were filed only at this stage.

Documents (9) and (10) relate to the use of flons as substitutes for chlorinated hydrocarbons (see document (9), page 2, lines 10 to 34 and (10), page 2, lines 1 to 16) and do not relate to the use of brominated hydrocarbons as required in the patent in suit; therefore, the Board finds that these documents are less relevant to the present case than documents (2) and (3) cited at first instance (see also points VII and VIII above).

Documents (11) and (12), published after the priority date of the patent in suit and which therefore do not belong to the prior art, were cited in order to illustrate that there was a need, even after the priority date of the patent in suit, for suitable alternatives to chlorine or flon solvents and how the skilled person would have considered the teaching of the prior art.

Since, however, documents (11) and (12) are patent specifications and not handbooks or textbooks, they report the personal belief of the writer and their teaching must be further considered to have been

influenced by the state of the art after the priority date of the patent in suit. Therefore, they cannot be considered to represent the common general knowledge of the skilled person at the priority date of the patent in suit.

The Board concludes therefore that the new late filed documents (9) to (12), being of no relevance to the present case, are not to be admitted into the proceedings.

- 1.3 As regards the videotape and the new experimental evidence filed with the statement of the grounds of appeal, they repeat in more details, as explained by the Appellant (see point VII above), the tests contained in the patent in suit and illustrate more precisely the technical results obtained by using the claimed solvent composition.

The content of the videotape shows, by comparison of a solvent composition according to the patent in suit with a similar solvent without stabilizer, that the unstabilized solvent reacts quickly with aluminium under reflux conditions as indicated on page 2, lines 28 to 30 of the patent in suit, whilst the composition according to the patent in suit is more stable.

Mr Tanaka's declaration no. 1 expands in more detail the experiments reported in tables 2 to 4 of the patent in suit and reports an additional experiment (table 7) at lower temperature. Mr Tanaka's declaration no. 2 shows that propyl bromides are more unstable than the bromides with longer chain length, which fact was known

to the skilled person at the priority date of the patent in suit, as accepted by both parties during oral proceedings.

The Board finds Mr Tanaka's declarations and the content of the videotape to be clear in view of the Appellant's written submissions and of the explanations given during oral proceedings (see point VII above).

The Board regards therefore that this evidence, filed for the first time together with the statement of the grounds of appeal, was submitted in answer to the impugned decision and to support the Appellant's case in defence of the patent.

Thus, applying the principles set out in point 1.1 above, the Board considers this new evidence as having been filed in due time and to be relevant to the present case. Therefore it is to be admitted into the proceedings.

- 1.4 The Appellant filed three amended set of claims during oral proceedings (see point VI above).

The Board finds that these new amended requests did not modify the matter of discussion and contained only amendments introduced as a response to the Board's communication of 30 December 2002. These amendments could have been expected by the Respondent and did not cause any difficulty to the Respondent for dealing with the case at the oral proceedings.

The Board concludes therefore that all these requests are admissible.

1.5 The Respondent requested a statement, allegedly made by the Appellant during oral proceedings in regard to the interpretation of document (12), to be recorded in the minutes.

The Appellant disputed that its submission had been correctly understood and requested that the alleged statement not be recorded.

According to Rule 76(1) EPC the minutes of oral proceedings can contain the relevant statements made by the parties; this does not exclude to record what the parties actually submitted during the oral proceedings, provided that this is "essential" for the issues to be dealt with in the decision.

However, the Board is responsible for deciding upon what is necessary to be recorded in the minutes. If, for example, the alleged wording of a statement is denied by the party having made the statement, it is up to the discretion of the Board to evaluate first whether the intended meaning of the statement is sufficiently clear and non ambiguous and then to consider whether or not it is "essential" within the meaning of Rule 76(1) EPC.

Since in the present case the statement at issue concerns the interpretation of document (12), which was not admitted into the proceedings (see point 1.2 above), the submissions that the Appellant may have made in regard to this document are not to be taken into account by the Board in its decision and thus are not "essential" within the meaning of Rule 76(1) EPC

(see e.g. T 928/98, unpublished in the OJ EPO, point 5.2 of the reasons for the decision).

Moreover, if the Board would have recorded the disputed statement in the minutes only because requested by a party without applying its discretionary power, this would not only have deviated from the current practice of the Boards of Appeal concerning drafting minutes, but also would have amounted to a breach of the principle of impartiality towards the party having given the alleged statement, since the alleged statement, if recorded in the minutes, could be used out of the specific context in which it was made before the Boards of Appeal, for instance in possible infringement cases, and could thus prejudice the opinion of national judges (see e.g. T 966/99, unpublished in OJ EPO, points 7.2.2 and 7.2.3 of the reasons for the decision). This is especially true in the present case where it is not the party allegedly having given the statement that requests its recording in the minutes but the other party, which tries to formulate the alleged statement in its own words.

Therefore, the Board concludes that the Respondent's request cannot be granted.

2. *Article 123(2) and 83 EPC (All requests)*

The Board is satisfied that the wording of the amended claims is supported by the application as originally filed. This has not been contested by the Respondent.

Moreover, the Board is also satisfied that the claimed invention complies with the requirements of Article 83 EPC. Since the objections based on this ground have been withdrawn by Respondent during oral proceedings, there is no need to give further details.

3. Novelty (Main Request)

3.1 Claim 1 relates to a solvent composition consisting essentially of a propyl bromide and specific stabilizers.

It is the established jurisprudence of the Boards of Appeal of the EPO that the wording "consisting essentially of" has to be interpreted as a requirement that the claimed composition does not contain additional components not specified in the claim which would affect the properties of the claimed composition (see e.g. T 472/88, unpublished in OJ EPO, point 3 of the reasons for the decision).

In the Board's judgement in the present case, relating to a solvent composition, any additional components would modify and thus affect the solubilizing properties of the solvent composition; therefore, such a claim has to be interpreted as relating to a composition consisting only of the indicated components and possible impurities or by-products that can be present in the used single commercial solvents.

3.2 Document (3) discloses compositions necessarily comprising a specific surfactant which modifies the properties of the solvent composition conferring to it the capacity of removing water from a substrate (see

column 2, lines 1 to 8) and does not cite propyl bromides as possible brominated hydrocarbon solvents. Therefore, this document cannot be considered to take away the novelty of the attacked claim 1.

Document (2) discloses a composition consisting of a monohydric alcohol, which may also contain an ether group, and a halogenated hydrocarbon solvent (column 1, lines 57 to 59 and column 3, lines 11 to 15). Even though the hydrocarbon solvent may also be brominated (column 2, lines 4 to 9) and it may also be a propyl bromide according to the list of suitable halogenated hydrocarbons contained in column 2, lines 17 to 36, the description of this document specifies that the preferred components for reasons of costs and availability are those containing at least two halogens in the molecule and more preferably the chlorinated ones (column 2, lines 57 to 62).

Therefore, even though this document suggests in its broadest teaching the possibility of using brominated hydrocarbons and among them also propyl bromides, a skilled person would select the above preferred halogenated hydrocarbons as a first choice in combination with, for example, ethers. Only if the skilled person would decide for whatever reason not to use these preferred halogenated hydrocarbons it would turn to the other possibilities encompassed by the teaching of document (2), e.g. to the short chain halogenated hydrocarbons as suggested in column 2, lines 53 to 56 and then to the brominated hydrocarbons (column 2, line 8) and then, finally, to propyl bromides (column 2, lines 24 and 27).

The Board thus concludes that document (2) does not contain a direct and unambiguous disclosure of a combination of n-propyl or isopropyl bromide and an ether and that the subject-matter of claim 1 is thus novel.

4. *Inventive step (Main Request)*

4.1 Technical problem

4.1.1 Claim 1 of the patent in suit relates to a deterging solvent composition which consists essentially of a propyl bromide solvent and stabilizers therefor.

According to the description of the patent in suit, the alleged goal of the invention was the provision of a substitute for chlorine and chlorofluorocarbon solvents which is stable and has deterging properties (page 2, lines 3 to 4 and 18 to 22). In regard to brominated hydrocarbons the description explains that they are very reactive even at room temperature in presence of metals and that such reaction is particularly vigorous at elevated temperatures (page 2, lines 26 to 28). In the light of these passages of the description, the technical problem underlying the claimed invention concerned therefore the stability of the selected solvents also at room temperature and not only at elevated temperature, the latter representing only a preferred aspect of the invention.

4.1.2 Both documents (2) and (3) disclose or suggest solvent compositions not based on chlorine or chlorofluorocarbon solvents which can be used for cleaning substrates (see document (2) column 1,

lines 51 to 58 and the list in column 2, lines 17 to 36 and document (3), column 1, lines 21 to 30 and column 3, lines 64 to 66).

The composition of document (2) is used for cleaning an equipment for the preparation of polyurethane foam (column 1, lines 6 to 10 and 25 to 31), which equipment, as agreed by both parties, consists mostly of metallic parts.

Since the equipment is, e.g., flushed with the solvent composition (column 4, lines 42 to 45) it appears reasonable to assume that the composition is used at room temperature; moreover, document (2) teaches that the same composition can be used repeatedly after storage (column 4, lines 50 to 59), thus implicitly suggesting that the used solvent composition is stable and does not attack the substrate to be cleaned.

The subject-matter disclosed in document (2) (see point 3.2 above) differs from that of the attacked claim 1 only insofar, as the combination of propyl bromide and ether is not specifically disclosed but is one of the possibilities falling within the framework of the generic disclosure of this document.

Document (3), relating to halogenated hydrocarbon compositions for cleaning articles (column 1, lines 22 to 30), suggests to use, in presence of metals, a stabilizer for the hydrocarbon solvent (column 4, lines 21 to 27).

However, document (3), as explained in point 3.2 above, requires the presence of a surfactant which is excluded from the wording of the attacked claims, whilst

document (2) discloses the use of a solvent composition consisting of the halogenated hydrocarbon solvent and a monohydric alcohol with ether groups (see point 3.2 above) and is therefore closer to the claimed subject-matter.

The Board finds therefore document (2) to represent the most suitable starting point for evaluating the inventive step of the claimed subject-matter, as also conceded by both parties during oral proceedings.

- 4.1.3 The technical problem underlying the patent in suit, seen in the light of document (2), can thus be formulated in agreement with the description of the patent in suit as the provision of a substitute for chlorine and chlorofluorocarbon solvents which, at least at room temperature, is stable in presence of metals and has cleaning properties.
- 4.1.4 In view of the experimental evidence contained in the patent in suit and that submitted with the statement of the grounds of appeal, the Board is satisfied that the claimed solvent compositions have solved the existing technical problem above.
- 4.2 Evaluation of inventive step.
 - 4.2.1 The Appellant argued that there existed a technical prejudice against the use of propyl bromides as solvents because of their propensity to corrode metals and their known instability, which was also shown in the experimental evidence submitted with the statement of the grounds of appeal (Mr Tanaka's declarations and the videotape).

The Board accepts that the skilled person was aware of the physical and chemical properties of the propyl bromides and thus also of their reactivity and that they had to be used with care. However, the prior art did not contain any teaching establishing a prejudice against the use of such a solvent for cleaning.

On the contrary, document (2) explicitly taught that propyl bromides could be used for cleaning a metal substrate in the composition disclosed therein, i.e. in combination with another solvent such as a monohydric alcohol having an ether group, e.g. a cellosolve (ethylene glycol monoalkyl ether) (see column 3, lines 48 to 52) and that such compositions were stable at least at room temperature (see point 4.1.2 above).

Therefore, the Board concludes that the skilled person would have followed the teaching of document (2) for cleaning metals at room temperature and, with a reasonable expectation of success, would have tried as alternative for the chlorine solvents and flons a brominated solvent such as n-propyl or isopropyl bromide in combination with ethers.

- 4.2.2 The Appellant also argued that the alcohols equally suggested in document (2) as suitable solvents to be used in combination with the brominated hydrocarbons (column 3, lines 64 to 67) did not provide sufficient stability as shown in tables 2 and 7 of Mr Tanaka's declaration no. 1 and that document (2) was silent about the stability of the disclosed solvent compositions at elevated temperature.

The Board agrees that the experimental report convincingly shows that alcohols are not sufficient for stabilizing propyl bromides in a treatment at the boiling point of the solvent or in a treatment at 40°C (the temperatures at which the evaluation methods of table 2 and 7 have been, respectively, carried out). However, no evidence has been submitted that the alcohols suggested in document (2) would not provide sufficient stability for a treatment at room temperature and, as explained in point 4.1.1 above, the technical problem underlying the claimed invention concerned the stability of the selected solvents also at room temperature and not only at elevated temperature, this particular stability representing only a preferred aspect of the invention.

The skilled person had therefore no reason for doubting the teaching of document (2) and would have expected the solvent compositions suggested in that document and thus also those comprising propyl bromides to be stable.

For these reasons, the Board concludes that the subject-matter of claim 1 does not involve inventive step.

The main request is thus to be dismissed.

5. *Novelty (First auxiliary request)*

The arguments submitted as regards novelty in point 3 above apply *mutatis mutandis* to the first auxiliary request.

6. *Inventive step (First auxiliary request)*

- 6.1 Claim 1 of the first auxiliary request differs from claim 1 of the main request insofar, as the claimed composition does not contain ether as a stabilizer.

Claim 3 of this request requires instead a stabilizer which is a combination of at least one compound selected from nitromethane, nitroethane and nitropropane and at least one compound selected from alkyl cellosolves and dioxane.

- 6.2 The composition suggested in document (2) differs from the above claimed subject-matter insofar, as it contains only an ether as stabilizer instead of a nitroalkane or an epoxide (claim 1) or of a combination of an ether and a selected nitroalkane (claim 3).

The problem underlying the claimed invention, seen in the light of document (2), has thus to be defined in agreement with the passage on page 2, lines 30 to 32 of the patent in suit, as the provision of a further solvent composition comprising propyl bromides which has similar cleaning properties and has a longer term stability also at elevated temperature than a composition comprising as stabilizer only an ether such as cellosolve as suggested in that document.

- 6.3 As shown in the tests contained in the patent in suit (tables 1 to 4) and in Mr Tanaka's declarations no. 1 (tables 2, 3 and 4), the use as stabilizers of nitroalkanes, epoxides or of the selected mixtures of nitroalkanes and ethers of claim 3 provides a long term stability also at elevated temperatures whilst the use

of ethers as the only stabilizers provide only a limited stability up to 6 hours.

Therefore, the above mentioned technical problem was plausibly solved by the claimed subject-matter.

- 6.4 Document (2) did not contain any suggestion how to operate with propyl bromides at elevated temperatures and how to improve their stability, since the process disclosed therein contemplated apparently only the use of room temperatures.

Document (3), even suggesting the use of different stabilizers for halogenated hydrocarbons including brominated hydrocarbons, addressed specifically compositions comprising butyl bromides (column 3, lines 65 to 66 and example 8) but not propyl bromides, which were known to be much more unstable than the longer chain bromides (see point 1.2 above). Moreover, it did not specify which solvents or combination of solvents from the general list reported in column 4, lines 30 to 35, could be useful for providing a long term stabilization of propyl bromides at elevated temperatures.

The Board finds therefore that the skilled person, being aware of the fact that propyl bromides were very reactive (see point 4.2.1 above), would not have found in the prior art any suggestion for the selection of other solvents for solving the existing technical problem and would not have departed from the teaching of document (2), i.e. it would have used an ether alone as stabilizer as suggested in that document.

The above mentioned effect was thus not to be expected in the light of the teaching of the prior art.

The Board concludes that the subject-matter of claims 1 and 3 involve inventive step.

The dependent claims derive their patentability from that of claims 1 and 3.

Order

For these reasons it is decided that:

1. Documents (9) to (12) are not admitted into the proceedings.
2. The video and the experimental evidence submitted with the grounds of appeal is admitted to the proceedings.
3. The decision under appeal is set aside.
4. The case is remitted to the first instance with the order to maintain the patent in amended form with the claims 1 to 4 according to the first auxiliary request submitted during oral proceedings and a description be adapted thereto.
5. The Respondent's request to take to the minutes one of the Appellant's statement is dismissed.

The Registrar:

The Chairman:

G. Rauh

P. Krasa