



SOLVENT" (Japanese Patent Application Tokuganhei No. 9-531832) was filed on February 26, 1997 as an international application (Foreign Application Priority claiming under Paris Convention, March 4, 1996, United States (US)), and registered on February 22, 2008 as Patent No. 4082734. (The number of Claims: 10. The patent is hereinafter referred to as "the Patent," and the specification and the claims are collectively referred to as "the specification," and a patentee of Albemarle Corporation is referred to as "demandee.")

The demand for invalidation trial of the case for the Patent was made by KANEKO CHEMICAL CO., LTD. (hereinafter referred to as "Demandant"). The prosecution history is set forth as below:

July 8, 2011 Submission of the written demand and Evidence A No. 1 to A No. 14 (by the demandant)

December 7, 2011 Written reply and Evidence B No. 1 to B No. 13 submitted (by the demandee)

January 25, 2012 Notification of matters to be examined

March 22, 2012 Oral proceedings statement brief and Evidence A No. 15 to A No. 22 submitted (by the demandant)

March 23, 2012 Oral proceedings statement brief and Evidence B No. 14 to B No. 27 submitted (by the demandee)

April 5, 2012 Oral proceedings

April 5, 2012 Decision regarding approval or refusal of amendment

April 10, 2012 Written statement and Evidence A No. 15 submitted again (by the demandant)

April 17, 2012 Written statement (by the demandee)

May 2, 2012 Written Statement (by the demandant)

May 30, 2012 Written statement and Evidence A No. 23 to A No. 27 submitted (by the demandant)

May 30, 2012 Written statement and Evidence B No. 28 to B No. 32 submitted (by the demandee)

June 15, 2012 Notice of conclusion of proceedings

June 21, 2012 Written statement (by the demandee)

## No. 2 The recitation of the Claims of the Patent

The recitation of Claims 1 to 10 of the Patent is set forth as below:

"[Claim 1]

A stabilized solvent composition comprising: a solvent portion which includes at least 90 wt.% n-propyl bromide; and a 1,4-dioxane-free stabilizer system portion which includes nitroalkane, 1,2-butylene oxide and 1,3-dioxolane.

[Claim 2]

The solvent composition of Claim 1, wherein the nitroalkane is nitromethane, nitroethane, or a mixture thereof.

[Claim 3]

The solvent composition of Claim 1, wherein the nitroalkane is nitromethane.

[Claim 4]

The solvent composition of Claim 1, wherein the solvent portion includes 90 to 92 wt.% n-propyl bromide.

[Claim 5]

The solvent composition of Claim 1, wherein the solvent portion includes 94 to 98 wt.% n-propyl bromide.

[Claim 6]

The solvent composition of Claim 1, wherein the stabilizer system portion includes 0.045 to 1.0 wt.% nitroalkane, 0.045 to 1.0 wt.% 1,2-butylene oxide, and 2.0 to 6.0 wt.% 1,3-dioxolane.

[Claim 7]

The solvent composition of Claim 6, wherein the solvent portion includes 90 to 92 wt.% n-propyl bromide.

[Claim 8]

The solvent composition of Claim 6, wherein the solvent portion includes 94 to 98 wt.% n-propyl bromide.

[Claim 9]

A process for cleaning an article which comprises immersing the article in a solvent composition comprising a solvent portion which includes at least 90 wt.% n-propyl bromide; and a 1,4-dioxane-free stabilizer system portion which includes nitroalkane, 1,2-butylene oxide, and 1,3-dioxolane, said solvent composition being at a temperature within the range from room temperature to 55°C.

[Claim 10]

A process for cleaning an article which comprises exposing the article to the vapor emanating from a boiling body of a solvent composition comprising a solvent portion which includes at least 90 wt.% n-propyl bromide; and a 1,4-dioxane-free stabilizer system portion which includes nitroalkane, 1,2-butylene oxide, and 1,3-dioxolane."

No. 3 Object of the Demand, Summary of the Argument, and Means of Proof submitted by the demandant

1 Summary of the Invalidation Reasons stated in the Written Demand for trial, Oral Proceedings Statement Brief, and Written Statement

The object of the demand claimed by the demandant is to "claim for the decision to the effect that 'the patents regarding the inventions according to Claims 1 to 10 of Patent No. 4082734 shall be invalidated. The costs in connection with the trial shall be borne by the demandee.' " (See the first oral proceedings record).

Further, it is recognized in general that the demandant argues the following Invalidation Reasons 1 to 9:

(1) Invalidation Reason 1

The inventions according to Claims 1 to 3, 5 to 6, and 8 to 10 of the Patent are identical to inventions described in the specification (Evidence A No. 1) originally attached to the application form of another patent application, which claims priority on the basis of an application filed before the the patent application's filing date (priority date) and was published after the patent application date(priority date). And also, they are identical to inventions described in the specification (Evidence A No. 2) originally attached to the application form of another patent application, which constitutes a basis of the priority claiming. Thus these inventions are not patentable under the provision of Article 29-2 of the Patent Act. The Patent corresponds to the patent provided in Article

123(1)(ii) of the Patent Act and thus should be invalidated.

(2) Invalidation Reason 2

The inventions according to Claims 1 to 10 of the Patent were easily conceivable by a person skilled in the art before the filing date (priority date) on the basis of the inventions described in Evidence A No. 3, A No. 4, and A No. 5 distributed before the patent application date (priority date). Therefore, these inventions are not patentable under the provision of Article 29(2) of the Patent Act. The Patent corresponds to the patent provided in Article 123(1)(ii) of the Patent Act and thus should be invalidated.

(3) Invalidation Reason 3

The inventions according to Claims 1 to 10 of the Patent were easily conceivable by a person skilled in the art before the filing date (priority date) on the basis of the inventions described in Evidence A No. 3, A No. 6, and A No. 7 distributed before the patent application date (priority date). Therefore, these inventions are not patentable under the provision of Article 29(2) of the Patent Act. The Patent corresponds to the patent provided in Article 123(1)(ii) of the Patent Act and thus should be invalidated.

(4) Invalidation Reason 4

The inventions according to Claims 1 to 3, 5 to 6, and 8 to 10 of the Patent were easily conceivable by a person skilled in the art before the filing date (priority date) on the basis of the inventions described in Evidence A No. 8 and A No. 3 distributed before the patent application date (priority date). Therefore, these inventions are not patentable under the provision of Article 29(2) of the Patent Act. The Patent corresponds to the patent provided in Article 123(1)(ii) of the Patent Act and thus should be invalidated.

(5) Invalidation Reason 5

The inventions according to Claims 1 to 10 of the Patent were easily conceivable by a person skilled in the art before the filing date (priority date) on the basis of the inventions described in Evidence A No. 9 and A No. 3 distributed before the patent application date (priority date). Therefore, these inventions are not patentable under the provision of Article 29(2) of the Patent Act. The Patent corresponds to the patent provided in Article 123(1)(ii) of the Patent Act and thus should be invalidated.

(6) Invalidation Reason 6

The inventions according to Claims 1 to 5, 9, and 10 of the Patent were easily conceivable by a person skilled in the art before the filing date (priority date) on the basis of the inventions described in Evidence A No. 10 and A No. 3 distributed before the patent application date (priority date). Therefore, these inventions are not patentable under the provision of Article 29(2) of the Patent Act. The Patent corresponds to the patent provided in Article 123(1)(ii) of the Patent Act and thus should be invalidated.

(7) Invalidation Reason 7

The Patent was granted for a patent application whose scope of claims did not conform to Article 36(6)(i) of the Patent Act, nor did the scope of claims satisfy the requirement of Article 36(6) of the Patent Act, and thus the Patent corresponds to the

provision of Article 123(1)(iv) of the Patent Act and thus should be invalidated.

(8) Invalidation Reason 8

The Patent was granted for a patent application whose Detailed Description of the Invention did not conform to the requirement of Article 36(4) of the Patent Act. Consequently, the patent corresponds to the provision of Article 123(1)(iv) of the Patent Act, and thus should be invalidated.

(9) Invalidation Reason 9

The Patent was granted for a patent application whose scope of claims that did not comply with Article 36(6)(ii) of the Patent Act, nor did the patent application confirm to the requirement of Article 36(6) of the Patent Act. Consequently, the patent corresponds to the provision of Article 123(1)(iv) of the Patent Act and thus should be invalidated.

2 Means of Proof submitted by the demandant

Means of Proof submitted by the demandant are listed as below:

(1) Means of Proof submitted with the written demand

Evidence A No. 1: Japanese Unexamined Patent Application Publication No. H08-337795

Evidence A No. 2: Japanese Patent Application No. H07-86888

Evidence A No. 3: Japanese Unexamined Patent Application Publication No. H06-220494

Evidence A No. 4: United States Patent No. 5403507 Specification

Evidence A No. 5: Japanese Unexamined Patent Application Publication No. H07-292393

Evidence A No. 6: Japanese Unexamined Patent Application Publication No. S49-87606

Evidence A No. 7: Japanese Unexamined Patent Application Publication No. S44-20082

Evidence A No. 8: Japanese Unexamined Patent Application Publication No. S56-25118

Evidence A No. 9: United States Patent No. 3238137 Specification

Evidence A No. 10: United States Patent No. 4394284 Specification

Evidence A No. 11: "Guideline for preventing health disorder due to 1,4-dioxane" (Guideline on the basis of the provision of Article 28(3) of the Industrial Safety and Health Act) (notice through official gazettes on December 21, 1992)

Evidence A No. 12: Saburo YASUKAWA et al, "Inhibiting mechanism of organic agent against dissolution reaction of aluminum by 1,1,1-trichloroethane", Journal of the Surface Finishing Society of Japan, Vol. 44, No. 2, 1993, pp.167-171

Evidence A No. 13: Notice of reasons for refusal (dispatched) on December 19, 2006 according to the Patent

Evidence A No. 14: Written Opinion (submitted) on June 4, 2007 according to the Patent

(2) Means of proof submitted for the oral proceedings statement brief (on March 22,

2012)

Evidence A No. 15: Examination of the effects of preventing metal corrosion when "methyl thiocyanate" is replaced with "1,3-dioxolane" in Evidence A No. 1 (Japanese Unexamined Patent Application Publication No. H08-337795) (KANEKO CHEMICAL CO., LTD., Technical Division, Kiyoshi SHIMADA, prepared on March 19, 2012)

Evidence A No. 16: Federal Register, vol.72, No. 103 (May 30, 2007)

Evidence A No. 17: Communication of Japan Association for Hygiene of Chlorinated Solvents, Vol. 7 (February 2009)

Evidence A No. 18: JIS-K1600-1981 (notice through official gazettes on April 28, 1992)

Evidence A No. 19: Japanese Patent Publication No. S48-39925

Evidence A No. 20: "Effects of the addition of ethers, esters, nitriles, amines and amidos on the inhibition of the reaction of aluminum particles and carbon tetrachloride", Kinzoku Hyomen Gijutsu, Vol. 13, No. 9, 1962, pp. 387-391

Evidence A No. 21: Japanese Unexamined Patent Application Publication No. H05-105899

Evidence A No. 22: Japanese Unexamined Patent Application Publication No. H05-124998

Further, Evidence A No. 15 was submitted again and Evidence A No. 16 to A No. 17 were withdrawn (See the record of the first oral proceeding).

Further, regarding Evidence A No. 19 to A No. 22, the addition of evidence was not permitted by the decision of acceptance or non-acceptance of amendment on April 5, 2012 (See the record of the first oral proceedings).

(3) Means of proof submitted with the written statement (on April 10, 2012)

Evidence A No. 15 (submitted again)

(4) Means of proof submitted with the written statement (on May 30, 2012)

Evidence A No. 23: Certificate of experimental results 1 (KANEKO CHEMICAL CO., LTD., Technical Division, prepared by Kiyoshi SHIMADA on May 28, 2012)

Evidence A No. 24: Certificate of experimental results 2 (KANEKO CHEMICAL CO., LTD., Technical Division, prepared by Kiyoshi SHIMADA on May 28, 2012)

Evidence A No. 25: Encyclopedia Dictionary of Chemistry, The committee for the edition of Encyclopedia Dictionary of Chemistry, Vol. 2, page 684, published on Showa 47 (1972) September 15

Evidence A No. 26: Koujien 4th Edition, Edited by Izuru NIIMURA, Iwanami Shoten Publishers, page 1330, published on November 15, 1991

Evidence A No. 27: Certificate of experimental results 3 (KANEKO CHEMICAL CO., LTD., Technical Division, prepared by Kiyoshi SHIMADA on May 28, 2012)

No. 4 Object of the reply and summary of the argument and means of proof submitted by Demandee

1 Object of the reply and outline of argument

The demandee seeks for a trial decision to the effect that "the demand for trial regarding the invalidation is groundless, and the costs in connection with the trial shall be borne by the demandant." (See the first oral proceedings record).

Further, it is recognized that the demandee argues that the above Invalidation

Reasons 1 to 9 are groundless:

2 Means of proof submitted by the demandee

Means of proof submitted by the demandee are listed as below:

(1) Means of Proof submitted with the written reply

Evidence B No. 1: Patent No. 4082734

Evidence B No. 2: European Patent Publication No. 609004

Evidence B No. 3: Japanese Unexamined Patent Application Publication No. H06-256796

Evidence B No. 4: Written Opinion on August 17, 2004 according to Japanese Patent Application No. 2004-65838

Evidence B No. 5-1: International Chemical Safety Card of dibromomethane (a website, updated in October 1995)

Evidence B No. 5-2: Safety Data Sheet of dibromomethane (a website, prepared on March 30, 2009)

Evidence B No. 6-1: International Chemical Safety Card of n-propylbromide (a website, updated in October 2004)

Evidence B No. 6-2: Safety Data Sheet of n-propylbromide (a website, prepared on February 1, 2010)

Evidence B No. 7-1: International Chemical Safety Card of methylchloroform (a website, updated in April 2007)

Evidence B No. 7-2: Safety Data Sheet of methylchloroform (a website, revised on March 30, 2009)

Evidence B No. 8: Chemical Compounds Safety Data Sheet of 1,3-dioxolane (Showa Chemical Industry Co., Ltd., revised on January 15, 2010)

Evidence B No. 9: Partial Translation of Evidence A No. 4

Evidence B No. 10: Japanese Unexamined Patent Application Publication No. H6-166895

Evidence B No. 11: Patent No. 3640661

Evidence B No. 12: Patent No. 2576933

Evidence B No. 13: Patent No. 2956578

(2) Means of proof submitted with the oral proceedings statement brief (on March 23, 2012)

Evidence B No. 14: United States Patent No. 5858953 Specification

Evidence B No. 15: Certificate of experimental results (Albemarle Corporation, Oh MIWA, prepared on December 6, 2011)

Evidence B No. 16: Certificate of experimental results 2 (Albemarle Corporation, Oh MIWA, prepared on March 21, 2012)

Evidence B No. 17: Translated and supervised by Yasuhide YUKAWA, Mitsuaki MUKAIYAMA, "Payne Organic Chemistry [I] Fifth Edition", Hirokawa Shoten, Cover page, page 42, colophon, first edition published on April 15, 1989

Evidence B No. 18: Edited by Masaaki YAMABE, Hitoshi MATSUO, "Development of fluorine-based materials", CMC Publishing Co., Ltd., Cover page, page 21, colophon, first edition, first print, published on January 31, 1994

Evidence B No. 19: K. S. Law et. al., "Halogenated Very Short-Lived Substances",

Cover page, List of contents, 2.1 to 2.5, page 7, February 2007  
Evidence B No. 20: United States Patent No. 4016215 Specification  
Evidence B No. 21: United States Patent No. 2008680 Specification  
Evidence B No. 22: United States Patent No. 3989640 Specification  
Evidence B No. 23: United States Patent No. 3657120 Specification  
Evidence B No. 24: United States Patent Application Publication No. 2006/33072  
Specification  
Evidence B No. 25: United States Patent No. 5993682 Specification  
Evidence B No. 26: United States Patent No. 6689734 Specification  
Evidence B No. 27: A website  
(<http://www.epa.gov/ozone/snap/solvents/lists/metals.html>)

Further, Evidence B No. 19 and Evidence B No. 24 to B No. 27 are withdrawn  
(See the record of the first oral proceedings).

(3) Means of proof submitted with the written statement (on May 30, 2012)  
Evidence B No. 28: Certificate of experimental results 3 (Albemarle Corporation, Oh  
MIWA, prepared on May 30, 2012)  
Evidence B No. 29: Court decision 2009 (Gyo-Ke) 10238  
Evidence B No. 30: National Publication of International Patent Application No. 2002-  
521417  
Evidence B No. 31: Examination Guidelines of Japan Patent Office, Part II, Chapter 3,  
Article 29-2 of the Patent Act  
Evidence B No. 32: Court decision, 2010 (Gyo-Ke) 10245

#### No. 5 Judgment by the body

Taking into consideration all the Invalidation Reasons, the body examines the  
Invalidation Reason 9 first. Then the body determines that there are grounds for the  
Invalidation Reason 9 with regard to the inventions according to Claims 1 to 8 of the  
Patent.

Moreover, supposing that the scope of the claims is construed in accordance with  
the demandee's argument, the body examines other Invalidation Reasons. Then the body  
determines that there are grounds for the Invalidation Reason 7 with regard to the  
inventions according to Claims 5 and 8 to 10 of the Patent, the Invalidation Reason 8 is  
groundless, and there are grounds for the Invalidation Reason 1 with regard to the  
inventions according to Claims 1 to 3, 5, 9, and 10 of the Patent, but not Claims 6 and 8  
of the Patent, and the Invalidation Reasons 2 to 6 are groundless.

The grounds are set forth as below.

#### 1 Invalidation Reason 9 (Article 36(6)(ii) of the Patent Act)

##### (1) Invalidation Reason presented by the demandant

In summary, the demandant argues about Invalidation Reason 9 in the written demand  
as set forth below.

##### A Invalidation Reason 9-1

Claim 1 recites "a solvent portion which includes at least 90 wt.%". This "90 wt.%" is  
indefinite as to whether it refers to the percentage of "a solvent portion" or the  
percentage of the whole "solvent composition". (Written demand, page 80, lines 13 to



23)

**B Invalidation Reason 9-2**

Claim 1 recites "1,4-dioxane-free stabilizer system portion", whereas the Detailed Description of the Invention describes "The solvent system is 1,4-dioxane-free; that is, it comprises no more than an impurity amount of the solvent composition; say, less than 500 ppm. It is preferred that no 1,4-dioxane whatsoever be present in the solvent composition." Thus it is indefinite as to whether the content of 1,4-dioxane is allowable if it is less than 500 ppm. (Written demand, page 80, lines 24 to 33)

**C Invalidation Reason 9-3**

Claim 1 recites "a solvent portion which includes at 90 wt.% n-propyl bromide; and a 1,4-dioxane-free stabilizer system portion which includes nitroalkane, 1,2-butylene oxide, and 1,3-dioxolane". The Invention 1 relates to a solvent composition comprising a solvent portion and a stabilizer system portion. It is indefinite as to whether the solvent portion might comprise 1,4-dioxane. (Written demand, page 81, lines 1 to 10)

**D Invalidation Reason 9-4**

Claim 1 recites "1,4-dioxane-free stabilizer system portion"; however, the recitation of "1,4-dioxane-free stabilizer system portion" may include compounds other than 1,4-dioxane such as amines that are strongly toxic (carcinogenicity) but useful for a stabilizer as the other component. In this case, the object of invention "to provide a solvent for degreasing and cleaning that exhibits high effects and is friendly for both users and the environment" may not be achieved. Thus it causes self-contradiction. (Written demand, page 81, lines 11 to 20)

**E Invalidation Reason 9-5**

Claim 1 recites "stabilized solvent composition."

However, there is no explicit definition about the term "stabilized" in the claims or the Detailed Description of the Invention. Besides, it is not clear what is stabilized or how to stabilize.

Further, according to the Detailed Description of the Invention, a stabilized solvent composition for degreaser and cleaner is a prerequisite for the inventions of the Patent, and the composition is furthermore stabilized by an additional stabilizer system. Since the composition is initially "stabilized" and furthermore "stabilized," the meanings of the term "stabilized" and the difference between the two "stabilized" compositions are not clear. (Written Demand, page 81, line 21 to page 82, line 1)

**F Invalidation Reason 9-6**

Claim 1 recites "nitroalkane," whereas it is indefinite as to whether the carbon number of alkane is indefinite. (Written demand, page 82, lines 2 to 5)

**G Invalidation Reason 9-7**

Claim 8 recites "the solvent composition of Claim 6, wherein the solvent portion includes 94 to 98 wt.% n-propyl bromide." Claim 6 from which Claim 8 depends recites "includes 0.045 to 1.0 wt.% nitroalkane, 0.045 to 1.0 wt.% 1,2-butylene oxide,

and 2.0 to 6.0 wt.% 1,3-dioxolane."

Here, if one wishes to select the lowest contents in the ranges recited in Claim 6, the sum is 2.09 wt.%, and thus "n-propyl bromide" may not exceed a value of 97.91 wt.%, which contradicts with the recitation of Claim 8. (Written demand, page 82, lines 6 to 17).

## (2) Determination by the body

The body made the determination about these Invalidation Reasons as set forth below.

The determination except Reason 9-5 accords with the tentative view expressed in the notification of matters to be examined dated January 25, 2012. The parties raised no opinion on this. (see the record of the first oral proceedings).

### A Invalidation Reason 9-1

The recitation of "a solvent portion which includes at least 90 wt.%" of Claim 1 is described as "Unless otherwise specified, wt.% and ppm value used herein are the values on the basis of total weight of the solvent composition." (column 4, lines 20 to 21, hereinafter the description of the specification is shown by the description of the publication.) Thus "90 wt.%" is obviously the percentage of "a total weight of the solvent composition." It cannot be said that the recitation of "a solvent portion which includes at least 90 wt.%" of Claim 1 is indefinite.

### B Invalidation Reason 9-2

Regarding the recitation of "1,4-dioxane-free stabilizer system portion" of Claim 1, the specification describes "The solvent system is 1,4-dioxane-free; that is, it comprises no more than an impurity amount of the solvent composition; say less than 500 ppm. It is preferred that no 1,4-dioxane whatsoever be present in the solvent composition." (column 4, lines 43 to 47). Therefore, it obviously means that the solvent composition is allowable if 1,4-dioxane is contained as an impurity at a level of less than 500 ppm.

Therefore, it cannot be said that the recitation of "1,4-dioxane-free stabilizer system portion" of Claim 1 is indefinite.

### C Invalidation Reason 9-3

Regarding the recitation of "a 1,4-dioxane-free stabilizer system portion which includes nitroalkane, 1,2-butylene oxide, and 1,3-dioxolane" of Claim 1, the specification describes "The solvent system is 1,4-dioxane-free; that is, it comprises no more than an impurity amount of the solvent composition, say less than 500 ppm." (column 4, lines 43 to 45). Therefore, "1,4-dioxane" is obviously not included into "solvent composition," nor is "1,4-dioxane" obviously included in "a solvent portion," which is a part of the "solvent composition."

Therefore, it cannot be said that the recitation of "a 1,4-dioxane-free stabilizer system portion which includes nitroalkane, 1,2-butylene oxide, and 1,3-dioxolane" of Claim 1 is indefinite.

### D Invalidation Reason 9-4

Even if "a 1,4-dioxane-free stabilizer system portion" should comprise

compounds other than 1,4-dioxane such as amines that are strongly toxic (carcinogenic) but useful for stabilizer as the other component, the recitation of "1,4-dioxane-free" has a definite meaning as discussed in the above B.

Even if "comprise compounds such as amines as the other component" should contradict with "the object of invention is to provide a solvent for degreasing and cleaning that exhibits high effects and friendly for both users and the environment" as described in the specification (column 4, lines 10 to 12), it does not make the invention according to Claim 1 indefinite.

Therefore, it cannot be said that the recitation of "1,4-dioxane-free stabilizer system portion" of Claim 1 is indefinite.

## E Invalidation Reason 9-5

### (A) History

Regarding the expression "stabilized solvent composition" of Claim 1, the demandee argued in the written reply that the "stabilized" composition did not corrode a metallic piece to be cleaned (written reply, page 84, line 19 to page 87, line 6), and the body's tentative view was in favor of this (Notification of matters to be examined on January 25, 2012). However, in the oral proceedings, the demandant argued that according to Evidence A No. 1 and A No. 8, degree of corrosion of a metallic piece varied, thus the term "stabilized" was not clear since the condition used for corrosion of a metallic piece was not defined. (Oral proceedings statement brief, page 34, line 16 to page 35, line 6). The demandee was silent on this point in the oral proceedings.

As long as the term "stabilized" is indefinite, it makes the substantive examination of the other Invalidation Reasons difficult. Therefore, the body thought that "a stabilized solvent composition" might be construed as "a solvent composition" that did not corrode a metallic piece of aluminum alloy, magnesium, or titanium after the metallic piece was immersed in the solvent composition refluxed for 24 hours" according to the examples in the specification. In the oral proceedings, the body presented a tentative view that in such a meaning that the expression "stabilized solvent composition" was definite without specifying use conditions in the claims and had examined the other Invalidation Reasons (See the first oral proceedings record).

In response, the demandee stated that adoption or rejection of the above body's tentative view would be notified later. On April 17, 2012, the demandee negated the above tentative opinion in a written statement and began to argue that "stabilized" meant the effect of "delaying metal corrosion"; i.e., it meant the state that "metals are not corroded longer with an additional stabilizer in the solvent" and a solvent said to be "stabilized" if metals are not corroded by adding a stabilizer to the solvent at the time when the metals are corroded in the solvent without the stabilizer (See page 3, line 4 to page 5, line 16).

### (B) Judgment

#### (B -1) Description of the specification and Evidence A No. 1 and A No. 3

The specification has the following descriptions:

(a) "n-propyl bromide is fairly stable when used at low temperatures; say at temperatures up to 55°C ... if n-propyl bromide is used in vapor cleaning systems, then stabilization is necessary. The higher temperatures; say 69-71°C, can lead to the corrosion of metals such as steel, aluminum, titanium, and magnesium. It is believed

that the metal catalyzes the dehydrobromination of the n-propyl bromide to yield HBr which in turn is available to corrode the metal. The prior art is replete with stabilizers to attenuate the catalytic ability of the metal and/or to deactivate any hydrogen halide produced." (column 3, lines 34 to 44)

(b) "EXAMPLE

A solvent composition was prepared by mixing the following ingredients together: 96.5 wt.% n-propyl bromide; 2.5 wt.% 1,3-dioxolane; 0.5 wt.% 1,2-butylene oxide; and 0.5 wt.% nitromethane.

Aluminum alloy (2024), magnesium (AZ-3 1 B), and titanium (MIL-T-9046) test coupons were polished with emery cloth until bright, shiny, and free of tarnish. The polished coupons were then washed with soap, followed by rinsing with distilled water. The rinsed coupons were dried with acetone without being handled by bare hands.

The dried coupons were then immersed in the solvent composition for 24 hours. The solvent composition was maintained at reflux during the immersion period. After the 24-hour period, the coupons were recovered, cooled, and visually examined for corrosion. No corrosion was observed." (column 6, lines 16 to 33)

Evidence A No. 1 discloses the following matters:

(c) "[0033] Example 19

To 100 ml glass-made conical flask there was added 50 ml of 1-bromopropane composition in which 0.5 weight part of nitromethane and 0.5 weight part of 1,2-butylene oxide were added on 100 weight parts basis of 1-bromopropane. One metal sample piece (size: 13 mm\*65 mm\*3 mm) with well-polished surfaces was sufficiently cleaned, dried, and placed in this flask so as to be located across a liquid phase and a gas phase. To the top part of this conical flask there was attached a reflux condenser, and the flask heated to a boiling temperature in a water bath to cause the sample piece to contact both liquid and gas phases under a reflux condition. After heat reflux for 140 hours, the flask was cooled to a room temperature to take out a sample piece, and the corrosion state and the degree of coloring in a liquid phase were observed, and further, generated acid content (hydrogen bromide) was quantified by titration.

The composition of stabilizer on 100 weight parts of 1-bromopropane (weight parts) is shown in Table 3, and the test result is shown in Table 4.

[0034]

[Table 3]

試験番号	安定剤組成 (重量部) <sup>1)</sup>									
	ニトロメタン	1,2-ブチレンオキサイド	トリメトキシメタン	ニトロエタン	1,4-ジオキサン	1,2-ジメトキシエタン	2-メトキシエタノール	トリエタノールアミン	N,N-ジイソプロピルエチルアミン	チオシア酸メチル
実施例 1 9	0.5	0.5	—	—	—	—	—	—	—	—
実施例 2 0	0.25	0.5	—	—	—	—	—	—	—	—
実施例 2 1	0.5	0.1	—	—	—	—	—	—	—	—
実施例 2 2	0.5	1	—	—	—	—	—	—	—	—
実施例 2 3	0.5	5	—	—	—	—	—	—	—	—
実施例 2 4	1	0.5	—	—	—	—	—	—	—	—
実施例 2 5	3	0.5	—	—	—	—	—	—	—	—
実施例 2 6	3	3	—	—	—	—	—	—	—	—
実施例 2 7	5	0.5	—	—	—	—	—	—	—	—
実施例 2 8	0.25	—	0.5	—	—	—	—	—	—	—
実施例 2 9	0.5	—	0.1	—	—	—	—	—	—	—
実施例 3 0	0.5	—	0.5	—	—	—	—	—	—	—
実施例 3 1	0.5	—	1	—	—	—	—	—	—	—
実施例 3 2	0.5	—	5	—	—	—	—	—	—	—
実施例 3 3	1	—	0.5	—	—	—	—	—	—	—
実施例 3 4	3	—	0.5	—	—	—	—	—	—	—
実施例 3 5	3	—	3	—	—	—	—	—	—	—
実施例 3 6	5	—	0.5	—	—	—	—	—	—	—
実施例 3 7	0.2	0.5	—	—	—	—	—	—	—	0.01
実施例 3 8	0.2	0.5	—	—	—	—	—	—	—	0.1
比較例 2 8	—	—	—	—	—	—	—	—	—	—
比較例 2 9	0.5	—	—	—	—	—	—	—	—	—
比較例 3 0	—	0.5	—	—	—	—	—	—	—	—
比較例 3 1	—	—	0.5	—	—	—	—	—	—	—
比較例 3 2	0.05	0.5	—	—	—	—	—	—	—	—
比較例 3 3	—	0.5	—	—	—	0.5	—	—	—	—
比較例 3 4	—	0.5	—	—	0.5	—	—	—	—	—
比較例 3 5	2	—	—	—	—	1	—	—	—	—
比較例 3 6	2	—	—	—	—	—	—	1	—	—
比較例 3 7	2	—	—	—	—	—	—	—	1	—
比較例 3 8	—	0.5	—	0.5	—	—	—	—	—	—
比較例 3 9	—	0.5	—	1	—	—	—	—	—	—
比較例 4 0	—	0.5	—	3	—	—	—	—	—	—
比較例 4 1	0.2	0.5	—	—	3	—	—	—	—	—
比較例 4 2	—	—	—	2	—	—	0.5	—	—	—
比較例 4 3	—	—	—	2	—	—	—	—	0.5	—
比較例 4 4	—	—	—	2	—	—	0.5	—	0.1	—

1) 1-ブロモプロパン100重量部に対する安定剤の添加量 (重量部)

試験番号                      Test Number  
安定剤組成 (重量部)              Stabilizer Composition (weight parts)  
ニトロメタン                      Nitromethane  
1, 2-ブチレンオキサイド              1,2-butylene oxide  
トリメトキシメタン                      Trimethoxymethane  
ニトロメタン                      Nitroethane  
1, 4-ジオキサン                      1,4-dioxane  
1, 2-ジメトキシエタン                      1,2-dimethoxyethane  
2-メトキシエタノール                      2-methoxyethanol  
トリエタノールアミン                      Triethanolamine

N, N-ジイソプロピルエチルアミン      N,N-diisopropylethylamine  
チオシアン酸メチル      methyl thiocyanate

実施例    Example

比較例    Comparative Example

1-ブロモプロパン 100 重量部に対する安定剤の添加量 (重量部)  
Additive amount of stabilizer on the basis of 100 weight parts of 1-bromopropane  
(weight parts)

[0035]

[Table 4]

試験番号	アルミニウム			亜鉛			鉄			銅		
	試験後の状態		H B r 濃度 (ppm)	試験後の状態		H B r 濃度 (ppm)	試験後の状態		H B r 濃度 (ppm)	試験後の状態		H B r 濃度 (ppm)
	試験片	試験液		試験片	試験液		試験片	試験液		試験片	試験液	
実施例 1 9	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 2 0	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 2 1	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 2 2	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 2 3	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 2 4	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 2 5	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 2 6	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 2 7	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 2 8	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 2 9	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 3 0	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 3 1	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 3 2	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 3 3	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 3 4	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 3 5	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 3 6	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 3 7	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 3 8	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
比較例 2 8	×	×	注 1)	×	×	注 1)	△	○	0	△	○	0
比較例 2 9	○	◎	10	○	◎	10	○	◎	10	△	○	10
比較例 3 0	×	×	注 1)	×	○	34	○	◎	0	△	○	24
比較例 3 1	×	×	注 1)	○	◎	0	○	◎	0	○	◎	0
比較例 3 2	×	×	注 1)	×	○	10	○	○	0	○	○	0
比較例 3 3	×	×	注 1)	×	○	10	○	○	0	○	○	0
比較例 3 4	×	×	注 1)	×	×	注 1)	△	○	10	△	○	0
比較例 3 5	◎	◎	10	×	○	34	×	×	注 1)	△	○	20
比較例 3 6	△	×	注 2)	△	×	注 2)	△	×	注 2)	△	×	注 2)
比較例 3 7	△	×	注 2)	△	×	注 2)	△	×	注 2)	△	×	注 2)
比較例 3 8	×	×	注 1)	○	○	22	○	○	48	○	○	22
比較例 3 9	○	○	34	○	○	34	○	○	35	○	○	35
比較例 4 0	○	○	66	○	○	100	○	○	83	○	○	>100
比較例 4 1	○	○	30	×	○	10	△	△	10	△	△	10
比較例 4 2	△	◎	0	×	○	0	×	×	>100	×	×	注 1)
比較例 4 3	×	◎	0	×	○	0	×	×	20	×	×	注 1)
比較例 4 4	◎	◎	0	×	○	0	×	○	20	×	×	注 1)

注 1) 試験液の劣化が激しかったため、酸分測定ができなかった

注 2) 試験液に沈殿が生じたため、試験を中止した

試験番号 Test Number  
アルミニウム Aluminum  
試験後の状態 State after test  
試験片 Sample piece  
試験液 Sample liquid  
H B r 濃度 HBr concentration  
亜鉛 Zinc  
鉄 Iron

銅 Copper

実施例 Example

比較例 Comparative Example

注1) Note 1)

試験後の劣化が激しかったため酸分測定ができなかった Acid content  
measurement failed due to the severe deterioration after test

注2) Note 2)

試験液に沈殿が生じたため、試験を中止した Test was stopped due to  
precipitation in a test liquid

[0036] Note that the materials of metal test pieces used were the following:

[0037]

Aluminum piece: JIS A 1100P

Zinc piece: JIS Type 2 (for flat plate)

Iron piece: JIS Cold-rolled steel SPCC

Copper piece: JIS Copper piece Type 1 (Normal Grade)

Further, the determination criteria of the appearance of metal test piece and the coloring of test liquid are indicated as in the following.

<Determination criteria of metal sample piece>

◎: No change at all

[0038] ○: Loss of only a small part of gloss.

[0039] △: Loss of gloss in whole.

[0040] ×: Coloring or corrosion is obviously observed in whole."

Evidence A No. 3 discloses the following matters:

(d) "[0004]

[Means for solving problem] After intensive investigations on brominated hydrocarbons from various aspects, the inventors have found that n-propyl bromide and isopropyl bromide are flame-retardant and have a high power of dissolving oils and excellent degreasing and deterging properties. However, the inventors have also found defects, in that the reactivity of these solvents with metals, particularly aluminum and its alloys, is extremely high. The problem is that this reaction occurs even at ambient temperature, and particularly when the temperature is elevated for the deterging with a vapor, the reaction becomes vigorous. Namely, the solvent reacts with aluminum in a short time of 10 to 20 min to form a dark brown tar or carbide and also to seriously corrode aluminum and finally to completely dissolve aluminum."

(e) "[0007]

By incorporating the specified stabilizer ..., metals can be effectively and stably degreased and deterged with the composition for a long period without being corroded."

(B-2) Clarity

As aforementioned, the demandee argues that the term "stabilized" of the Invention 1 means that the solvent is "stabilized" if metals are not corroded in a solvent including a stabilizer added thereto at the time when metals are corroded in the solvent without the stabilizer.

Indeed, it can be understood according to the description of the specification (see



point a) and the description of Evidence A No. 3 (see points d and e) that the addition of "a stabilizer" to the solvent "prevents metal from corroding", which is caused by the solvent composition, and thus the term "stabilized" may include the meaning that a solvent is "stabilized" if metals are not corroded in the solvent including a stabilizer added thereto at the time when metals are corroded in the solvent without the stabilizer.

However, even if the term "stabilized" might be construed as aforementioned, the term "stabilized" means the occurrence of phenomenon that metals are not corroded by adding a stabilizer to the solvent at the time when metals are corroded in the solvent without the stabilizer. Thus, the term does not specify the physical properties of the "solvent composition" itself.

Further, there is general common technical knowledge that the tendency of corrosion depends on kinds of metals. In view of the description, e.g., Comparative Examples 35 and 41 of Evidence A No. 1 (see point c) and the comparison between the additional test 1 and the additional test 2 of the written statement on May 30, 2012 the demandee submitted (page 3, line 22 to page 8, line 16), metal corrosion takes place in some cases, but does not in other cases even if a corrosion test is conducted with the same solvent composition and under the same use conditions. That depends on kinds of metals used. Further, metal corrosion is apt to take place as the temperature goes up in view of the description of the specification (see point a) and the description of Evidence A No. 3 (see point d). Therefore, it can be seen that metal corrosion takes place in some cases and does not in other cases even if the same solvent composition is used, depending on use conditions of solvent composition such as kinds of metals used and the temperature of the solvent.

Further, it cannot be said that there is common technical knowledge that any kinds of metals are not corroded by adding a stabilizer to a solvent at the time when a certain kind of metals is corroded in the solvent without the stabilizer under any conditions and at any temperatures.

For example, even if there were a solvent composition that causes faster aluminum corrosion in the solvent excluding a stabilizer than that including the stabilizer, it would not necessarily cause faster titanium corrosion in the same solvent without the stabilizer than that including the same stabilizer. Therefore, it is obvious that the phenomenon of metal corrosion depends on the use condition of the solvent.

Further, regardless of a question raised in the oral proceedings about cause and effect between the use condition of the "solvent composition" and the "stabilization" to be achieved, the demandee had not answered the question in the written statement submitted thereafter.

Consequently, the term "stabilized" may be construed as meaning that a solvent is "stabilized" if metals are not corroded in a solvent including a stabilizer added thereto at the time when metals are corroded in the solvent without the stabilizer, however, it cannot be said that the expression "stabilized solvent composition" is definite in the absence of specifying use conditions thereof, because the same solvent composition may be "stabilized" in some cases and may be not in other cases, depending on the use conditions as described above.

Further, as shown in the body's tentative view in the oral proceedings, a solvent composition may be construed as being "stabilized" when no metal corrosion is observed and being "not stabilized" when metal corrosion is observed under the specific use conditions employed in the examples of the specification. In view of the description

of the specification, that state of a solvent can be criteria for deciding whether the solvent is stabilized or not. On the contrary, supposing that a "stabilized solvent composition" includes any solvent compositions in which metals are not corroded with a stabilizer added thereto at the time when metals are corroded in the solvent without the stabilizer under undefined conditions, for example, a "solvent composition" in which metal corrosion is observed in the specific use conditions employed in the examples of the specification can become a "stabilized solvent composition" when metals are not corroded in the solvent including a stabilizer added thereto at the time when metal is corroded in the solvent without the stabilizer under another certain condition. Then, the solvent may result in the solvent that is encompassed in the scope of the inventions according to Claims 1 to 8.

However, in the examples in the specification supporting a "stabilized solvent composition", the presence and the absence of metal corrosion are only observed after 24 hours' immersion. They did not compare a solvent composition including a stabilizer to a solvent composition excluding a stabilizer regarding time metal corrosion time. Besides, since it is well known that n-propyl bromide without a stabilizer causes aluminum corrosion in a very short time, the examples may show an effect of delaying metal corrosion in a solvent without stabilizer. However, there is no common technical knowledge that n-propyl bromide causes titanium corrosion in a short time (In fact, Evidence A No. 27 shows that titanium is not corroded even in a solvent without a stabilizer). Therefore, it is obvious that those examples are not intended for studying differences in metal corrosion time between solvents with/without a stabilizer. Further, according to remaining descriptions of the specification, it cannot be understood that a solvent including a stabilizer delays metal corrosion and the solvent may be regarded as a stabilized solvent. It is natural for a person skilled in the art to recognize that a solvent composition which corrodes metals under the conditions employed in the examples is not regarded as "a stabilized solvent composition" and that solvent composition is not encompassed in the inventions according to Claims 1 to 8. Accordingly, it cannot be understood that "a stabilized solvent composition" is a solvent if metals are not corroded in the solvent including a stabilizer added thereto at the time when metals are corroded in the solvent without the stabilizer.

Therefore, it cannot be said that the recitation of "stabilized solvent composition" of Claims 1 to 8 is clear.

#### F Invalidation Reason 9-6

Regarding the recitation of "nitroalkane" of Claim 1, the meaning of the technical term "nitroalkane" is definite as an "alkane having nitro group" without specifying the carbon number. Thus it cannot be said that the recitation of "nitroalkane" of Claim 1 is indefinite.

#### G Invalidation Reason 9-7

Based on the recitation of "includes 0.045 to 1.0 wt.% nitroalkane, 0.045 to 1.0 wt.% 1,2-butylene oxide, and 2.0 to 6.0 wt.% 1,3-dioxolane" of Claim 6, if the lowest contents are selected, the sum amounts to 2.09 wt.%. In that case, the content of "n-propyl bromide" may not exceed 97.91 wt.%. On the other hand, Claim 8 recites "includes 94 to 98 wt.% n-propyl bromide". The aforesaid upper limit of "97.91 wt.%"

may be represented as "98 wt.%" in view of significant digits. Therefore, it does not contradict the fact that the upper limit of "n-propyl bromide" of Claim 8 is "98 wt.%."

Therefore, it cannot be said that the recitation of "the solvent composition of Claim 6, including 94 to 98 wt.% n-propyl bromide" of Claim 8 is indefinite.

### (3) Summary

As aforementioned, it cannot be said that the inventions according to Claim 1 and Claims 2 to 8 depending therefrom are definite. Therefore, the recitation of the Claims does not conform to Article 36(6)(ii) of the Patent Act. Thus the Patent was granted for a patent application that did not satisfy the requirement of Article 36(6) of the Patent Act.

Further, it cannot be said that the inventions according to Claims 1 to 8 are definite. Therefore, with respect to the Invalidation Reasons 1 to 8, supposing that the term "stabilized" may be construed as meaning that "the addition of the stabilizer to a solvent makes a metal corrosion-free even at the time when metal corrosion begins in the solvent without stabilizer" (hereinafter referred to as "delay of metal corrosion"), and further supposing that "a stabilized solvent composition" means "a solvent composition" that may cause such a phenomenon in a certain use condition in favor of the demandee's argument, the following determination is made.

## 2 Invalidation Reason 7 (Article 36(6)(i) of the Patent Act)

### (1) Invalidation Reason 7 argued by the demandant

Invalidation Reason 7 argued by the demandant is set forth as below: (Written demand, page 77, line 27 to page 79, line 10, Oral proceedings statement brief, page 32, lines 25 to page 34, line 4)

#### A The range of the content of stabilizer

The Detailed Description of the Invention only describes the examples in which 2.5 wt.% 1,3-dioxolane, 0.5 wt.% 1,2-butylene oxide, and 0.5 wt.% nitromethane were used as stabilizers.

Claim 1 fails to define the contents of "nitroalkane," "1,2-butylene oxide," and "1,3-dioxolane" as a stabilizer. Therefore, it is highly likely that the effect of the Invention would not be caused (i.e., a problem may fail to be solved) in numerical ranges out of the numerical ranges described as the preferable ranges of these compounds (Publication, column 4, line 48 to column 5, line 10), in particular, below the lower limits of the preferable ranges.

Claim 6 recites that the stabilizer system portion "includes 0.045 to 1.0 wt.% nitroalkane, 0.045 to 1.0 wt.% 1,2-butylene oxide, and 2.0 to 6.0 wt.% 1,3-dioxolane." The lower limit value is one-tenth that of the examples. Thus it is highly likely that the effect of the Invention would not be caused in such a value (i.e., a problem may fail to be solved).

Claims 9 and 10 fail to define the contents of the stabilizers of "nitroalkane," "1,2-butylene oxide," and "1,3-dioxolane." Therefore, it is highly likely that the effect of the Invention would not be caused (i.e., a problem may fail to be solved) in numerical ranges out of the numerical ranges described as the preferable ranges of these compounds (Publication, column 4, line 48 to column 5, line 10), in particular, below

the lower limits of the preferable ranges.

Therefore, one example described in the Detailed Description of the Invention may not be extended or generalized to any solvent composition that satisfies the requirement of Claim 1 (any content of each component included into a stabilizer system portion), the requirement of Claim 6 (any content within the above range of each component included into a stabilizer system portion), and the requirement of Claims 9 and 10 (any content of each component included into a stabilizer system portion). The inventions according to Claims 1 to 10 are not described in the Detailed Description of the Invention.

B The specification of "includes 94 to 98 wt.% n-propyl bromide" in Claims 5 and 8

Claims 5 and 8 recite "includes 94 to 98 wt.% n-propyl bromide." The Detailed Description of the Invention discloses that "If the n-propyl oxide is of high purity, then the n-propyl bromide could be 94-97 wt.% the solvent composition"; however, it fails to disclose that n-propyl bromide is 94 to 98 wt.%.

Therefore, the inventions according to Claims 5 and 8 are not described in the Detailed Description of the Invention.

## (2) Construction of Article 36(6)(i) of the Patent Act

Article 36(6) of the Patent Act specifies "The statement of the scope of claims as provided in paragraph (3), item 4 shall comply with each of the following items." The item 1 of the same paragraph specifies that "the invention for which a patent is sought is stated in the detailed explanation of the invention." Item 1 of the same paragraph specifies so-called supporting requirement of the specification. The determination of whether or not the recitation of the Claims might comply with the supporting requirement should follow the steps of: comparing the recitation of the Claims and the descriptions of the Detailed Description of the invention; and considering whether or not the invention recited in the Claims might fall within the scope in which a person skilled in the art could recognize that a problem to be solved by the invention might be solved by the description of the Detailed Description of the Invention, or considering whether or not the invention recited in the Claims might fall within the scope in which a person skilled in the art could recognize without such description or suggestion in view of common technical knowledge as of the filing that the problem to be solved by the invention might be solved.

From this viewpoint, a consideration is given hereinafter.

## (3) Problem to be solved by the Invention

A problem to be solved by the invention according to Claims 1 to 10 of the Patent (hereinafter referred to as "the problem to be solved by the Invention") is "to provide a solvent for degreasing and cleaning that exhibits high effects and friendly for both users and the environment" (column 4, lines 10 to 12) as described in the specification, and thus it is recognized as "to provide a solvent for degreasing and cleaning that exhibits high effects and friendly for both users and the environment."

Further, in view of "n-propyl bromide is ... allowable due to low possibility of ozone depletion." (column 3, lines 18 to 20), "n-propyl bromide shows promise in toxicity tests" (column 3, lines 24 to 25), "an old and very common stabilizing component, 1,4-dioxane, is not now favored due to health concerns." (column 4, lines 6

to 9), it is recognized that "friendly for both users and the environment" means the use of a low toxicity (1,4-dioxane-free) deterging solvent including a deterging solvent of "n-propyl bromide."

Further, in view of "n-propyl bromide is fairly stable when used at low temperatures; say temperatures up to 55°C. ... The higher temperatures; say 69-71°C, can lead to the corrosion of metals such as steel, aluminum, titanium, and magnesium." (column 3, lines 30 to 38), "high effects" means that n-propyl bromide is stabilized so as not to cause metals such as steel, aluminum, titanium, and magnesium to corrode.

Furthermore, "stabilized" means the delay of metal corrosion. Thus the problem to be solved by the Invention is "to provide a (1,4-dioxane-free) deterging solvent with low toxicity comprising n-propyl bromide as a deterging solvent, wherein n-propyl bromide causes the delay of metal corrosion (in a certain use condition)."

#### (4) Comparison and Determination

##### A The range of the content of stabilizer

##### (A) Comparison between the recitation of the Claims and the Detailed Description of the Invention

The invention according to Claim 1 of the Patent is "a stabilized solvent composition which comprises: a solvent portion which includes at least 90 wt.% n-propyl bromide; and a 1,4-dioxane-free stabilizer system portion which includes nitroalkane, 1,2-butylene oxide, and 1,3-dioxolane."

Further, the invention according to Claim 6 of the Patent is "the solvent composition of Claim 1, wherein the stabilizer portion includes 0.045 to 1.0 wt.% nitroalkane, 0.045 wt.% 1,2-butylene oxide, and 2.0 to 6.0 wt.% 1,3-dioxolane".

On the other hand, the Detailed Description of the Invention discloses that "This invention relates to a stabilized degreasing and cleaning solvent composition which comprises a solvent portion which includes at least 90 wt.% n-propyl bromide; and a 1,4-dioxane-free stabilizer system which includes nitroalkane, 1,2-butylene oxide, and 1,3-dioxolane composition." (column 4, lines 14 to 20). Therefore, it can be said that the invention according to Claim 1 is formally described in the Detailed Description of the Invention.

Further, the Detailed Description of the Invention discloses that "The nitroalkane constituent of the solvent system ... The amount of nitroalkane used will generally be within the range of from 0.045 to 1.0 wt.%. ... The 1,2-butylene oxide constituent will be generally present in an amount within the range of from 0.045 to 1.0 wt.%, ... the 1,3-dioxolane constituent ... are within the range of from 2.0 to 6.0 wt.% with respect to the numerical ranges of a preferable content." (column 4, line 48 to column 5, line 10). Therefore, it can be said that the invention according to Claim 6 is formally described in the Detailed Description of the Invention.

##### (B) Solution to the problem to be solved by the Invention

##### (B-1) Inventions according to Claims 1 to 8

The Detailed Description of the Invention discloses that a solvent composition consisting of 96.5 wt.% n-propyl bromide, 2.5 wt.% 1,3-dioxolane, 0.5 wt.% 1,2-butylene oxide, and 0.5 wt.% nitromethane was used in the examples, and a coupon of aluminum alloy, magnesium, and titanium was immersed into this solvent composition while maintaining a reflux into the solvent composition during the immersion period,

and 24 hours after recycling the coupon, no corrosion was observed (column 6, lines 16 to 33).

Consequently, "a solvent composition consisting of 96.5 wt.% n-propyl bromide, 2.5 wt.% 1,3-dioxolane, 0.5 wt.% 1,2-butylene oxide, and 0.5 wt.% nitromethane" described in the Examples is obviously encompassed into the invention according to Claim 1 or 6, and it is supported that the composition does not include "1,4-dioxane" with a health concern, nor does it cause metal corrosion in a test condition shown in the above examples. Further, the Detailed Description of the Invention does not describe any example using a solvent composition free of such stabilizer compared in the same condition as shown in the above examples, nor does it explicitly describe the effects of the delay of metal corrosion compared to a solvent free of stabilizer; however, in view of the description of the specification that "if n-propyl bromide is used in vapor cleaning systems, then stabilization is necessary. The higher temperatures; say 69-71°C, can lead to the corrosion of metals such as steel, aluminum, titanium, and magnesium." and the description of Evidence A No. 3, it can be seen as obvious that metal corrosion of aluminum takes place in 10 to 20 minutes in a condition where n-propyl bromide does not contain a stabilizer. Therefore, it can be recognized from the above examples in reference to this common technical knowledge that the delaying effects of metal corrosion on a solvent free of stabilizer in this use condition may be caused.

Consequently, a person skilled in the art could recognize from the Detailed Description of the Invention and the common technical knowledge that the problem to be solved by the Invention "to provide a deterging solvent with low toxicity comprising n-propyl bromide as a deterging solvent, wherein n-propyl bromide causing the delay of metal corrosion (in a certain use condition)" might be solved.

Further, it is hard to think on the basis of the common technical knowledge that only one point of the above example causes effects with regard to the contents of "nitroalkane," "1,2-butylene oxide," and "1,3-dioxolane." Within a certain range including the contents of stabilizers shown in the examples, a person skilled in the art could recognize that the problem to be solved by the Invention might be solved.

Further, the inventions according to Claims 1 and 6 both include the matter specifying the invention of "stabilized solvent composition." This "stabilized solvent composition" is assumed to have a meaning of "a solvent composition that causes the delay of metal corrosion in a certain use condition," as discussed in the above item 1(3). Therefore, it is not a "stabilized solvent composition" unless the problem of "causing the delay of metal corrosion" may be solved as a result by a composition falling out of the numerical ranges described in the preferable range of the content of stabilizer, in particular below the lower limit, and it is recognized that it is not covered by the invention according to Claim 1 or 6 and the inventions according to Claims 2 to 5 and 7 to 8 depending therefrom.

Consequently, even if the contents of the stabilizers of "nitroalkane," "1,2-butylene oxide," and "1,3-dioxolane" were not defined in Claim 1; further even if the effects were not achieved in a similar manner to the examples across the overall ranges of the contents of each component of the stabilizers of "nitroalkane," "1,2-butylene oxide," and "1,3-dioxolane" recited in Claim 6, for such a reason, it cannot be said that the inventions according to Claims 1 to 8 of the Patent may fail to solve the problem to be solved by the Invention.

(B-2) Inventions according to Claims 9 and 10

The inventions according to Claims 9 and 10 do not include the matters specifying the invention of "stabilized solvent composition."

In this regard, in summary, the demandee argues that the inventions according to Claims 9 and 10 comprise the same solvent portion and the same stabilizer system portion as the solvent portion (comprising at least 90 wt.% n-propyl bromide) and the stabilizer system portion (comprising nitroalkane, 1,2-butylene oxide and 1,3-dioxolane, but free of 1,4-dioxane) that constitute a solvent composition according to the inventions according to Claims 1 to 8, and thus these inventions are "stabilized" in a similar manner to the solvent composition according to the inventions according to Claims 1 to 8, and further, it is obvious to a person skilled in the art that the inventions according to Claims 9 and 10 are method inventions of stabilized solvent composition of the inventions according to Claims 1 to 8 (Oral proceedings statement brief, page 54, line 28 to page 55, line 17).

As aforementioned, however, the inventions according to Claims 1 to 8 cause the effects of "being stabilized" because they have the matter specifying the invention of "stabilized solvent composition." The inventions according to Claims 9 and 10 not including the matter specifying the invention may encompass one falling out of the numerical ranges described as the preferable ranges of the contents of stabilizers, in particular, falling below the lower limit of the preferable range. Therefore, it is obvious that such compositions may not necessarily solve the problem to "cause the delay of metal corrosion." Furthermore, Claims 9 and 10 are not recited by citing "solvent composition" of Claims 1 to 8. Thus it cannot be said that the inventions according to Claims 9 and 10 are the method inventions of "stabilized solvent composition," which is the invention according to Claims 1 to 8 that includes the matter specifying the invention of "stabilized solvent composition."

Consequently, the demandee's allegation is not acceptable, and thus it cannot be said that the inventions according to Claims 9 and 10 of the Patent may solve the problem to be solved by the Invention within the overall range.

B The specification of "includes 94 to 98 wt.% n-propyl bromide" in Claims 5 and 8

(A) Comparison between the recitation of the Claims and the Detailed Description of the Invention

The invention according to Claim 5 of the Patent is "the solvent composition of Claim 1, wherein the solvent portion includes 94 to 98 wt.% n-propyl bromide."

The invention according to Claim 8 of the Patent is "the solvent composition of Claim 1, wherein the solvent portion includes 94 to 98 wt.% n-propyl bromide."

On the other hand, the Detailed Description of the Invention discloses that "the n-propyl bromide could be 94-97 wt.% the solvent composition." (publication, column 5, lines 30 to 32), however, it fails to disclose "the n-propyl bromide could be 94-98 wt.% the solvent composition." Further, to "include 97 to 98 wt.%" n-propyl bromide is not described in the Detailed Description of the Invention.

The Detailed Description of the Invention describes "includes at least 90 wt.% n-propyl bromide." The numerical range of "includes at least 90 wt.%" encompasses the numerical range of "includes 94 to 98 wt.%" The technical concept of "includes 94 to 98 wt.%" corresponds to the specific concept of the technical concept of "includes at least 90 wt.%" ; however, it must be said that the inventions represented by more

specific concept and generic concept are different from each other as a technical concept.

Consequently, the Detailed Description of the Invention fails to describe, first of all, the matters specifying the invention of "the solvent portion includes 94 to 98 wt.% n-propyl bromide" for the invention according to Claim 5 or 8. It cannot be said that the invention according to Claim 5 or 8 is "the invention described in the Detailed Description of the Invention."

(B) Demandee's argument

(B-1) Summary of the argument

In summary, the demandee generally argues as in the following (oral proceedings statement brief, page 53, line 18 to page 54, line 27):

The terms "includes 94 to 98 wt.% n-propyl bromide" of the inventions according to Claim 5 and 8 obviously correspond to "the n-propyl bromide could be 94-97 wt.% solvent composition" of the specification of the Patent. The specification discloses that "will contain 90-92 wt.% n-propyl bromide, 4-6 wt.% iso-propyl bromide, 0.25-1.0 wt.% nitromethane, 0.25-1.0 wt.% 1,2-butylene oxide, and 2.0-6.0 wt.% 1,3-dioxolane," and "If the n-propyl oxide is of high purity, then the n-propyl bromide could be 94-97 wt.% solvent composition." In this context, "high purity" means being completely free of isopropyl bromide. Consequently, it is expected and substantially described that high purity n-propyl bromide is contained in an amount of 90 to 92 wt.% + 4 to 6 wt.%; i.e., 94 to 98 wt.%.

Further, the specification discloses that "The amount of nitroalkane used will generally be within the range of from 0.25 to 1.0 wt.%. ... The 1,2-butylene oxide constituent will generally be present in an amount within the range of from 0.045 to 1.0 wt.%, ... the 1,3-dioxolane constituent ... are within the range of from 0.1 to 10 wt.%", and when the lowest amounts of nitroalkane, 1,2-butylene oxide and 1,3-dioxolane are selected, the content of n-propyl bromide is 97.91 wt.%, which amounts to 98 wt.% in terms of significant digits. Thus the specification substantially discloses that the uppermost limit of n-propyl bromide is 98 wt.%.

(B-2) Consideration of the argument

The Detailed Description of the Invention of the specification fails to describe that "high purity n-propyl bromide" is completely free of isopropyl bromide, nor does it disclose that all amounts of isopropyl bromide may be replaced with n-propyl bromide. Thus there is no reason to adopt the sum of the upper limit of the contents of n-propyl bromide and isopropyl bromide for the upper limit in the case where n-propyl bromide is solely used.

Similarly when the lowest amounts of nitroalkane, 1,2-butylene oxide and 1,3-dioxolane are selected, the content of n-propyl bromide could be 98 wt.% in terms of significant digits, but there is no reason to select the case where the lowest amounts of nitroalkane, 1,2-butylene oxide, and 1,3-dioxolane as the upper limit of n-propyl bromide are contained but the bromide as amount of high purity n-propyl bromide completely free of the other component.

Further, in the above item 1(2)G, we have mentioned that the upper limit value of "n-propyl bromide" of Claim 8 of "98 wt.%" does not contradict with the case where the lowest amounts of nitroalkane, 1,2-butylene oxide, and 1,3-dioxolane are selected.



The consistency of the recitation of the claims has nothing to do with the fact that the Detailed Description of the Invention discloses that the content of n-propyl bromide could be "94-98 wt.%."

Therefore, the above allegation by the demandee cannot be accepted.

#### (5) Summary

As seen above, it cannot be recognized that the inventions according to Claims 5, 8 to 10 are described in the Detailed Description of the Invention, and the recitation of the Claims does not conform to Article 36(6)(i) of the Patent Act, and the Patent was granted for a patent application that did not satisfy the requirement of Article 36(6) of the Patent Act.

### 3 Invalidation Reason 8 (Article 36(4) of the Patent Act)

#### (1) Invalidation Reasons argued by the demandant

The Invalidation Reason 8 argued by the demandant is summarized as below: (Written demand, page 79, line 11 to page 80, line 11, Oral proceedings statement brief, page 34, lines 5 to 14)

Claim 1 fails to define the contents of "nitroalkane," "1,2-butylene oxide," and "1,3-dioxolane" as a stabilizer. Therefore, it is highly likely that the effect of the Invention would not be caused in numerical ranges out of the numerical ranges described as the preferable ranges of these compounds; in particular, below the lower limits.

The invention of Claim 6 includes the matters specifying the invention that the stabilizer system portion "includes 0.045 to 1.0 wt.% nitroalkane, 0.045 to 1.0 wt.% 1,2-butylene oxide, and 2.0 to 6.0 wt.% 1,3-dioxolane." The lower limit is one-tenth that of the examples. It is highly likely that the effect of the Invention would not be caused with such a value.

The examples of the Detailed Description of the Invention are only one example. It cannot be said that the solvent composition of the Invention including a range unlikely to cause the effect of the invention is an ideal composition. It requires undue trial and error for a person skilled in the art to obtain a "deterging solvent" that achieves desired effects of the invention.

The inventions recited in Claims 9 and 10 do not include the matters specifying the invention of "stabilized." Thus the solvent composition causing metal to corrode also becomes a target; however, the Detailed Description of the Invention only describes one example. Thus it is unlikely to cause the effects, and requires undue trial and error for a person skilled in the art to obtain a "deterging solvent" that achieves the desired effect of the Invention.

#### (2) Construction of Article 36(4) of the Patent Act

Article 36(4) of the Patent Act specifies that "the Detailed Description of the Invention of the item (iii) of the preceding paragraph should disclose definitely and sufficiently to the extent that allows those who has an expert knowledge in the technical field to implement the invention pursuant to the Ordinance of Ministry of International Trade and Industry." The paragraph specifies so-called enablement requirement of the specification. In a product invention, it requires a specific description of a method for manufacturing the product in the Detailed Description of the Invention, or otherwise

requires a person skilled in the art to be able to manufacture the product without undue trial and error on the basis of the description of the specification and the drawings and the common technical knowledge as of the filing.

Further, in a method invention, it requires a specific description of implementing the method in the Detailed Description of the Invention, or otherwise requires a person skilled in the art to be able to implement the method without undue trial and error on the basis of the description of the specification and the drawings and the common technical knowledge as of the filing.

### (3) Determination

#### A Description of the Detailed Description of the Invention

The Detailed Description of the Invention describes the following matters:

##### "Examples

A solvent composition was prepared by mixing the following ingredients together: 96.5 wt.% n-propyl bromide; 2.5 wt.% 1,3-dioxolane; 0.5 wt.% 1,2-butylene oxide; 0.5 wt.% nitromethane.

Aluminum alloy (2024), magnesium (AZ-31B), and titanium (MIL-T-9046) test coupons were polished with emery cloth until bright, shiny, and free of tarnish. The polished coupons were then washed with soap, followed by rinsing with distilled water. The rinsed coupons were dried with acetone without being handled by bare hands. The dried coupons were then immersed in the solvent composition for 24 hours. The solvent composition was maintained at reflux during the immersion period. After the 24-hour period, the coupons were recovered, cooled, and visually examined for corrosion. No corrosion was observed." (column 6, lines 16 to 33).

#### B Judgment

##### (A) The inventions according to Claims 1 to 8

The Detailed Description of the Invention describes the aforementioned examples, and thereby specifically describes "a solvent composition" corresponding to the inventions according to Claims 1 to 3, 5, 6 and 8. Therefore, it can be said that a part of the inventions for which a patent is sought recited at least in Claims 1 to 3, 5, 6, and 8 may be specifically manufactured.

Further, the Detailed Description of the Invention discloses that "The nitroalkane constituent of the solvent system ... The amount of nitroalkane used will generally be within the range of from 0.045 to 1.0 wt.%. ... The 1,2-butylene oxide constituent will generally be present in an amount within the range of from 0.045 to 1.0 wt.%, ... the 1,3-dioxolane constituent ... are within the range of from 2.0 to 6.0 wt.%" with respect to the numerical ranges of a preferable content of each stabilizer of solvent composition (column 4, line 48 to column 5, line 10). It would not require undue trial and error for a person skilled in the art to conduct an experiment in a similar manner to the examples with reference to such a numerical range, and experimentally determine a numerical range in which the effect of "delay of metal corrosion" is achieved.

Regarding the inventions according to Claims 4 and 7, the examples are not described in the Detailed Description of the Invention; however, the Detailed Description of the Invention discloses that "A typical solvent composition in which the n-propyl bromide used is not particularly pure, will contain 90-92 wt.% n-propyl

bromide, 4-6 wt.% iso-propyl bromide, 0.25-1.0 wt.% nitromethane, 0.25-1.0 wt.% 1,2-butylene oxide, and 2.0-6.0 wt.% 1,3-dioxolane." (column 5, lines 24 to 30). Therefore, it can be said that "a solvent composition" of the invention according to Claims 4 and 7 may be manufactured with reference to this description. Further, within this range, it would not require undue trial and error for a person skilled in the art to conduct an experiment in a similar manner to the examples with reference to range, and experimentally determine a numerical range in which the effect of "delay of metal corrosion" is achieved.

(B) The inventions according to Claims 9 and 10

The invention according to Claim 9 is "A process comprising immersing the article in a solvent composition comprising the stabilizer system portion at a temperature in a temperature range from room temperature to 55°C," and the examples are not described in the Detailed Description of the Invention; however, the Detailed Description of the Invention discloses that "Experimental work shows that n-propyl bromide can be used in both cold and vapor cleaning systems. Surprisingly, it has been learned that n-propyl bromide is fairly stable when used at low temperatures; say temperatures up to 55°C. Tests have shown that in cold cleaning systems, n-propyl bromide needs little, if any, stabilization." (column 3, lines 28 to 34). It is thus obvious from common technical knowledge of a person skilled in the art that a result of "no metal corrosion" may be obtained in a similar manner to the examples even if it is deterged in a temperature range from room temperature to 55°C, which is lower than that of the examples. Further, Evidence A No. 3 discloses that "n-propyl bromide and isopropyl bromide are ... found also defects in that the reactivity of these solvents with metals, particularly aluminum and its alloys is extremely high ... this reaction occurs even at ambient temperature" (see [0004]). It can thus be seen from this that aluminum corrodes when only n-butyl bromide without stabilizer is used for deterging metal in a range of room temperature to 55°C. Further, a person skilled in the art could recognize in view of such common technical knowledge that the effect of the delay of metal corrosion would be achieved even when an article was immersed into a solvent composition "which comprises: a solvent portion which includes at least 90 wt.% n-propyl bromide; and a 1,4-dioxane-free stabilizer system portion which includes nitroalkane, 1,2-butylene oxide, and 1,3-dioxolane" in a range of room temperature to 55°C, like the invention according to Claim 9. It is not recognized that it would require undue trial and error for a person skilled in the art to conduct an experiment with reference to this temperature range and the aforementioned preferable range of contents of stabilizer system portion, and experimentally determine a numerical range in which the delaying effect of metal corrosion is achieved.

The invention according to Claim 10 is "a process comprising exposing the article to the vapor emanating from a boiling body of a solvent composition." In the above examples, a reflux was implemented with a metallic piece of deterging target being immersed into a solvent composition. Thus it is indefinite as to whether "the article is exposed to the vapor emanating from a boiling body of a solvent composition." As Evidence A No. 18 (JIS K1600-1981) discloses that "To a conical flask there is added 200 ml of sample. In this there is immersed a sample piece A, and a sample piece B is attached to the bottom part of a Liebig condenser ... and the sample is subjected to heat reflux with a light bulb and the flow rate of cooling water is adjusted so that the

sample may condense at a height not more than half that of the Liebig condenser." (page 10, lines 2 to 6), and it was a matter of common technical knowledge to also attach a metallic piece to the bottom part of the condenser where the sample (solvent composition) was refluxed (as a result the metallic piece is placed in a vapor phase of the solvent composition) and to observe corrosion state while refluxing the solvent composition. Thus in a similar manner to this, one could confirm the presence or the absence of metal corrosion by placing the metallic piece. Further, if the examples of the Detailed Description of the Invention disclose a status where a metallic piece was immersed into a solvent composition boiling by reflux, it can be seen as a part of boiled vapor contacting with a metallic piece in the form of bubbles, etc. Therefore, it can be assumed that the status is substantially identical to a status where vapor diffuses from a boiling source. Exposing the article to the vapor diffusing from a boiling source of the solvent composition "which comprises: a solvent portion which includes at least 90 wt.% n-propyl bromide; and a 1,4-dioxane-free stabilizer system portion which includes nitroalkane, 1,2-butylene oxide, and 1,3-dioxolane," it is sufficiently understood that the effects of the delay of metal corrosion are caused. It does not require undue trial and error for a person skilled in the art to conduct an experiment with reference to the aforementioned test condition and the aforementioned preferable ranges of the contents of stabilizers, and experimentally determine numerical ranges in which the delaying effects of metal corrosion is achieved.

Further, although a part of the scope of the inventions according to Claims 9 and 10 may include a range of solvent composition that does not cause the delaying effects of metal corrosion as discussed in the above item 2(4)A(B)(B-2), this fact does not directly lead to the necessity of undue trial and error for a person skilled in the art to implement the inventions according to Claims 9 and 10 that cause the delaying effects of metal corrosion.

#### (4) Summary

As seen above, it is recognized that the Detailed Description of the Invention discloses definitely and sufficiently to the extent that allows a person skilled in the art to implement the inventions according to Claims 1 to 10, and thus it cannot be said that the Patent was granted for a patent application that did not satisfy the provision of Article 36(4) of the Patent Act.

#### 4 Invalidation Reason 1 (Article 29-2 of the Patent Act)

##### (1) The Invention

The inventions according to Claims 1 to 10 of the Patent (hereinafter referred to as "the Invention 1" to "the Invention 10," and collectively referred to as "the Invention") are as recited in Claims 1 to 10 of the scope of the claims, as shown in the above "No. 2,"

As mentioned in the above item 1(3), however, a determination is made, given that "a stabilized solvent composition" means "a solvent composition" that may cause "a delay of metal corrosion" in a certain use condition.

Further, the finding of the Invention can also apply to the Invalidation Reason 2 to 6.

##### (2) Description of Evidence A No. 1 (Evidence A No. 2) and Evidence A No. 11

A Description of Evidence A No. 1 (Evidence A No. 2)

The specification originally attached to the application of Japanese Patent Application No. H08-85268 (Japanese Unexamined Patent Application Publication No. H08-337795) involving the claim of priority (Japanese Patent Application No. H07-86888) before the priority date of the Patent (Evidence A No. 1; hereinafter referred to as "the specification of earlier application," and the specification originally attached to the application of earlier application on which the priority benefit is based (Evidence A No. 2) is referred to as "Priority specification") has the following matters:

Note that the following description is on the basis of the specification of earlier application, and the description of the specification of earlier application differing from the description of the specification of the application on which priority claims are based is shown by parentheses ({} ) for the description of the specification of the application on which priority claims are based:

(1-a) "[Claim 3] A stabilized 1-bromopropane composition of Claim 1 {no description of "of Claim 1"}, comprising 100 weight parts of 1-bromopropane, 0.1 to 1 weight part of nitromethane and 0.1 to 1 weight part of 1,2-butylene oxide." (Priority specification, [Claim 1])

(1-b) "[0006] This decomposition reaction of 1-bromopropane in contact with metal differs depending on the kind of metal, in particular the reaction significantly proceeds in the case of aluminum. Further at ambient temperature, the reaction proceeds very slowly; however, in heating condition, the decomposition proceeds like a chain reaction, while generating hydrogen bromide, and finally vigorously corrodes aluminum to change into a blackish tarry substance. Therefore, when 1-bromopropane is used for the cleaning, etc. of various metal parts, it is an essential requirement to suppress the decomposition reaction of 1-bromopropane that is induced by various metals, in particular aluminum, and stabilize 1-bromopropane in order to prevent the corrosion of an article to be cleaned or a cleaning apparatus." (Priority specification, [0006])

(1-c) "[0013] For example, when nitromethane is solely used, the decomposition reaction due to the contact with metal is suppressed, but in a condition of repetitive use for a long period at a high temperature such as vapor cleaning, moisture in 1-bromopropane and 1-bromopropane react to generate hydrogen bromide gas, which results in the corrosion of metals. Further, when 1,2-butylene oxide or trimethoxymethane is solely used, no stabilizing effect is observed. Specifically {Specifically}, it is supposed that nitromethane suppresses the decomposition reaction due to the contact with metals, and 1,2-butylene oxide or trimethoxymethane captures hydrogen bromide gas to stabilize. Therefore {Therefore}, it is not until the combination of two-component stabilizer of the present invention with 1-bromopropane that a solvent exhibits a stabilizing effect on metals such as zinc, iron, and copper, let alone aluminum. It maintains effective stability particularly in a condition of repetitive use for a long period at a high temperature like vapor cleaning. Further, it maintains the effective stability in ambient temperature cleaning." (Priority specification, [0012])

(1-d) "[0015] Further, the stabilizers suggested by the present invention may be used in combination with the other various stabilizers. They may be used, for example, in combination with a stabilizer selected from cyclic ethers such as 1,4-dioxane, 1,3-dioxolane, and 1,3,5-trioxane, linear ethers such as 1,2-dimethoxyethane, saturated alcohols such as isopropylalcohol, tert-butylalcohol, and tert-amylalcohol, unsaturated alcohols such as 2-methyl-3-butyn-2-ol, phenols such as phenol, thymol, 2,6-di-tert-

butyl-p-cresol, and catechol, and thiocyanate esters such as methyl thiocyanate and ethyl thiocyanate." (Priority specification, [0015])

(1-e) "[0018] Example 1 To a 50 ml glass-made test tube there was added 10 ml of 1-bromopropane in which 0.5 weight part of nitromethane and 0.5 weight part of 1,2-butylene oxide on the basis of 100 weight parts of 1-bromopropane. One piece of an aluminum sample piece (Standard: JIS A-1100P; Size: 13 mm\*65 mm\*3 mm) with well-polished surfaces was sufficiently cleaned, dried and placed in the test tube so as to be located across a liquid phase and a gas phase. To the top part of this test tube there was attached an air cooler, and the test tube was subjected to heat reflux in an oil bath. To the air cooler attached to a pH tester, and after heat reflux for 96 hours, the tube was cooled to a room temperature to take out a sample piece, and the corrosion state of the sample piece and the degree of coloring of a liquid phase were observed, and further generation of hydrogen bromide gas was confirmed by the pH tester. The composition of stabilizer on 100 weight parts of 1-bromopropane and the test result are shown in Table 1.

[0019]

試験番号	安定剤組成 (重量部) <sup>1)</sup>			試験の状態		酸性ガスの発生
	ニトロメタン	1,2-ブチレンオキサイド	トリメトキシメタン	試験片	試験液	
実施例 1	0.5	0.5	—	◎	◎	○
実施例 2	0.5	0.1	—	◎	◎	○
実施例 3	0.25	0.5	—	◎	◎	○
実施例 4	0.5	1	—	◎	◎	○
実施例 5	0.5	5	—	◎	◎	○
実施例 6	1	0.5	—	◎	◎	○
実施例 7	3	0.5	—	◎	◎	○
実施例 8	3	3	—	◎	◎	○
実施例 9	5	0.5	—	◎	◎	○
実施例 10	0.25	—	0.5	◎	◎	○
実施例 11	0.5	—	0.1	◎	◎	○
実施例 12	0.5	—	0.5	◎	◎	○
実施例 13	0.5	—	1	◎	◎	○
実施例 14	0.5	—	5	◎	◎	○
実施例 15	1	—	0.5	◎	◎	○
実施例 16	3	—	0.5	◎	◎	○
実施例 17	3	—	3	◎	◎	○
実施例 18	5	—	0.5	◎	◎	○
比較例 1	—	—	—	×	×	×
比較例 2	0.5	—	—	○	◎	×
比較例 3	1	—	—	○	◎	×
比較例 4	3	—	—	○	◎	×
比較例 5	—	3	—	×	×	×
比較例 6	—	0.5	—	×	×	×
比較例 7	—	—	1	×	×	×
比較例 8	0.05	0.5	—	×	×	×
比較例 9	0.05	—	0.5	×	×	×

1) 1-プロモプロパン100重量部に対する安定剤の添加量 (重量部)

試験番号 Test Number

安定剤組成 (重量部) Stabilizer Composition (weight parts)

ニトロメタン Nitromethane

1, 2-ブチレンオキサイド 1,2-butylene oxide

トリメトキシメタン Trimethoxymethane

試験の状態 State of test

試験片 Sample piece

試験液 Sample liquid

酸性ガスの発生 Generation of acidic gas

実施例 Example

比較例 Comparative Example

1-プロモプロパン 100 重量部に対する安定剤の添加量 (重量部)

Additive amount of stabilizer on the basis of 100 weight parts of 1-

bromopropane (weight parts)

[Table 1]

{[Table 1]

試験番号	安定剤組成 (重量部)		試験後の状態		酸性ガスの発生
	ニトロメタン	1,2-ブチレンオキサイド	試験片	試験液	
実施例 1	0.5	0.5	◎	◎	○
実施例 2	1	0.5	◎	◎	○
実施例 3	0.25	0.5	◎	◎	○
実施例 4	0.5	0.1	◎	◎	○
実施例 5	0.5	1	◎	◎	○
比較例 1	0	0	×	×	×
比較例 2	1	0	○	◎	×
比較例 3	0.5	0	○	◎	×
比較例 4	0.25	0	○	◎	×
比較例 5	0	0.5	×	×	×
比較例 6	0.05	0.5	×	×	×

試験番号 Test Number

安定剤組成 (重量部) Stabilizer Composition (weight parts)

ニトロメタン Nitromethane

1,2-ブチレンオキサイド 1,2-butylene oxide

トリメトキシメタン Trimethoxymethane



試験の状態           State of test  
試験片   Sample piece  
試験液   Sample liquid  
酸性ガスの発生   Generation of acidic gas  
実施例   Example  
比較例   Comparative Example

}

[0020] Note that the determination criteria of the appearance of aluminum test piece and the coloring of test liquid are indicated as in the following.

[0021] <Determination criteria of metal sample piece>

◎: No change at all

[0022] ○: Loss of only a small part of gloss.

[0023] △: Loss of gloss in whole.

[0024] ×: Coloring or corrosion is obviously observed in whole.

[0025] <Determination criteria of the coloring of test liquid>

◎: Transparent.

[0026] ○: Slightly colored.

[0027] △: Definitely colored.

[0028] ×: Significantly colored.

[0029] Further, the generation of hydrogen bromide gas is represented by the following symbols:

○: Not generated

×: Generated

[0030] Examples 2 to 18 {2 to 5}, Comparative Examples 1 to 9 {1 to 6}

A test of 1-bromopropane composition was conducted in a similar manner to Example 1, except for the change of the composition of stabilizer and the additive amounts {of nitromethane and 1,2-butylene oxide}, as suggested by the present invention. The composition of stabilizer on the basis of 100 weight parts of 1-bromopropane and the test result are collectively shown in Table 1." (Priority specification [0017] to [0023])

(1-f) "[0031] Comparative Example 10 {7} to 27{24}

A test of 1-bromopropane composition was conducted in a similar manner to Example 1, except for the change of stabilizer. The composition of stabilizer on the basis of 100 weight parts of 1-bromopropane and the test result are collectively shown in Table 2.

[0032]

[Table 2]

試験番号	安定剤		試験後の状態		酸性ガスの発生
	化合物名	添加量 <sup>1)</sup>	試験片	試験液	
比較例10	1,4-ジオキサン	3	×	×	×
比較例11	1,2-ジメトキシエタン	5	×	×	×
比較例12	アセトン	3	×	×	×
比較例13	1,3-ジオキソラン	3	◎	◎	×
比較例14	メチルエチルケトン	3	×	×	×
比較例15	sec-ブチルアルコール	3	×	×	×
比較例16	tert-ブチルアルコール	3	×	×	×
比較例17	2-メチル-3-ブチン-2-オール	3	×	×	×
比較例18	n-プロパノール	3	×	×	×
比較例19	イソプロパノール	3	×	×	×
比較例20	ジイソプロピルアミン	3	×	×	×
比較例21	トリエチルアミン	3	×	×	×
比較例22	テトラヒドロフラン	3	×	×	×
比較例23	テトラヒドロピラン	3	×	×	×
比較例24	ジイソプロピルエーテル	3	×	×	×
比較例25	酢酸エチル	3	×	×	×
比較例26	2-メトキシエタノール	3	×	×	×
比較例27	メチラール	3	×	×	×

1) 1-プロモプロパン100重量部に対する安定剤の添加量(重量部)

試験番号 Test Number

安定剤 Stabilizer

化合物名 Compound Name

添加量 Additive amounts

試験後の状態 State after test

試験片 Sample piece

試験液 Sample liquid

酸性ガスの発生 Generation of acidic gas

比較例 Comparative Example

1, 4-ジオキサン 1,4-dioxane

1, 2-ジメトキシエタン 1,2-dimethoxyethane

アセトン acetone

1, 3-ジオキソラン 1,3-dioxolane

メチルエチルケトン methylethylketone

sec-ブチルアルコール sec-butylalcohol

tert-ブチルアルコール tert-butylalcohol

2-メチル3-ブチン-2-オール 2-methyl-3-butyn-2-ol

n-プロパノール n-propanol

イソプロパノール isopropanol

ジイソプロピルアミン diisopropylamine

トリエチルアミン triethylamine

テトラヒドロフラン tetrahydrofuran

テトラヒドロフラン tetrahydrofuran

ジイソプロピルエーテル diisopropylether

酢酸エチル ethyl acetate

2-メトキシエタノール 2-methoxyethanol

メチラール methylal

1-ブロモプロパン 100 重量部に対する安定剤の添加量 (重量部)

Additive amount of stabilizer on the basis of 100 weight parts of 1-bromopropane (weight parts)

試験番号	安定剤	添加量	試験後の状態		酸性ガスの発生
		重量部	試験片	試験液	
比較例 7	1,4-ジオキサン	3	×	×	×
比較例 8	1,2-ジメトキシエタン	5	×	×	×
比較例 9	アセトン	3	×	×	×
比較例 10	1,3-ジオキソラン	3	◎	◎	×
比較例 11	メチルエチルケトン	3	×	×	×
比較例 12	sec-ブチルアルコール	3	×	×	×
比較例 13	tert-ブチルアルコール	3	×	×	×
比較例 14	2-メチル-3-ブチン-2-オール	3	×	×	×
比較例 15	n-プロパノール	3	×	×	×
比較例 16	イソプロパノール	3	×	×	×
比較例 17	ジイソプロピルアミン	3	×	×	×
比較例 19	テトラヒドロフラン	3	×	×	×
比較例 20	テトラヒドロピラン	3	×	×	×
比較例 21	ジイソプロピルエーテル	3	×	×	×
比較例 22	酢酸エチル	3	×	×	×
比較例 23	2-メトキシエタノール	3	×	×	×
比較例 24	メチラー	3	×	×	×

試験番号

Test Number

安定剤	Stabilizer
添加量	Additive amounts
重量部	Weight part
試験後の状態	State after test
試験片	Sample piece
試験液	Sample liquid
酸性ガスの発生	Generation of acidic gas
比較例	Comparative Example
1, 4-ジオキサン	1,4-dioxane
1, 2-ジメトキシエタン	1,2-dimethoxyethane
アセトン	acetone
1, 3-ジオキソラン	1,3-dioxolan
メチルエチルケトン	methylethylketone
sec-ブチルアルコール	sec-butylalcohol
tert-ブチルアルコール	tert-butylalcohol
2-メチル3-ブチン-2-オール	2-methyl-3-butyne-2-ol
n-プロパノール	n-propanol
イソプロパノール	isopropanol
ジイソプロピルアミン	diisopropylamine
トリエチルアミン	triethylamine
テトラヒドロフラン	tetrahydrofuran
テトラヒドロピラン	tetrahydropyran
ジイソプロピルエーテル	diisopropylether
酢酸エチル	ethyl acetate
2-メトキシエタノール	2-methoxyethanol
メチラール	methylal

} (Priority specification [0024], [0025])

(1-g) "[0033] Example 19 {6}

To a 100 ml glass-made conical flask there was added 50 ml of 1-bromopropane composition in which 0.5 weight part of nitromethane and 0.5 weight part of 1,2-butylene oxide were added on the basis of 100 weight parts of 1-bromopropane. One metal sample piece (size: 13 mm\*65 mm\*3 mm) with sufficiently polished surfaces was sufficiently cleaned, dried, and placed in the flask across a liquid phase and a gas phase. To the top part of this conical flask there was attached a reflux condenser, and the flask was heated to a boiling temperature in a water bath to cause the sample piece to come in contact with both liquid and gas phases under a reflux condition. After heat reflux for 140 hours, the flask was cooled to room temperature to take out a sample piece, and the corrosion state of the sample piece and the degree of coloring of the liquid phase were observed, and further generated acid content (hydrogen bromide) was quantified by titration. The composition of stabilizer on the basis of 100 weight parts of 1-bromopropane (weight parts) is shown in Table 3, and the test result is shown in Table 4.

[0034]  
[Table 3]

試験番号	安定剤組成 (重量部) <sup>1)</sup>									
	ニトロメタン	1,2-ブチレンオキサイド	トリメトキシメタン	ニトロエタン	1,4-ジオキササン	1,2-ジメトキシエタン	2-メトキシエタノール	トリエタノールアミン	N,N-ジイソプロピルエチルアミン	チオシア酸メチル
実施例 19	0.5	0.5	—	—	—	—	—	—	—	—
実施例 20	0.25	0.5	—	—	—	—	—	—	—	—
実施例 21	0.5	0.1	—	—	—	—	—	—	—	—
実施例 22	0.5	1	—	—	—	—	—	—	—	—
実施例 23	0.5	5	—	—	—	—	—	—	—	—
実施例 24	1	0.5	—	—	—	—	—	—	—	—
実施例 25	3	0.5	—	—	—	—	—	—	—	—
実施例 26	3	3	—	—	—	—	—	—	—	—
実施例 27	5	0.5	—	—	—	—	—	—	—	—
実施例 28	0.25	—	0.5	—	—	—	—	—	—	—
実施例 29	0.5	—	0.1	—	—	—	—	—	—	—
実施例 30	0.5	—	0.5	—	—	—	—	—	—	—
実施例 31	0.5	—	1	—	—	—	—	—	—	—
実施例 32	0.5	—	5	—	—	—	—	—	—	—
実施例 33	1	—	0.5	—	—	—	—	—	—	—
実施例 34	3	—	0.5	—	—	—	—	—	—	—
実施例 35	3	—	3	—	—	—	—	—	—	—
実施例 36	5	—	0.5	—	—	—	—	—	—	—
実施例 37	0.2	0.5	—	—	—	—	—	—	—	0.01
実施例 38	0.2	0.5	—	—	—	—	—	—	—	0.1
比較例 28	—	—	—	—	—	—	—	—	—	—
比較例 29	0.5	—	—	—	—	—	—	—	—	—
比較例 30	—	0.5	—	—	—	—	—	—	—	—
比較例 31	—	—	0.5	—	—	—	—	—	—	—
比較例 32	0.05	0.5	—	—	—	—	—	—	—	—
比較例 33	—	0.5	—	—	—	0.5	—	—	—	—
比較例 34	—	0.5	—	—	0.5	—	—	—	—	—
比較例 35	2	—	—	—	—	1	—	—	—	—
比較例 36	2	—	—	—	—	—	—	1	—	—
比較例 37	2	—	—	—	—	—	—	—	1	—
比較例 38	—	0.5	—	0.5	—	—	—	—	—	—
比較例 39	—	0.5	—	1	—	—	—	—	—	—
比較例 40	—	0.5	—	3	—	—	—	—	—	—
比較例 41	0.2	0.5	—	—	3	—	—	—	—	—
比較例 42	—	—	—	2	—	—	0.5	—	—	—
比較例 43	—	—	—	2	—	—	—	—	0.5	—
比較例 44	—	—	—	2	—	—	0.5	—	0.1	—

1) 1-プロモプロパン100重量部に対する安定剤の添加量 (重量部)

試験番号                      Test Number  
安定剤組成 (重量部)              Stabilizer Composition (weight parts)  
ニトロメタン                      Nitromethane  
1, 2-ブチレンオキサイド              1,2-butylene oxide  
トリメトキシメタン                      Trimethoxymethane  
ニトロメタン                      Nitroethane

1, 4-ジオキサン 1,4-dioxane  
1, 2-ジメトキシエタン 1,2-dimethoxyethane  
2-メトキシエタノール 2-methoxyethanol  
トリエタノールアミン Triethanolamine  
N, N-ジイソプロピルエチルアミン N,N-diisopropylethylamine  
チオシアン酸メチル methyl thiocyanate

実施例 Example

比較例 Comparative Example

1-ブロモプロパン 100重量部に対する安定剤の添加量 (重量部)  
Additive amount of stabilizer on the basis of 100 weight parts of 1-bromopropane (weight parts)

{[Table 3]}

試験番号	安定剤組成 (重量部)					
	ニトロメタン	ニトロエタン	1, 2-ブチレン オキサイド	2-メトキシエタ ノール	N, N-ジイソプロ ピルエチルアミン	チオシアン 酸メチル
実施例 6	0. 5	—	0. 5	—	—	—
実施例 7	1	—	0. 5	—	—	—
実施例 8	0. 2 5	—	0. 5	—	—	—
実施例 9	0. 5	—	0. 1	—	—	—
実施例 1 0	0. 5	—	1	—	—	—
実施例 1 1	0. 2	—	0. 5	—	—	0. 0 1
実施例 1 2	0. 2	—	0. 5	—	—	0. 1
比較例 2 5	—	—	—	—	—	—
比較例 2 6	0. 5	—	—	—	—	—
比較例 2 7	—	—	0. 5	—	—	—
比較例 2 8	—	2. 0	—	0. 5	—	—
比較例 2 9	—	2. 0	—	—	0. 5	—
比較例 3 0	—	2. 0	—	0. 5	0. 1	—

試験番号

Test Number

安定剤組成 (重量部)

Stabilizer Composition (weight parts)

ニトロメタン Nitromethane

ニトロメタン Nitroethane

1, 2-ブチレンオキサイド 1,2-butylene oxide



2-メトキシエタノール 2-methoxyethanol  
N, N-ジイソプロピルエチルアミン N,N-diisopropylethylamine  
チオシアン酸メチル methyl thiocyanate  
実施例 Example  
比較例 Comparative Example

}  
[0035]  
[Table 4]

試験番号	アルミニウム			亜鉛			鉄			銅		
	試験後の状態		H B r 濃度 (ppm)	試験後の状態		H B r 濃度 (ppm)	試験後の状態		H B r 濃度 (ppm)	試験後の状態		H B r 濃度 (ppm)
	試験片	試験液		試験片	試験液		試験片	試験液		試験片	試験液	
実施例 1 9	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 2 0	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 2 1	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 2 2	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 2 3	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 2 4	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 2 5	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 2 6	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 2 7	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 2 8	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 2 9	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 3 0	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 3 1	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 3 2	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 3 3	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 3 4	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 3 5	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 3 6	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 3 7	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 3 8	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
比較例 2 8	×	×	注1)	×	×	注1)	△	○	0	△	○	0
比較例 2 9	○	◎	10	○	◎	10	○	◎	10	△	○	10
比較例 3 0	×	×	注1)	×	○	34	○	◎	0	△	○	24
比較例 3 1	×	×	注1)	○	◎	0	○	◎	0	○	◎	0
比較例 3 2	×	×	注1)	×	○	10	○	○	0	○	○	0
比較例 3 3	×	×	注1)	×	○	10	○	○	0	○	○	0
比較例 3 4	×	×	注1)	×	×	注1)	△	○	10	△	○	0
比較例 3 5	◎	◎	10	×	○	34	×	×	注1)	△	○	20
比較例 3 6	△	×	注2)	△	×	注2)	△	×	注2)	△	×	注2)
比較例 3 7	△	×	注2)	△	×	注2)	△	×	注2)	△	×	注2)
比較例 3 8	×	×	注1)	○	○	22	○	○	48	○	○	22
比較例 3 9	○	○	34	○	○	34	○	○	35	○	○	35
比較例 4 0	○	○	66	○	○	100	○	○	83	○	○	>100
比較例 4 1	○	○	30	×	○	10	△	△	10	△	△	10
比較例 4 2	△	◎	0	×	○	0	×	×	>100	×	×	注1)
比較例 4 3	×	◎	0	×	○	0	×	×	20	×	×	注1)
比較例 4 4	◎	◎	0	×	○	0	×	○	20	×	×	注1)

注1) 試験液の劣化が激しかったため、酸分測定ができなかった

注2) 試験液に沈殿が生じたため、試験を中止した

試験番号 Test Number  
アルミニウム Aluminum  
試験後の状態 State after test  
試験片 Sample piece  
試験液 Sample liquid  
H B r 濃度 HBr concentration  
亜鉛 Zinc  
鉄 Iron

銅 Copper

実施例 Example

比較例 Comparative Example

注 1) Note 1)

試験後の劣化が激しかったため酸分測定ができなかった Acid content measurement failed due to the severe deterioration after test

注 2) Note 2)

試験液に沈殿が生じたため、試験を中止した Test was stopped due to precipitation in a test liquid

{[Table 4]}

試験番号	アルミニウム			亜鉛			鉄			銅		
	試験後の状態		HBr 濃度 (ppm)	試験後の状態		HBr 濃度 (ppm)	試験後の状態		HBr 濃度 (ppm)	試験後の状態		HBr 濃度 (ppm)
	試験片	試験液		試験片	試験液		試験片	試験液		試験片	試験液	
実施例 6	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 7	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 8	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 9	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 10	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 11	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
実施例 12	◎	◎	0	◎	◎	0	◎	◎	0	◎	◎	0
比較例 25	×	×	注1)	×	○	>100	○	○	0	×	△	>100
比較例 26	○	◎	10	○	◎	10	△	◎	10	×	○	10
比較例 27	×	×	注1)	×	○	3.4	○	◎	0	×	○	2.4
比較例 28	△	◎	0	×	○	0	×	×	>100	×	×	注1)
比較例 29	×	○	0	×	○	0	×	×	20	×	×	注1)
比較例 30	◎	◎	0	×	○	0	×	○	20	×	×	注1)

注1) : 試験液の劣化が激しかったため、酸分測定ができなかった。

試験番号 Test Number

アルミニウム Aluminum

試験後の状態 State after test

試験片 Sample piece

試験液 Sample liquid

HBr 濃度 HBr concentration

亜鉛 Zinc

鉄 Iron

銅 Copper

実施例 Example

比較例 Comparative Example

注 1) Note 1)

試験後の劣化が激しかったため酸分測定ができなかった Acid content  
measurement failed due to the severe deterioration after test.  
}

[0036] Note that the materials of metal test pieces used are in the following:

[0037]

Aluminum piece: JIS A 1100P

Zinc piece: JIS Type 2 (for flat plate)

Iron piece: JIS Cold-rolled steel SPCC Copper piece: JIS Copper piece Type 1 (Normal Grade)

Further, the determination criteria of the appearance of metal test piece and the coloring of test liquid are indicated as in the following.

<Determination criteria of metal sample piece>

◎: No change at all

[0038] ○: Loss of only a small part of gloss.

[0039] △: Loss of gloss in whole.

[0040] ×: Coloring or corrosion is definitely observed in whole.

[0041] <Determination criteria of the coloring of test liquid>

◎: Transparent.

[0042] ○: Slightly colored.

[0043] △: Definitely colored.

[0044] ×: Significantly colored.

[0045] Examples 20{7} to Examples 38{12}, Comparative Examples 28{25} to Comparative Examples 44{30}.

A test of 1-bromopropane composition was conducted in a similar manner to Example 19{6}, except for the change of the composition of stabilizer and additive amounts {composition of stabilizer} as suggested by the present invention. The compositions of stabilizers on the basis of 100 weight parts of 1-bromopropane are shown in Table 3 and the test results are shown in Table 4, collectively.

[0046] As is evident from Table 3 and Table 4 {Table 4}, the 1-bromopropane composition of the present invention {used in the working examples} showed sufficient stabilizing effects on aluminum, zinc, iron, and copper. However, the combination of stabilizers shown in the Comparative Examples showed insufficient stabilizing effects; i.e. stabilizing effects were observed in one metal, whereas they were not observed in the other metal." (Priority specification [0026] to [0033])

## B Description of Evidence A No. 11

According to a publication distributed before the priority date of the Patent, "Guideline for preventing health disorder due to 1,4-dioxane" (Guideline on the basis of the provision of Article 28(3) of Industrial Safety and Health Act) (Evidence A No. 11), the following matters are described:

(11-a) "The guideline determines matters to be noted with regard to measures to be

taken by a business operator in manufacturing and handling of 1,4-dioxane in order to serve for preventing health disorder of workers due to 1,4-dioxane.

Accordingly, the guideline (the whole text) is hereby sent as in Appendix 1. It is recommended to keep the following matters in mind, aiming to inform business companies and associated trade association of the guideline at every opportunity and giving them an instruction so that proper measures to prevent health disorder due to 1,4-dioxane are taken in each workplace by taking into account the purpose of the guideline." (Introduction, lines 3 to 7)

(11-b) "In such circumstances, we focus on the carcinogenicity of 1,4-dioxane, and determine measures to be taken other than the measures to be taken in compliance with the current organic regulation for the prevention of health disorder of workers who engage in every task of manufacturing and handling a product containing 1,4-dioxane." ("No. 1 Purpose", lines 15 to 17)

(3) The Invention described in the specification of earlier application (invention of earlier application)

On the basis of the matters described in both the specification of earlier application and priority specification, the invention of earlier application is found and compared with the Inventions 1 to 3, 5, 6, 8 to 10 for determination. Hereinafter, in the determination of Invalidation Reason 1, the matters that the body simply mentioned as being described in "the specification of earlier application" are also the matters described in "Priority specification," unless otherwise pointed out.

The specification of earlier application discloses that "a stabilized 1-bromopropane composition comprising 100 weight parts of 1-bromopropane, 0.1 to 1 weight part of nitromethane and 0.1 to 1 weight part of 1,2-butylene oxide" (see point 1-a), and "two-component stabilizer of the present invention is combined with 1-bromopropane" (see point 1-b). Therefore, "nitromethane" and "1,2-butylene oxide" are "stabilizers," and "the stabilizers suggested by the present invention may be used in combination with the other various stabilizers selected from cyclic ethers such as 1,4-dioxane, 1,3-dioxolane, and 1,3,5-trioxane, linear ethers such as 1,2-dimethoxyethane, saturated alcohols such as isopropylalcohol, tert-butylalcohol, and tert-amylalcohol, unsaturated alcohols such as 2-methyl-3-butyn-2-ol, phenols such as phenol, thymol, 2,6-di-tert-butyl-p-cresol, and catechol, and thiocyanate esters such as methyl thiocyanate and ethyl thiocyanate" (see point 1-c).

Consequently, it is recognized that the specification of earlier application discloses

an invention of "a stabilized 1-bromopropane composition comprising 100 weight parts of 1-bromopropane, 0.1 to 1 weight part of nitromethane, and 0.1 to 1 weight part of 1,2-butylene oxide, and a stabilizer usable in combination includes a stabilizer selected from cyclic ethers such as 1,4-dioxane, 1,3-dioxolane, and 1,3,5-trioxane, linear ethers such as 1,2-dimethoxyethane, saturated alcohols such as isopropylalcohol, tert-butylalcohol, and tert-amylalcohol, unsaturated alcohols such as 2-methyl-3-butyn-2-ol, phenols such as phenol, thymol, 2,6-di-tert-butyl-p-cresol, and catechol, and thiocyanate esters such as methyl thiocyanate and ethyl thiocyanate" (hereinafter referred to as "Invention 1 of earlier application").

Further, the specification of earlier application discloses that "it is not until the combination of the two-component stabilizer of the present invention with 1-bromopropane that a solvent exhibits a stabilizing effect on metals such as zinc, iron, and copper, let alone aluminum. It maintains effective stability particularly in a condition of repetitive use at a high temperature like vapor cleaning" (see point 1-c), and further it describes "maintaining the effective stability in ambient temperature cleaning" (see point 1-d).

Accordingly, it is recognized that the specification of earlier application discloses

"a process utilizing a stabilized 1-bromopropane composition for vapor cleaning and cold cleaning, the 1-bromopropane composition comprising 100 weight parts of 1-bromopropane, 0.1 to 1 weight part of nitromethane, and 0.1 to 1 weight part of 1,2-butylene oxide, and a stabilizer usable in combination includes a stabilizer selected from cyclic ethers such as 1,4-dioxane, 1,3-dioxolane, and 1,3,5-trioxane, linear ethers such as 1,2-dimethoxyethane, saturated alcohols such as isopropylalcohol, tert-butylalcohol, and tert-amylalcohol, unsaturated alcohols such as 2-methyl-3-butyn-2-ol, phenols such as phenol, thymol, 2,6-di-tert-butyl-p-cresol, and catechol, and thiocyanate esters such as methyl thiocyanate and ethyl thiocyanate" (hereinafter referred to as "the Invention 2 of earlier application").

#### (4) Comparison and Determination

##### (4-1) Invention 1

###### A Comparison

Invention 1 and the Invention 1 of earlier application are compared to each other.

"1-bromopropane" and "nitromethane" of the Invention 1 of earlier application respectively correspond to "n-propyl bromide" and "nitroalkane" of Invention 1. Further, "1-bromopropane" of the invention of earlier application is "a solvent," and "1-bromopropane" and "nitromethane" are "stabilizers," and thus respectively correspond to "solvent portion" and "stabilizer system portion" of Invention 1.

Furthermore, in view of the description of the specification of earlier application discloses that "decomposition reaction of 1-bromopropane caused by contact with metal ... the decomposition proceeds like a chain reaction in a heating condition while producing hydrogen bromide... and finally vigorously corrodes aluminum ... when 1-bromopropane is used for the cleaning, etc. of various metal parts, it is an essential requirement to ... stabilize 1-bromopropane in order to prevent the corrosion of an article to be cleaned or a cleaning apparatus" (see point 1-b), 1-bromopropane corrodes aluminum in a heating condition, and thus it is construed that a composition where a stabilizer is added to prevent the corrosion of the aluminum, etc. is referred to as "stabilized 1-bromopropane composition of the Invention 1 of earlier application," and this simultaneously achieves the delaying effects of metal corrosion to the effect that "the addition of the stabilizer to a solvent makes a metal corrosion-free even at the time when metal corrosion begins in the solvent without stabilizer" in a heating condition. Therefore, it can be said to be a "stabilized solvent composition" of Invention 1.

Consequently, the two inventions have a common point in that they are "stabilized solvent compositions comprised of a solvent portion which includes n-propyl bromide; and a stabilizer system portion which includes nitroalkane, 1,2-butylene oxide," and are prima facie different in the following two points:

(i) As for "stabilizer system portion," the former "includes 1,3-dioxolane, but does not include 1,4-dioxane," whereas the latter "is capable of including a stabilizer selected from cyclic ethers such as 1,4-dioxane, 1,3-dioxolane, and 1,3,5-trioxane, linear ethers such as 1,2-dimethoxyethane, saturated alcohols such as isopropylalcohol, tert-butylalcohol, and tert-amylalcohol, unsaturated alcohols such as 2-methyl-3-butyn-2-ol, phenols such as phenol, thymol, 2,6-di-tert-butyl-p-cresol, and catechol, and thiocyanate esters such as methyl thiocyanate and ethyl thiocyanate."

(ii) The former "contains at least 90 wt.% n-propyl bromide," whereas the latter "comprises 100 weight parts of 1-bromopropane, 0.1 to 1 weight part of nitromethane, and 0.1 to 1 weight part of 1,2-butylene oxide," and the content of the other stabilizers in the latter is indefinite.

## B Consideration of difference

### (A) Consideration of the difference (i)

(A-1) Whether the embodiment of the Invention 1 of earlier application is described in the specification of earlier application

The specification of earlier application discloses that the stabilizers usable in combination are "used in combination with stabilizers selected from cyclic ethers such as 1,4-dioxane, 1,3-dioxolane, and 1,3,5-trioxane, linear ethers such as 1,2-dimethoxyethane, saturated alcohols such as isopropylalcohol, tert-butylalcohol, and tert-amylalcohol, unsaturated alcohols such as 2-methyl-3-butyn-2-ol, phenols such as phenol, thymol, 2,6-di-tert-butyl-p-cresol, and catechol, and thiocyanate esters such as methyl thiocyanate and ethyl thiocyanate" (see point 1-d).

Further, when a stabilizer usable in combination is selected, the combinatorial use of a plurality of stabilizers is required to prepare more and more kinds of stabilizers. Thus if there are several examples of components as mentioned above as a stabilizer usable in combination, it is firstly supposed to be a normal embodiment to select only one component from these exemplified components. This is supported by the single addition of "methyl thiocyanate" as a stabilizer usable in combination in Examples 37 and 38.

Consequently, it can be said that the specification of earlier application discloses an embodiment according to the invention thereto where "1,3-dioxolane" is solely added as one of the other 14 exemplified components besides the single use of "methyl thiocyanate."

Further, when "1,3-dioxolane" is solely added as a stabilizer usable in combination, which is described as one embodiment of the invention of earlier application, "1,4-dioxane" is clearly not included into a solvent composition.

(A-2) Requirement to find that difference (i) is not a substantial difference

It is recognized that the following two points need to be satisfied to find that the difference (i) is not a substantial difference.

(i-1) The embodiment of the Invention 1 of earlier application of "including only 1,3-dioxolane (free of 1,4-dioxane)" as a stabilizer usable in combination is completed as an invention (hereinafter referred to as "qualified for a completed invention").

It should be noted that "it should be construed as being necessary and sufficient to be a completed invention that the technical means is configured specifically and objectively to the extent that a skilled person in the art who has ordinary knowledge in

the technical field may repetitively implement and achieve the desired effects" (1998(Gyo-Ke)401).

Further, it can be seen from this holding that "completed invention" does not only include an invention described in working examples but also includes an invention described in comparative examples and an invention where a person skilled in the art can recognize from the whole disclosure of the specification of earlier application that the desired effects may be achieved, on the premise that the desired effects may be achieved by a technical means described in the specification of earlier application. Furthermore, the "desired effects" are achieved when certain effects are achieved, even though it should not necessarily reach a level of working examples. An invention originally described not as a working example but as a comparative example in the specification of earlier application may become an invention according to the scope of the claims by an amendment. If the description of comparative examples is not regarded as a "completed invention," such an invention filed later may not be subjected to the application of Article 29-2 of the Patent Act, which can regard the above earlier application as an earlier application with respect to the present invention, which is against the spirit of the Law.

(i-2) The fact that a composition "including 1,3-dioxolane but not including 1,4-dioxane" as a stabilizer usable in combination does not cause more significant effects compared to a composition not including a stabilizer usable in combination, or a composition including a stabilizer other than 1,3-dioxolane (methyl thiocyanate) described in the examples of the specification of earlier application (hereinafter referred to as "not qualified for a selection invention").

#### (A-3) Qualification for a completed invention

The specification of earlier application discloses Examples 19, 37, and 38 (Examples 6, 11, and 12 of priority specification) that "while refluxing" "a composition comprising stabilizers of 0.5 weight part of nitromethane and 0.5 weight part of 1,2-butylene oxide on the basis of 100 weight parts of 1-bromopropane," "a composition comprising stabilizers of 0.2 weight part of nitromethane, 0.5 weight part of 1,2-butylene oxide, and 0.01 weight part of methyl thiocyanate on the basis of 100 weight parts of 1-bromopropane" and "a composition comprising stabilizers of 0.2 weight part of nitromethane, 0.5 weight part of 1,2-butylene oxide, and 0.1 weight part of methyl thiocyanate on the basis of 100 weight parts of 1-bromopropane," "test pieces" of "aluminum piece," "zinc piece," "iron piece," and "copper piece" "were brought into contact with both a gas phase and a liquid phase," and "after heat reflux for 140 hours, the flask was cooled to a room temperature to take out the test piece, and the corrosion state of the test piece and the degree of coloring of a liquid phase were observed," and the status after the test of the "test pieces" of "aluminum piece," "zinc piece," "iron piece," and "copper piece" was "☉: No change at all" (see point 1-g).

Further, the specification of earlier application discloses that "it is supposed that nitromethane suppresses the decomposition reaction due to the contact with metals, and 1,2-butylene oxide or trimethoxymethane captures hydrogen bromide gas to stabilize. Therefore, the specification of earlier application discloses that "it is not until the combination of two-component stabilizer of the present invention with 1-bromopropane that a solvent exhibits a stabilizing effect on metals such as zinc, iron, and copper, let alone aluminum. It maintains effective stability particularly in a condition of repetitive



use for a long period at a high temperature like vapor cleaning" (see point 1-c), and further it discloses that "the stabilizers suggested by the present invention may be used in combination with various other stabilizers." Therefore, if this is construed literally, it can be seen that Invention 1 of earlier application is described in such a manner that stabilizing effects are achieved when the effective amount of two-component stabilizer of "nitromethane" and "1,2-butylene oxide" is contained, and further "the use in combination with various stabilizers" may achieve such stabilizing effects.

Further, as a specific example supporting the fact, the specification of earlier application discloses "1,3-dioxolane" as one of stabilizers usable in combination as well as "methyl thiocyanate" specifically described in Examples 37 and 38. Therefore, a person skilled in the art can recognize that "1-bromopropane composition" including "1,3-dioxolane" in addition to "nitromethane" and "1,2-butylene oxide" as stabilizers (this composition is free of 1,4-dioxane) also causes similar effects to "1-bromopropane composition" described in Examples 19, 37, and 38.

As is described in Comparative Example 41 (not described in Priority specification), when "1,4-dioxane" is selected as a stabilizer usable in combination, and "a composition comprising stabilizers of 0.2 weight part of nitromethane, 0.5 weight part of 1,2-butylene oxide, and 3 weight parts of 1,4-dioxane on the basis of 100 weight parts of 1-bromopropane" is tested, the test results of the "test pieces" of "aluminum piece," "zinc piece," "iron piece," and "copper piece" respectively resulted in "○: Loss of only a small part of gloss", "×: Coloring or corrosion is obviously observed in whole," "△: Loss of gross in whole," and "△: Loss of gross in whole". Thus it can be seen that one might not obtain results similar to Examples 19, 37, and 38 even if a stabilizer exemplified for the use in combination in the specification of earlier application were selected. (Note that Comparative Example 41 cannot be used as a ground to find Invention 1 of earlier application since it is not described in the priority specification; however, it is possible to use as a ground that "1-bromopropane composition," to which a stabilizer usable in combination is added in addition to "nitromethane" and "1,2-butylene oxide" cannot be seen as a completed invention.)

On the other hand, the specification of earlier application discloses in Comparative Example 13 (Comparative Example 10 of the specification of earlier application) that "a composition comprising a stabilizer of 3 weight parts of 1,3-dioxolane on 100 weight parts of 1-bromopropane" was "subjected to heat reflux," and "aluminum test piece" was "placed across a liquid phase and a gas phase," "and after heat reflux for 96 hours, the flask was cooled to a room temperature to take out a sample piece, and the corrosion state of the sample piece and the degree of coloring of a liquid phase were observed," and as a result, the status of the "sample piece" was "◎: No change at all," and the generation of acidic gas" was "×: Generated," and further in "1-bromopropane composition" including a sole stabilizer such as "1,4-dioxane" as the other stabilizer, all the "sample pieces" had the status of the test of "×: Coloring or corrosion is obviously observed in whole" (see point 1-f). Therefore, only the single use of "1,3-dioxolane" obviously results in the achievement of the effects of "the delay of corrosion time compared to the ones to which no stabilizer is added" on at least aluminum although it results in the generation of an acidic gas, differing from the other stabilizers.

Consequently, in the stabilization mechanism of corrosion reaction caused by organic solvent, which has not been necessarily solved theoretically, in general terms,

supposing that the addition of "nitromethane" and "1,2-butylene oxide" as stabilizers might cause stabilizing effects, further addition of the other stabilizers that may not cause comparable stabilizing effects by itself does not necessarily cause comparable effects unless the stabilizing effects are supported by experiments, etc. As shown in Example 19 of the specification of earlier application, when only "nitromethane" and "1,2-butylene oxide" are used as stabilizers, it brings about a good result against metal corrosion similarly to Examples 37 and 38 where "methyl thiocyanate" is selected as a stabilizer to be used in combination, and taking into account a specific example of Comparative Example 13 where the single use of "1,3-dioxolane" brought an advantageous effect on metal corrosion compared to a stabilizer, it can be seen as being specifically and objectively supported by the common technical knowledge that at least the case of "1-bromopropane composition" to which "only 1,3-dioxolane" is added in addition to "nitromethane" and "1,2-butylene oxide" as stabilizers usable in combination may actually cause desired effects of preventing metal corrosion to the extent that is shown in Comparative Example 13; i.e., "the delay of corrosion time compared to the one without adding stabilizers" similar to Invention 1.

Comparative Example 10 (Comparative Example 7 of the Priority specification) showed that, when 1,4-dioxane was used as a single stabilizer, the result of corrosion of aluminum piece was "×: Coloring or corrosion is obviously observed in whole," whereas Comparative Example 41 showed that, when "1,4-dioxane" was used in combination with "nitromethane" and "1,2-butylene oxide," the result of corrosion of aluminum piece was "○: Loss of only a small part of gloss." Therefore, the result of Comparative Example 41 might possibly become a ground that "1-bromopropane composition" to which "1,3-dioxolane" is added in addition to "nitromethane" and "1,2-butylene oxide" does not necessarily cause effects comparable to Examples 19, 37, and 38; however, it would not become a ground that it does not even cause effects to the extent as shown in Comparative Example 13.

Therefore, it is sufficient for "stabilized solvent composition" of Invention 1 to cause effects of "the delay of corrosion time compared to the one without the addition of stabilizers" in a certain use condition. It does not go so far as to require the prevention of the generation of acidic gas. Therefore, it can be said that the specification of earlier application disclosed specifically and objectively to the extent that allowed "1-bromopropane composition" to which "only 1,3-dioxolane" is added in addition to "nitromethane" and "1,2-butylene oxide" as a stabilizer (this composition is free of 1,4-dioxane) to cause effects by repetitive implementation.

(A-4) Not qualified for a selection invention

It is considered as to whether or not a composition "including 1,3-dioxolane but not including 1,4-dioxane" as a stabilizer usable in combination might cause more significant effects as compared to a composition free of stabilizer usable in combination, or a composition including a stabilizer other than 1,3-dioxolane.

(A-4-1) 1,3-dioxolane is used in combination as a stabilizer

Experiment of Evidence A No. 23 submitted by the demandant and the additional test 1 described in the written statement on May 30, 2012 submitted by the demandee were implemented in the same condition as described in the examples of the specification for three kinds of solvent compositions: the solvent composition

comprising 2.5 wt.% 1,3-dioxolane with a base of 96.5 wt.% n-propyl bromide, 0.5 wt.% nitromethane, and 0.5 wt.% 1,2-butylene oxide (corresponding to the Invention 1); the solvent composition in which n-propyl bromide is increased up to 99.0 wt.% in place of 1,3-dioxolane (corresponding to the Invention 1 of earlier application); and the solvent composition comprising 2.5 wt.% methyl thiocyanate in place of 1,3-dioxolane (corresponding to Invention 1 of earlier application). All the experiments resulted in the failure to observe metal corrosion of aluminum alloy (2024) after 24 hours for all the solvent compositions.

Consequently, when compared in the same condition as the examples of the specification, it cannot be said that a composition "including 1,3-dioxolane but not including 1,4-dioxane" as a stabilizer usable in combination might cause more significant effects as compared to a composition not including a stabilizer usable in combination, or a composition including a stabilizer other than 1,3-dioxolane.

In this regard, the demandee submitted Evidence B No. 28 as an additional test 2, and argued that significant effects might be caused since a solvent composition including 1,3-dioxolane in addition to nitromethane and 1,2-butylene oxide as a stabilizer to be used in combination (the Invention 1) showed an experimental result that the starting time of corrosion was extended as compared to a solvent composition free of stabilizer to be used in combination (Example 19 of the specification of earlier application) or a solvent composition including methyl thiocyanate (Examples 37 to 38 of the specification of earlier application) when "aluminum alloy ADC14" was used as a test piece instead of "aluminum alloy (2024)" of the examples of the specification, and a solvent composition corresponding to the examples of the specification of earlier application and a solvent composition corresponding to the examples of the specification were compared (Written statement on May 30, 2012, page 5, line 17 to page 9, line 4).

The specification only describes, however, a result that no metal corrosion was observed when "aluminum alloy (2024)" was used as a test piece and subjected to cleaning in a boiling condition of the solvent composition of the Invention 1 for 24 hours. The specification fails to describe a metal corrosion test when "aluminum alloy ADC14" was used as a test piece. It cannot be recognized that the effects of the Invention 1 go beyond the effects that the solvent composition of the Invention 1 may cause the delay of metal corrosion as compared to a solvent composition to which no stabilizer is added.

Further, there is no common technical knowledge showing the capability of deducing from the description of the specification that, regardless of the fact that under the same condition as the working example of the specification, no metal corrosion of aluminum was observed in both a solvent composition in which n-propyl bromide is increased up to 99.0 wt.% instead of 1,3-dioxolane and a solvent composition comprising 2.5 wt.% methyl thiocyanate instead of 1,3-dioxolane as similar to the solvent composition of Invention 1, the solvent composition of Invention 1 may achieve more delay of corrosion time as compared to the solvent composition of the Invention 1 of earlier application when the other test piece is used.

Furthermore, it can be seen from the experimental result shown in Evidence B No. 28 that the time to the beginning of corrosion in a test piece by sight is "the starting time of corrosion," but it fails to show any picture of the status of the test piece at the time when the corrosion began by sight, but only shows the starting time of corrosion.

Further, the experimental results shown in Evidence B No. 15 and Evidence B No. 16 do not show the status of the test piece as the corrosion allegedly began similarly with a picture, but only describes the starting time of corrosion. Further, the starting time of corrosion of Evidence B No. 16 is unnatural because the addition of methyl thiocyanate sometimes resulted in rather a shorter time of corrosion, which makes us have doubt about the accuracy of the measurement of the starting time of corrosion. Thus Evidence B No. 28 in which similar experiments were conducted also remains doubtful about the accuracy of the measurement of the starting time of corrosion.

On the other hand, according to the experimental results of Evidence A No. 24 and Evidence A No. 27 submitted by the demandant, they confirmed the corrosion by immersing a test piece under reflux for 140 hours into a solvent composition comprising n-propyl bromide, nitromethane, and 1,2-butylene oxide and a solvent composition further comprising 1,3-dioxolane and methyl thiocyanate. Thus in either solvent composition, the pictures of the test pieces of aluminum alloy (2024) are attached, showing that no corrosion takes place.

Consequently, the experimental results shown in Evidence B No. 15, Evidence B No. 16, and Evidence B No. 28 remain doubtful about the accuracy, whereas Evidence A No. 24 and Evidence A No. 27 clearly show that there is no difference in the effects of the delay of corrosion even when implementing a long-term reflux for 140 hours, which is almost 5 times as long as the example of the specification. Therefore, it cannot be recognized from the experimental results shown in Evidence B No. 15, Evidence B No. 16, and Evidence B No. 28 that Invention 1 has significant effects over the specific embodiments of the examples of the specification of earlier application.

(A-4-2) The fact of "free of 1,4-dioxane"

The Invention 1 also causes the effects of solving the concerns about health for users due to "free of 1,4-dioxane." Evidence A No. 11 discloses "we focus on the carcinogenicity of 1,4-dioxane, and determine measures to be taken other than the measures to be taken in compliance with the current organic solvent regulation for the prevention of health disorder of workers who engage in every task of manufacturing and handling a product containing 1,4-dioxane" (see point 11-b). It can be said that this was tried to have "business companies and associated trade association" "well-informed" as a guideline (see point 11-a). Thus the health damage due to 1,4-dioxane is a matter of common technical knowledge for a person skilled in the art, and it is recognized that the effects caused by not including 1,4-dioxane are obvious to a person skilled in the art.

(A-5) Summary

Therefore, the different feature (i) is not a substantial difference.

(B) Consideration of the difference (ii)

Regarding the amounts of stabilizers to be used in combination, the numerical ranges are not described in the specification of earlier application; however, Examples 37 and 38 discloses the use of 100 weight parts n-propyl bromide, 0.2 weight part nitromethane, 0.5 weight part 1,2-butylene oxide, and 0.01 weight part and 0.1 weight part "methyl thiocyanate" as the other stable component (see point 1-g). Consequently, it is obvious to a person skilled in the art to use this amount even for a stabilizer to be used in combination other than "methyl thiocyanate." Thus, calculated on the basis of

this example, n-propyl bromide is "99.3 wt.%" "99.2 wt.%" on the total solvent composition basis, and thus "includes at least 90 wt.%."

Further, Invention 1 of earlier application is "a stabilized 1-bromopropane composition comprising 100 weight parts of 1-bromopropane, 0.1 to 1 weight part of nitromethane, and 0.1 to 1 weight part of 1,2-butylene oxide," and it is recognized from the common technical knowledge that stabilizers to be used in combination would not be contained in a mixing amount far from the mixing amounts of essential components of nitromethane and 1,2-butylene oxide. Therefore, it is construed that the amount of stabilizer to be used in combination has an upper limit of 1 weight part. This means 97.1% or more of n-propyl bromide. Therefore, it can be said as "including at least 90 wt.%" also from this viewpoint.

Therefore, the different feature (ii) is not a substantial difference.

### C Summary

Therefore, Invention 1 is identical to Invention 1 of earlier application.

#### (4-2) Inventions 2, 3, and 5

Invention 2 limits "nitroalkane" of Invention 1 to "nitromethane, nitroethane, or a mixture thereof," whereas Invention 1 of earlier application uses "nitromethane" as a stabilizer. Thus this point cannot be a new difference.

Invention 3 limits "nitroalkane" of Invention 1 to "nitromethane," whereas Invention 1 of earlier application uses "nitromethane" as a stabilizer. Thus this point cannot be a new difference.

Invention 5 limits "including at least 90 wt.% n-propyl bromide" of Invention 1 to "including 94 to 98 wt.% n-propyl bromide."

As is considered in the above item (4-1)B(B), n-propyl bromide may include 97.1 weight% or more. Thus the contents of n-propyl bromide overlap. Again, this limitation does not make a new difference.

Therefore, Inventions 2, 3 and 5 are identical to Invention 1 of earlier application.

#### (4-3) Inventions 6 and 8

##### A Comparison

Therefore, Invention 6 confines "which is 1,4-dioxane-free, but includes nitroalkane, 1,2-butylene oxide, and 1,3-dioxolane" of Invention 1 to "includes 0.045 to 1.0 wt.% nitroalkane, 0.045 to 1.0 wt.% 1,2-butylene oxide, and 2.0 to 6.0 wt.% 1,3-dioxolane."

Consequently, in addition to the above differences (i) and (ii), Invention 6 is further different from Invention 1 of earlier application in the following point:

(iii) Invention 6 "includes 0.045 to 1.0 wt.% nitroalkane, 0.045 to 1.0 wt.% 1,2-butylene oxide, and 2.0 to 6.0 wt.% 1,3-dioxolane," whereas Invention 1 of earlier application "includes 0.1 to 1.0 weight part of nitromethane, 0.1 to 1.0 weight part of 1,2-butylene on the basis of 100 weight parts of 1-bromomethane," the content of a stabilizer capable of being further added and used in combination is indefinite.

##### B Consideration of difference

The specification of earlier application discloses in Comparative Example 13 (Comparative Example 10 of priority specification) that 3.0 wt.% 1,3-dioxolane was

added (see point 1-f). This is the amount when 1,3-dioxolane is added as a sole stabilizer. This is not used as a stabilizer usable in combination with the essential components of nitromethane and 1,2-butylene oxide. The specification of earlier application fails to describe the additive amounts of stabilizers usable in combination. The additive amount is 0.01 weight part and 0.1 weight part respectively in the specific examples of Examples 37 and 38 (Examples 11 and 12 of priority specification). The upper limits of the amount of the essential stabilizer components of nitromethane and 1,2-butylene oxide are respectively 1.0 weight part in Invention 1 of earlier application (the specification of earlier application describes the upper limit of nitromethane and 1,2-butylene oxide is set to 5.0 wt.% (see Claim 1, paragraph [0014]), but this is not described in the priority specification). In view of this, it is hard to believe that a stabilizer component usable in combination may be contained in an amount beyond the upper limit of the essential components of 1.0 wt.%. It cannot be said that the specification of earlier application discloses the inclusion of 3.0 wt.% in the case of including "1,3-dioxolane" as a stabilizer usable in combination.

Consequently, the above difference (iii) is a substantial difference.

#### C Summary

Therefore, it cannot be said that Invention 6 is identical to Invention 1 of earlier application.

Further, Invention 8 depends from Invention 6, and includes all the matters for specifying Invention 6, and thus it cannot be said to be identical to Invention 1 of earlier application.

#### (4-4) Invention 9

##### A Comparison

Invention 9 and Invention 2 of earlier application are compared to each other.

The "ambient temperature cleaning" of Invention 2 of earlier application means that a solvent composition and an article are brought into contact and cleaned at an ambient temperature. The contact means the immersion of an article to be cleaned into a cleaning agent, and "ambient temperature" has the same meaning as "room temperature." Therefore, "a process for ambient temperature cleaning" of Invention 2 of earlier application corresponds to "a process for cleaning an article which comprises immersing the article in a solvent composition comprising the stabilizer system portion at a temperature in a temperature range from room temperature to 55°C" of Invention 9.

Consequently, Invention 9 and Invention 2 of earlier application are identical to each other in that they both relate to

"A process for cleaning an article which comprises immersing the article in a solvent composition comprised of a solvent portion which includes n-propyl bromide; and a stabilizer system portion which includes nitroalkane, and 1,2-butylene oxide, wherein the article is immersed into said solvent composition comprising the stabilizer system portion at a temperature in a temperature range from room temperature to 55°C," and are tentatively different in the following two points:

(iv) As for "stabilizer system portion," the former "includes 1,3-dioxolane, but does not include 1,4-dioxane," whereas the latter "is capable of including a stabilizer selected from cyclic ethers such as 1,4-dioxane, 1,3-dioxolane, and 1,3,5-trioxane, linear ethers such as 1,2-dimethoxyethane, saturated alcohols such as isopropylalcohol, tert-

butylalcohol, and tert-amylalcohol, unsaturated alcohols such as 2-methyl-3-butyn-2-ol, phenols such as phenol, thymol, 2,6-di-tert-butyl-p-cresol and catechol, and thiocyanate esters such as methyl thiocyanate and ethyl thiocyanate."

(v) The former "contains at least 90 wt.% n-propyl bromide," whereas the latter "comprises 100 weight parts of 1-bromopropane, 0.1 to 1 weight part of nitromethane, and 0.1 to 1 weight part of 1,2-butylene oxide," and the content of the other stabilizers in the latter is indefinite.

#### B Consideration of difference

The above differences (iv) and (v) are respectively the same as differences (i) and (ii) between Invention 1 and the invention of earlier application, as discussed in the above item (4-1)A.

Consequently, these differences are not substantial differences, as discussed in the above items (4-1)B(A) and (B).

#### C Summary

Therefore, Invention 9 is identical to Invention 2 of earlier application.

#### (4-5) Invention 10

##### A Comparison

Invention 10 and Invention 2 of earlier application are compared to each other.

In view of the description of "Fed to a conical flask" and "To the top part of this conical flask there was attached a reflux condenser, and the flask was heated to a boiling temperature in an oil bath to cause the sample piece to contact with both liquid and gas phases under a reflux condition." (see point 1-g), the "vapor cleaning" of Invention 2 of earlier application means that an article is exposed to a vapor from a boiling solvent composition and cleaned. Thus it corresponds to "a process for cleaning an article which comprises exposing the article to the vapor emanating from a boiling body of a solvent composition" of Invention 10.

Consequently, Invention 10 and Invention 2 of earlier application are identical to each other in that they both relate to

"a process for cleaning an article which comprises exposing the article to the vapor emanating from a boiling body of a solvent composition comprising a solvent portion which includes n-propyl bromide; and a stabilizer system portion which includes nitroalkane, and 1,2-butylene oxide," and are tentatively different in the following two points:

(vi) As for "stabilizer system portion," the former "includes 1,3-dioxolane, but does not include 1,4-dioxane," whereas the latter "is capable of including a stabilizer selected from cyclic ethers such as 1,4-dioxane, 1,3-dioxolane, and 1,3,5-trioxane, linear ethers such as 1,2-dimethoxyethane, saturated alcohols such as isopropylalcohol, tert-butylalcohol, and tert-amylalcohol, unsaturated alcohols such as 2-methyl-3-butyn-2-ol, phenols such as phenol, thymol, 2,6-di-tert-butyl-p-cresol, and catechol, and thiocyanate esters such as methyl thiocyanate and ethyl thiocyanate"; and

(vii) The former "contains at least 90 wt.% n-propyl bromide," whereas the latter "comprises 100 weight parts of 1-bromopropane, 0.1 to 1 weight part of nitromethane, and 0.1 to 1 weight part of 1,2-butylene oxide," and the content of the other stabilizers in the latter is indefinite.

B Consideration of difference

The above differences (v) and (vii) are respectively the same as differences (i) and (ii) between Invention 1 and Invention 1 of earlier application, as discussed in the above item (4-1)A.

Consequently, these differences are not substantial differences, as discussed in the above items (4-1)B(A) and (B).

C Summary

Therefore, Invention 10 is identical to Invention 2 of earlier application.

(5) As for the demandee's argument

A Gist of the demandee's allegation

Regarding the Invalidation Reason 1, the demandee presents the following argument in the written reply, the oral proceedings statement brief, and the written statement on May 30, 2012 in summary:

(A) The specification of earlier application fails to disclose the composition "including n-propyl bromide, nitromethane, 1,2-butylene oxide, and 1,3-dioxolane."

Specifically, the specification of earlier application only discloses in [0015] that the stabilizers according to the invention described in the specification of earlier application "may be" used in combination with the other various stabilizers. Further, paragraph [0015] describes an ambiguous generic concept. Compounds within the concept probably amount to several hundreds in sum. Among them 1,3-dioxolane is just occasionally described. The content is not specified. Regarding the specification of earlier application in which an essential component of the Invention is only described as one of such several hundreds of compounds, as a legal matter, it is insufficient to find that an invention identical to the Invention is disclosed.

To find a completed invention, a support of experimental result of confirming the effects is required for the invention regarding chemical technology; however, what is specifically supported is only the one utilizing "methyl thiocyanate" as a stabilizer usable in combination. It cannot be said that the one utilizing the other stabilizer is a completed invention.

It is not permitted to combine arbitrarily the recitation of Claim 3 of the specification of earlier application with Comparative Example 13 to make an invention convenient for oneself.

(See written reply, page 8, line 17 to page 13, line 15, oral proceedings statement brief, page 3, lines 24 to page 4, line 2, page 4, line 22 to page 5, line 21, page 6, line 25 to page 11, line 24, page 12, line 5 to page 13, line 26, page 14, line 12 to page 15, line 13)

(B) The specification of earlier application fails to disclose the composition "free of 1,4-dioxane."

The argument that Invention 1 of earlier application also encompasses an embodiment "including only 1,3-dioxolane and free of 1,4-dioxane" is an arbitrary construction.

The specification of earlier application fails to disclose the technical concept of "free of 1,4-dioxane," nor does it mention that 1,4-dioxane is not desirable in terms of



the user's health. In view of the court decision of 2010 (Gyo-Ke) 10245, the specification of earlier application fails to disclose the technical concept of "free of 1,4-dioxane," nor does it suggest teaching away from 1,4-dioxane at all. Thus the specification of earlier application fails to disclose Invention 1.

(See written reply, page 13, line 16 to page 14, line 1, oral proceedings statement brief, page 3, lines 4 to 23, page 13, line 27 to page 14, line 11, written statement on May 30, 2012, page 15, line 5 to page 17, line 6)

(C) Comparative Example 13 of the specification of earlier application only shows instable stabilizing effect in which acidic gas is produced. Therefore, it cannot be predicted as to whether the use of 1,3-dioxolane as a stabilizer usable in combination may achieve sufficient stabilizing effects comparable to Examples 37 to 38.

(Oral proceedings statement brief, page 15, line 14 to page 20, line 29)

(D) The specification of earlier application fails to disclose "a solvent portion which includes at least 90 wt.% n-propyl bromide."

It is inappropriate to use Examples 37 to 38 of the specification of earlier application as the basis for the mixing amount of components.

(Written reply, page 16, lines 9 to 20, Oral proceedings statement brief, page 4, lines 11 to 20)

(E) The Invention has an effect superior to that of Invention 1 of earlier application.

Specifically, it is obvious from the experimental results of Evidence B No. 15, Evidence B No. 16, and Evidence B No. 28 that the addition of 1,3-dioxolane to a solvent composition of n-propyl bromide including nitroalkane and 1,2-butylene oxide may provide higher stabilizing effects compared to no addition of 1,3-dioxolane or the addition of methyl thiocyanate. The consideration of the effects of the condition different from the examples is permitted in the court decision 2009(Gyo-Ke)10238.

In the same condition as in the examples of the specification, regardless of 1,3-dioxolane being not added (Examples) (Comparative Example 1) to n-propyl bromide composition including nitromethane and 1,2-butylene oxide, or even when methyl thiocyanate (Comparative Example 2) was added to the composition, metal corrosion was not observed. This experimental result does not show a relative merit of stabilizing effects of Examples and Comparative Examples 1 and 2. It can be said that the combination effects of stabilizers according to Examples are comparable to or superior to the combination effects of stabilizers according to Comparative Examples 1 and 2.

Further, the Invention causes an excellent effect of avoiding a problem of the user's health due to lack of 1,4-dioxane. In view of the specification of earlier application, it was not well-known to avoid 1,4-dioxane as a stabilizer.

In Comparative Example 13 of the specification of earlier application, acidic gas generates due to metal corrosion, and thus finally should corrode metal. Thus the experimental result of no metal corrosion being observed in Comparative Example 13 is doubtful.

(Oral proceedings statement brief, page 20, last line to page 24, line 10, written statement on May 30, 2012, page 3, line 22 to page 13, line 23)

## B Consideration

Consideration is given to the demandee's allegations.

(A) Allegations (A) and (B)

Even if the specification of earlier application should show stabilizers usable in combination as hundreds of combinations, it is sufficient if the stabilizers usable in combination are objectively and concretely described to the extent that may cause desired effects among the combinations (completed invention). The number of exemplified alternatives has nothing to do with the establishment of the completed invention.

Further, as is discussed in the above items (4)(4-1)B(A)(A-1) to (A-3), it can be said that the specification of earlier application discloses the matters of "free of 1,4-dioxane" as well as "including nitromethane, 1,2-butylene oxide and 1,3-dioxolane" as a stabilizer in "n-propyl bromide" solvent as a completed invention.

Further, the court decision of 2010 (Gyo-Ke) 10245 (Evidence B No. 32) that the demandee cites is a case where novelty was affirmed because the matters specifying the invention of "free of CMIT" cannot be said to be described in a cited publication when the examples of the cited publication show the composition consisting only of the combination of "MIT(2-methylisothiazolin-3-on) and BIT (1,2-benzisothiazolin-3-on)," whereas they suggest the use of "CMIT (5-chloro-2-methylisothiazolin-3-on)," but they do not disclose the technical concept or technical meaning of "free of CMIT."

This case did not affirm novelty, however, only because the cited publication fails to describe the technical concept or technical meaning of "free of CMIT." This determination was made as a result of comprehensive consideration of the fact that only the mixture of "CMIT and MIT" was available as of the filing date (priority date), and it is indefinite whether "MIT" described as the examples in the cited publication is a pure "MIT," but may include "CMIT" (Court decision, page 33, line 15 to page 34, line 25).

On the other hand, the specification of earlier application discloses in the examples a stabilizer including only "nitromethane," "1,2-butylene oxide," and "methyl thiocyanate," which is obviously free of 1,4-dioxane. Further, the specification of earlier application describes "1,4-dioxane" together with alternatives such as "1,3-dioxolane" and "methyl thiocyanate" as a component of stabilizer to be used in combination; however, it is obvious from the description of the specification of earlier application and common technical knowledge that "1,4-dioxane" is not included as an essential component or an inevitable component for stabilizers. Therefore, the specification of earlier application also described the case where only "1,3-dioxolane" was used as a stabilizer usable in combination, and it simultaneously suffices the matter specifying the invention of "free of 1,4-dioxane" in such a case.

Furthermore, "the specification of earlier application fails to describe that '1,4-dioxane' causes damage on health." As is discussed in the above item (4)(4-1)B(A)(A-4-2), however, this was a matter of common technical knowledge of a person skilled in the art in view of the description of Evidence A No. 11. Even if the specification of earlier application fails to describe the technical meaning of "free of 1,4-dioxane," the technical meaning had been recognized as a matter of course by a person skilled in the art.

Consequently, the case and the case of the above court decision have different circumstances. It is obvious that this court decision may not apply to this case.

Therefore, the demandee's allegation is not acceptable.

(B) Regarding allegation (C)

As is discussed in the above item (4)(4-1)B(A)(A-3), although Comparative Example 13 might produce acidic gas, which shows insufficient stabilizing effects, it shows the delaying effects of metal corrosion compared to one free of stabilizers like the Invention. Thus the effects are identical to the effects achieved by the Invention.

Therefore, the demandee's argument is not acceptable.

(C) Regarding allegation (D)

As discussed in the above (4)(4-1)B(B), methyl thiocyanate of Examples 37 to 38 of the specification of earlier application was used as a stabilizer to be used in combination. Thus there is no inconvenience to use the additive amount as a basis for the calculation of mixing ratio of "1,3-dioxolane," which is also a stabilizer usable in combination. Furthermore, it can be sufficiently understood from the other description of the specification of earlier application and common technical knowledge that the matters specifying the invention of "including at least 90 wt.% n-propyl bromide" will be satisfied.

Therefore, the demandee's argument is not acceptable.

(D) Regarding allegation (E)

As discussed in the above item (4)(4-1)B(A)(A-4-1), the results of Evidence B No. 15, No. 16, and B No. 28 may not be deduced from the specification.

The demandee cited 2009 (Gyo-Ke) 10238 (Evidence B No. 29), which rules that "setting aside the case where there is no description of 'the effect of the invention' in the original specification, when a person skilled in the art could recognize or deduce 'the effect of the invention' from the description, it is permitted to consider the experimental effects supplemented after the filing, unless it exceeds the scope of the description." Of course, it is not permitted to consider the effects that cannot be deduced from the description of the original specification. If an application is filed thereafter with the specification describing the experimental results shown in Evidence B No. 28 and specifying the specific use condition, then claiming a use invention of solvent composition of the Invention 1, there is a room for identifying an invention as a selection invention regardless of the presence of Invention 1. In this case, considering the experimental data of Evidence B No. 28, Invention 1 encompasses such a use invention as well. It follows that any invention of later application cannot be recognized as a selection invention. Therefore, from the viewpoint of fairness with a third party in a first-to-file system, it should not be permitted to consider the experimental data shown in Evidence B No. 28 that cannot be deduced from the description of the specification.

Further, the written statement on May 30, 2012 shows an experimental result that no metal corrosion was observed for all in the condition of the additional test 1. The experimental result does not show a relative merit of stabilizing effects of Examples and Comparative Examples 1 and 2 of the additional test 1 only. The combination effect of stabilizers according to the examples might possibly have a poorer effect compared to the combination of stabilizers according to Comparative Examples 1 and 2. Thus the experimental result cannot be a basis for the Invention having more significant effect compared to the invention of earlier application.

Furthermore, the effects caused by "free of 1,4-dioxane" is as discussed in the above item (4)(4-1)B(A)(A-4-2). Further, it is correct that Comparative Example 13 of the specification of earlier application showed the delaying effect of metal corrosion compared to at least a composition free of stabilizer similarly to the Invention.

#### (5) Summary

As described above, Inventions 1 to 3, 5, 9, and 10 are identical to Invention 1 or 2 of earlier application, and the inventors of the invention according to the Patent are not identical to the inventors of the invention according to earlier application, nor is an applicant as of the filing of the Patent identical to an applicant of earlier application. Therefore, the patents of the Inventions 1 to 3, 5, 9, and 10 were granted in violation of the provision of Article 29-2 of the Patent Act.

#### 5 Invalidation Reason 2 (Article 29(2) of the Patent Act)

##### (1) Described matter of the publication

##### A Description of Evidence A No. 3

Japanese Unexamined Patent Application Publication No. H06-220494, a publication distributed before the priority date of the Patent (Evidence A No. 3), has the following descriptions:

(3-a) "[Claim 1] A deterging solvent composition comprising n-propyl bromide and/or isopropyl bromide.

[Claim 2] The deterging solvent composition of Claim 1, comprising at least one kind of stabilizers selected from the group consisting of nitroalkanes, ethers, epoxides, and amines."

(3-b) "[0004]

[Means for solving problem] After intensive investigations on brominated hydrocarbons, the inventors found that n-propyl bromide and isopropyl bromide are flame-retardant and have a high power of dissolving oils and excellent degreasing and deterging properties. However, the inventors also found defects of them, in that the reactivity of these solvents with metals, particularly aluminum and its alloys, is extremely high. The problem is that this reaction occurs even at ambient temperature, and particularly when the temperature is elevated for the deterging with a vapor, the reaction becomes vigorous. Namely, the solvent reacts with aluminum in a short time of 10 to 20 min to form a dark brown tar or carbide and also to seriously corrode aluminum and finally to completely dissolve aluminum. Various investigation were conducted to seek for a stabilizer capable of stably implementing vapor cleaning for a long period. As a result, it has been found that the addition of a specific stabilizer may drastically improve reactivity with metal. The present invention has been made on the basis of such finding. Specifically, the present invention provides a deterging solvent composition comprising n-propyl bromide and/or isopropyl bromide. The present invention also provides a stable deterging solvent composition in which at least one kind of stabilizers selected from the group consisting of nitroalkanes, ethers, epoxides, and amines is added to this deterging solvent composition.

[0005] Nitroalkanes used in the present invention may include nitromethane, nitroethane, 1-nitropropane, 2-nitropropane, nitrobenzene, or a mixture of two or more listed above. Ethers may include 1,2-dimethoxyethane, 1,4-dioxane, diethylether, diisopropylether, dibutylether, trioxane, methyl cellosolve, ethyl cellosolve, isopropyl

cellosolve, acetal, acetonedimethylacetal, gamma-butyrolactone, methyl tert-butyl ether, tetrahydrofuran, N-methyl pyrrole, or a mixture of two or more listed above. Epoxides may include epichlorhydrine, propyleneoxide, butylene oxide, cyclohexeneoxide, glycidylmethylether, glycidylmethacrylate, penteneoxide, cyclopenteneoxide, cyclohexeneoxide, or a mixture of two or more listed above. Amines may include hexylamine, octylamine, 2-ethylhexylamine, dodecylamine, ethylbutylamine, hexylmethylamine, butyloctylamine, dibutylamine, octadecylmethylamine, triethylamine, tributylamine, diethyloctylamine, tetradecyldimethylamine, diisobutylamine, diisopropylamine, pentylamine, N-methylmorpholine, isopropylamine, cyclohexylamine, butylamine, isobutylamine, dipropylamine, 2,2,2,6-tetramethylpiperidine, N,N-diallyl-p-phenylenediamine, diallylamine, aniline, ethylenediamine, propylenediamine, diethylenetriamine, tetraethylenepentamine, benzylamine, dibenzylamine, diphenylamine, diethylhydroxyamine, and a mixture of two or more listed above."

(3-c) "[0006] In the present invention, in addition to the above stabilizers, an assistant stabilizer to be used with a stabilizer of chlorinated hydrocarbons may be used, including phenols such as phenol and o-cresol, aminoalcohol such as monoethanolamine, diethanolamine, and triethanolamine, acetylene-based alcohol such as methylbutynol, methylpentynol, and propargyl alcohol, and triazoles such as benzotriazole, (2-hydroxyphenyl)benzotriazole, and chlorobenzotriazole. The additive amounts and the proportion of stabilizers necessary for the stabilization of n-propyl bromide and isopropyl bromide differ depending on the kind of oils attached to a material of article to be cleaned and use condition such as cleaning method. They may vary within a fairly wide range. It is preferable to use a range of 0.1 to 15 wt.% on the basis of total weight of n-propyl bromide and isopropyl bromide, and more preferably 0.5 to 10 wt.%. Specifically, the proportion of 0.1% or less is apt to decrease stabilizing effects, whereas the addition of 15% or more is not economical. The above stabilizers may have the effects when used solely, but two, three, or more may be used in combination. The additive amount is preferably in a range of 0.1 to 15% in total."

(3-d) "[0008]

[Examples] Example 1

A deterging solvent composition was prepared as in Table-1. An aluminum piece (JIS-H-4000, A1100P) was placed on each of liquid phase part and gas phase part of the deterging solvent composition to observe the corrosion state of the metallic piece after 48 hours in compliance with the method of JIS-K1600, and assessed according to the following criteria.

Determination Criteria of Corrosion State

○ No change

× Corrosion Observed

The obtained result is shown in Table-1 together with a result of Comparative Examples. Note that n-propyl bromide is represented by nPB, isopropylbromide is represented by IPB, and the mixing amount is represented as a weight ratio in parentheses in the table.

[0009] Further, the degreasing cleaning ability was measured by the following method.

Test of degreasing cleaning ability

A press oil (product name: NIHON KOHSAKUYU CO,LTD #640) was coated on a SPCC soft steel plate (50\*100\*0.3 mm), cleaned in advance, and left in a room for 3

days to make a test piece (oil attached amount: 200 to 300 mg/dm<sup>2</sup>). This test piece was immersed into a sample liquid for 2 minutes at room temperature, and dried to measure a residual oil amount by a weight method. Degreasing cleaning ability was determined as good when the attached amount was 2 mg/dm<sup>2</sup> or less, comparable to that of trichloroethane.

Residual oil content 2 mg/dm<sup>2</sup> or more ×

Residual oil content 2 mg/dm<sup>2</sup> or less ○

[0010]

[Table 1] Table-1

Corrosion Cleaning ability	Degrease No.	Cleaning solvent composition	Status
1 nPB(99.5)/nitromethane(0.5)		○ ○	
2 IPB(99)/nitromethane(1)		○ ○	
3 nPB(95)/1,2-dimethoxyethane(5)		○ ○	
4 IPB(97)/epichlorohydrin(3)		○ ○	
5 nPB(95)/diisopropylamine(5)		○ ○	
6 IPB(97)/nitromethane(2)/phenol(1)		○ ○	
7 nPB(97)/nitromethane(2)/triethanolamine(1)		○ ○	
8 IPB(97)/nitromethane(2)/methylbutynol(1)		○ ○	
9 IPB(97)/nitromethane(2)/benzotriazole(1)		○ ○	
10 nPB(97)/nitromethane(2)/1,2-dimethoxyethane(1)		○ ○	
11 IPB(97)/nitromethane(2)/diisopropylamine(1)		○ ○	
13 nPB(100)	×	○	
14 IPB(100)	×	○"	

#### B Description of Evidence A No. 4

United States Patent No. 5403507 Specification (Evidence B No. 4), which was distributed before the priority date of the Patent, has the following descriptions: Note that the translation is a partial translation made by the demandant.

(4-a) "This invention relates to a method for cleaning articles by vapor degreasing; and more particularly to a method of removing organic materials from metallic and electrical materials with a solvent employing various blends including dibromomethane and appropriate stabilizers." (column 1, lines 9 to 14)

(4-b) "It has been found that dibromomethane can be stabilized with a mixture of three low boiling solvents to prevent it from turning acidic and releasing free bromine into the air. The solvents are nitromethane, 1,2 butylene oxide, and 1,3, dioxolane. It was also discovered that excessive pitting and corrosion would appear on metals placed into the vapor layer unless appropriate stabilizers as indicated have been added. It has been determined that the appropriate ratio of the stabilizers is approximately 0.5% nitromethane, 0.5% 1,2 butylene oxide, and 3-4% 1,3 dioxolane." (column 3, lines 19 to 29)

#### C Description of Evidence A No. 5

Japanese Unexamined Patent Application Publication No. H07-292393, a publication distributed before the priority date of the Patent (Evidence A No. 5), has the following descriptions:

(5-a) "[Claims]

[Claim 1] A cleaning agent comprising a halogen-based solvent with a carbon number of 4 or less and a boiling point of 100°C or less and 0.1 to 15 wt.% an anticorrosive agent.

[Claim 2] A cleaning agent comprising: a halogen-based solvent with a carbon number of 4 or less and a boiling point of 100°C or less; 0.1 to 15 wt.% an anticorrosive agent; and 5 to 40 wt.% of an inflammable organic solvent with a boiling point of 350°C or less.

[Claim 3] The cleaning agent of Claim 1 or 2, wherein said halogen-based solvent is isopropyl bromide, n-propyl bromide, methylenebromide, bromochloromethane, n-butylbromide, isobutylbromide, sec-butylbromide, tert-butylbromide, tert-butylchloride, or a mixture of two or more kinds of these solvents."

(5-b) "[0001]

[Field of industrial application] The present invention relates to a deterging agent, in particular a deterging agent suitable for cleaning printed circuit or electronic components used for electronic device, or precision machine parts, etc."

(5-c) "[0007]

[Means for solving problem] Halogenated solvent dissolves rosin and oils very well. It has a problem of attacking and reacting with active metals such as aluminum and magnesium. The inventors have found, however, that the reactivity against active metal will be lost when a certain kind of suppressant is added to this halogenated solvent, and the addition of inflammable organic solvent with a boiling point of 350°C or less to this halogenated solvent results in further improvement of cleaning ability, and thus completed the present invention."

(5-d) "[0011] Halogen-based solvent without burning point may include isopropylbromide, n-propyl bromide, methylenedibromide, methylenebromide, bromochloromethane, etc. These halogen-based solvents are relatively low cost and do not have a burning point, but rather have a self-extinguishing property. Further, these solvents almost have no toxicity when used at room temperature, and further do not attack commonly-used resins. Thus they are currently solvents that are not subject to regulation."

(5-e) "[0015] Anticorrosive agent is added for the purpose of suppressing the reaction with active metal. Anticorrosive agent used in the present invention may include oil-soluble antirust, drying antirust, solvent-diluted type antirust, antirust lubricant, emulsified antirust, etc."

#### D Description of Evidence B No. 20

The Specification of United States Patent No. 4016215, distributed before the priority date of the Patent (Evidence B No. 20), has the following descriptions: Note that the translation is a partial translation made by the demandee.

(20'-a) "It is well recognized in the art, however, that good stabilization of one type of halogenated hydrocarbon is no indication of successful stabilization against other halogenated hydrocarbons, since the nature and degree of the decomposition reaction are greatly different for each of the different halogenated hydrocarbons." (Column 1, lines 58 to 64)

#### E Description of Evidence B No. 23

The Specification of United States Patent No. 3657120, description distributed before

the priority date of the Patent (Evidence B No. 23), has the following descriptions: Note that the translation is a partial translation made by the demandee.

(23'-a) "Chlorinated hydrocarbons have been stabilized heretofore with a binary combination of polyhydroxy alcohols e.g. 1,2-benzenediol) and epoxy compounds. Another stabilization system for chlorinated hydrocarbons such as perchlorethylene and trichloroethylene makes use of a combination of an oxime, an epoxide, and a dialkylhydrazone." (column 1, lines 24 to 30)

(23'-b) "It has not, however, been possible heretofore to stabilize bromine-containing hydrocarbons (bromocarbons) and hydrocarbons containing both bromine and chlorine (bromochlorocarbons) with stabilization systems of the aforescribed type. This disadvantage is particularly acute because of the fact that bromocarbons and bromochlorocarbons have been found to be better fire-extinguishing substances than the chlorinated hydrocarbons described earlier and thus are most desirable for use in fire extinguishers that must be stored for long periods of time." (column 1, lines 45 to 55).

### (2) Invention described in Evidence A No. 3 (Cited Invention 3)

Evidence A No. 3 describes "a deterging solvent composition comprising n-propyl bromide and/or isopropyl bromide," "comprising at least one stabilizer selected from the group consisting of nitroalkanes, ethers, epoxides, and amines" (See point 3-a).

Further, Evidence A No. 3 discloses that "the deterging solvent composition of the present invention may contain, in addition to the above-described stabilizer, an assistant stabilizer ... used as the stabilizers for chlorinated hydrocarbons such as ... aminoalcohol, e.g. ... triethanolamine." (See point 3-c).

Consequently, Evidence A No. 3 discloses an invention of "a deterging solvent composition comprising n-propyl bromide and/or isopropyl bromide," "comprising at least one stabilizer selected from the group consisting of nitroalkanes, ethers, epoxides, and amines, wherein the solvent composition may contain an assistant stabilizer used as the stabilizers for chlorinated hydrocarbons" (hereinafter referred to as "cited Invention 3").

### (3) Comparison and Determination

#### (3-1) Invention 1

##### A Comparison

Invention 1 and cited Invention 3 are compared to each other.

The two have in common that "a stabilized solvent composition comprising a solvent portion which includes n-propyl bromide and a stabilizer system portion," whereas they are different from each other in the following two points:

(i') As a "stabilizer system portion," the former includes nitroalkane, 1,2-butylene oxide and 1,3-dioxolane, but not include 1,4-dioxane," whereas the latter "comprises at least one stabilizer selected from the group consisting of nitroalkanes, ethers, epoxides, and amines, wherein the solvent composition may contain an assistant stabilizer used as the stabilizers for chlorinated hydrocarbons."

(ii') The former "includes at least 90 wt.% n-propyl bromide," whereas the latter is "the additive amount of stabilizers of 0.5 to 10 wt.% on the total weight basis of n-propyl bromide."

##### B Consideration of difference



The above difference (i') is considered in the following.

Evidence A No. 3 discloses "1,4-dioxane" (see point 3-b) as "nitroalkanes" and "ethers" of stabilizers, and "butylene oxide" as "epoxides" (see point 3-b). Therefore, it can be said that cited Invention 3 encompasses the embodiments including "nitroalkane, 1,4-dioxane and butylene oxide" as a stabilizer.

Further, the demandee argues that the court decision 2006 (Gyo-Ke) 10346 rules that to find that an invention composed of a combination of a plurality of specific technical elements is described in a publication, it is not sufficient to show the presence of an alternative including specific technical elements in the publication, but it is necessary to specifically describe the invention which actually selects and combines the specific technical elements, and thus it cannot be said that the above embodiments are described in Evidence A No. 3 (Written reply, page 28, lines 19 to 26, Oral proceedings statement brief, page 25, lines 12 to 29, page 27, line 10 to page 30, line 6). The demandee admits, however, that above court decision does not have such holding (see the first oral proceedings record), and thus the demandee's allegation is not reasonable.

Further, Evidence A No. 3 discloses in the examples the ones which contain "nitromethane" and "triethanolamine" as a stabilizer (Example 7) and "nitromethane" and "1,2-dimethoxyethane" (Example 10) in "n-propyl bromide" (see point 3-d). Therefore, it can be said that cited Invention 3 encompasses the embodiment including "nitromethane and triethanolamine" or "nitromethane and 1,2-dimethoxyethane" as a stabilizer.

Evidence A No. 4 discloses that, in "relates to a method for cleaning an article by vapor degreasing, ... and removing organic materials from metal and electronic material by use of a solvent using various blends including dibromomethane and appropriate stabilizers" (see point 4-a), "have found that dibromomethane is ... stabilized by a mixture of three low-boiling point solvents. The solvent is nitromethane, 1,2-butylene oxide and 1,3-dioxolane" (see point 4-b). Therefore, it can be said that Evidence A No. 4 discloses stabilizing by containing three stabilizers of nitromethane, 1,2-butylene oxide and 1,3-dioxolane in a cleaning solvent including dibromomethane.

On the other hand, Evidence A No. 5 discloses that "halogenated solvent ... has a problem of attacking and reacting with active metals such as aluminum and magnesium. The inventors have found, however, that the addition of a certain kind of suppressant to this halogenated solvent results in the loss of reactivity against active metal ... and thus completed the present invention." (see point 5-b), "halogen-based solvent without burning point may include isopropylbromide, n-propyl bromide, methylenedibromide, methylenebromide, bromochloromethane, etc." (see point 5-c). Further, in view of the description of "a cleaning agent comprising a halogen-based solvent with a carbon number of 4 or less and a boiling point of 100°C or less and 0.1 to 15 wt.% of an anticorrosive agent" (see point 5-a) and "anticorrosive agent is added for the purpose of suppressing the reaction with active metal. Anticorrosive agent used in the present invention may include oil-soluble antirust, drying antirust, solvent-diluted type antirust, antirust lubricant, emulsified antirust, etc." (see point 5-e). It is recognized from these descriptions of Evidence A No. 5 that the reaction of metal with halogenated solvent such as n-propyl bromide and methylenedibromide ("dibromomethane" of Evidence A No. 4) is suppressed by an anticorrosive agent.

Further, "anticorrosive agent" of Evidence A No. 5 preventing the reaction of halogenated solvent and metal corresponds to "stabilizers" in the context of Invention 1

and cited Invention 3; however, the component included in this "anticorrosive agent" is not disclosed. Further, n-propyl bromide and methylenedibromide are categorized into a same halogenated solvent; however, Evidence A No. 5 fails to suggest that they can similarly prevent the reaction of halogenated solvent and metal by the same stabilizer.

Consequently, supposing that cited Invention 3 encompasses the embodiment including "nitroalkane, 1,4-dioxane, and butylene oxide" as a stabilizer and this stabilizer is replaced with the stabilizers of "nitroalkane, 1,3-dioxane and 1,2-butylene oxide" of Evidence A No. 4 described as stabilizers of methylenedibromide, it cannot be said that a similar stabilizing effect would be caused. Therefore, it cannot be recognized that difference (i) is easily conceivable by a person skilled in the art.

Further, it cannot be recognized that it was easily conceivable by a person skilled in the art to replace the one in which "nitromethane and triethanolamine" or "nitromethane and 1,2-dimethoxyethane" are included as a stabilizer, which can be said as an embodiment of cited Invention 3, with the one which includes "nitroalkane, 1,3-dioxane, and 1,2-butylene oxide" as a stabilizer described in Evidence A No. 4.

### C Summary

For the above reasons, without considering the remaining differences and the effects, it cannot be said that Invention 1 was easily conceivable by a person skilled in the art on the basis of the inventions described in Evidence A No. 3 to A No. 5.

#### (3-2) Inventions 2 to 10

Inventions 2 to 8 include all the matters specifying the invention of Invention 1, and further confine the scope of Invention 1. Thus, in circumstances where it cannot be recognized that Invention 1 was easily conceivable by a person skilled in the art on the basis of the inventions described in Evidence A No. 3 to A No. 5, it cannot be recognized similarly that Inventions 2 to 8 were easily conceivable by a person skilled in the art on the basis of the inventions described in Evidence A No. 3 to A No. 5.

Further, Inventions 9 and 10 also use "a stabilized solvent composition which comprises: a solvent portion which includes at least 90 wt.% n-propyl bromide; and a 1,4-dioxane-free stabilizer system portion which includes nitroalkane, 1,2-butylene oxide, and 1,3-dioxolane," which is a matter for specifying the invention common to Invention 1. This matter specifying the invention includes the above difference (i). Therefore, it cannot be recognized similarly that Inventions 9 and 10 were easily conceivable by a person skilled in the art on the basis of the inventions described in Evidence A No. 3 to A No. 5.

#### (4) Demandant's argument

##### A Gist of the demandant's allegation

The demandant mentioned that one could understand from the description of Evidence A No. 5 that metal corrosion and stabilization mechanism is a unique problem for halogenated solvent, and n-propyl bromide and methylenedibromide are the same halogenated solvent, and thus they are equivalent to each other in suppressing the reaction with metal, "n-propyl bromide" of Evidence A No. 3 and "methylenedibromide" of Evidence A No. 4 are in common from the viewpoint of ozone layer depletion potential and Kauri-butanol values, and thus there is a motivation to apply a stabilizer applied to dibromomethane disclosed in Evidence A No. 4 to n-

propyl bromide suitable for a deterging solvent (Written demand, page 30, lines 27 to 34, Oral proceedings statement brief, page 15, line 5 to page 17, line 24).

## B Consideration

As in the demandant's argument, n-propyl bromide and methylenedibromide have in common that the reaction of a metal with a halogen-based solvent may be suppressed by a stabilizer, whereas different kinds of halogen-based solvent have different reactivity with metal even in the same category of the halogen-based solvent. This is evident from the description of Evidence B No. 20, stating that "It is well recognized in the art, however, that good stabilization of one type of halogenated hydrocarbon is no indication of successful stabilization against other halogenated hydrocarbons, since the nature and degree of the decomposition reaction are greatly different for each of the different halogenated hydrocarbons" (see point 20'-a), the description of Evidence B No. 23, stating that "Chlorinated hydrocarbons have been stabilized heretofore with a binary combination of polyhydroxy alcohols (e.g. 1,2-benzenediol) and epoxy compounds. Another stabilization system for chlorinated hydrocarbons such as perchlorethylene and trichloroethylene, makes use of a combination of an oxime, an epoxide, and a dialkylhydrazone." (see point 23'-a), and the description of "It has not, however, been possible heretofore to stabilize bromine-containing hydrocarbons (bromocarbons) and hydrocarbons containing both bromine and chlorine (bromochlorocarbons) with stabilization systems of the aforescribed type." (see point 23'-b), and the description of Evidence A No. 5 does not necessarily mean that n-propyl bromide and methylenedibromide are similarly stabilized by the same stabilizer.

Further, even if n-propyl bromide and methylenedibromide are in common from the viewpoint of ozone layer depletion potential and Kauri-butanol value, it does not suggest similarly stabilizing with the same stabilizer. Therefore, it cannot be said that there is a motivation to apply to n-propyl bromide a stabilizer applied to dibromomethane disclosed in Evidence A No. 4.

## (5) Summary

As described above, it cannot be recognized that Inventions 1 to 10 were easily conceivable by a person skilled in the art on the basis of the inventions described in Evidence A No. 3 to A No. 5, nor it can be said on the ground of the above reasons and evidences that the patents according to Inventions 1 to 10 were granted in violation of the provision of Article 29(2) of the Patent Act.

## 6 Invalidation Reason 3 (Article 29(2) of the Patent Act)

### (1) Described matter of the publication

The described matter of publication that has already been pointed out in the above item 5(1) is omitted.

## A Description of Evidence A No. 6

Japanese Unexamined Patent Application Publication No. S49-87606, a publication distributed before the priority date of the Patent (Evidence A No. 6), has the following descriptions:

(6-a) "Methylchloroform (1,1,1-trichloroethane) is an industrial solvent widely used for

vapor degreasing." (page 1, right bottom column, lines 2 to 4)

(6-b) "Two compounds which are effective stabilizing additives for methylchloroform are 1,3-dioxolane and 1,4-dioxane. These two additives are useful since they prevent methylchloroform from undergoing aluminum-induced decomposition." (page 1, right bottom column, lines 10 to 14)

#### B Description of Evidence A No. 7

Japanese Patent Publication No. S44-20082, a publication distributed before the priority date of the Patent (Evidence A No. 7), has the following descriptions:

(7-a) "The present invention relates to the stabilization of halogenated saturated aliphatic hydrocarbons. It is well known that a certain halogenated substituent, in particular a saturated fatty hydrocarbon containing chloride, is instable when it is contacted with aluminum or its alloy and magnesium or its alloy. The instability causes deterioration of halogenated hydrocarbon involving the production of accompanying halogenated hydrogen acid and the coloring of said hydrocarbon. This causes serious disadvantage in using these halogenated hydrocarbons as a degreasing solvent for metal parts or elements and/or a cleaning solvent." (column 1, lines 22 to 33)

(7-b) "For halogenated derivatives of saturated fatty hydrocarbons stabilized by the method of the present invention, the following list of compounds is particularly focused on as an illustration, but they are not limited thereto, specifically including dichloroethane, trichloroethane, 1,2-dichloropropane, 1,2 and 2,3-dichlorobutane, tribromoethane, and 1,2-dichloropropane." (column 3, lines 9 to 15)

(7-c) "Examples 1 to 9 It shows the stabilizing effect of trimethylorthoformate (TMOF), whereas the following test was conducted for the purpose of demonstrating the binding of trimethylorthoformate with 1,4-dioxane, nitromethane, trioxane, acetonitrile, tert-butanol, and 1,1,1-trichloroethane. In the presence of an aluminum plate with a purity of 99.9%, a thickness of 1 mm, a length of 7.5 mm, and a width of 12 mm, 40 ml solvent to which a stabilizer had been added was subjected to reflux heating. This plate was partially immersed into a solvent. Reflux time before the generation of acid vapor and/or showing the coloring of a solvent reflects the stabilizing ability of stabilizers or tested stable composition.

The following table summarizes a result obtained by stabilization test of composition with various stabilizers and 1,1,1-trichloroethane. To show better the benefit of the present invention by comparison, a test result was shown in this table with the following stabilizer. Specifically, 1,4-dioctane (Trial Decision note: this is recognized as a typo of "1,4-dioxane"), trioxane, and acetonitrile. A control test by use of 1,1,1-trichloroethane not including any of stabilizers is also included." (column 4, lines 2 to 23)

(7-d) "Examples 10 and 11 In a similar manner to Examples 1 to 9, the stabilization test of 1,1-dichloroethane was conducted by a similar method, and an obtained result is shown in the following table." (column 5, line 25 to column 6, line 26)

#### C Description of Evidence A No. 12

A publication distributed before the priority date of the Patent "written by Saburo YASUKAWA et al, 'Inhibiting mechanism of organic agent against dissolution reaction of aluminum by 1,1,1-trichloroethane', Journal of the Surface Finishing Society of Japan, Vol. 44, No. 2, 1993, pp.167-171" (Evidence A No. 12) has the following matters:

(12-a) "The previous report<sup>1)</sup> clarified the factor governing an induction period of dissolution reaction of aluminum (hereinafter abbreviated as Al) due to 1,1,1-trichloroethane (hereinafter abbreviated as  $\text{CCl}_3\text{CH}_3$ ) (time to produce aluminum chloride by reaction and this catalyzes the drastic increase of the dissolution rate of Al) and considered the reason for the shorter induction period compared to that of the reaction between trichloroethylene or tetrachloroethylene (hereinafter abbreviated as  $\text{CCl}_4$ ) and Al." (page 167, left column, lines 2 to 9)

(12-b) "Further, a solution in which aluminum chloride anhydride (hereinafter abbreviated as  $\text{AlCl}_3$ ) is added to  $\text{CCl}_3\text{CH}_3$  shows conductivity. Higher conductivity results in a shorter induction period, and thus the dissolution of Al was presumed to be an ionic reaction.

Regarding whether a reaction of a general organic halogenated compound and Al is a radical reaction or an ionic reaction, several previous studies are shown in the following." (page 167, left column, line 16 to right column, line<sup>2)</sup>

(12-c) "However,  $\text{AlCl}_3$  is well dissolved into ethyl bromide, butyl chloride and stearyl chloride to show conductivity<sup>10)</sup>. Further, unless the  $\text{AlCl}_3$  concentration exceeds a certain threshold value, it does not show the promotive effect of dissolution of Al. In a concentration showing promotive effect, a solution exhibits conductivity<sup>11), 12)</sup>. Therefore, it can be said that the dissolution mechanism of this case is an ionic reaction. As aforementioned, according to the studies of authors, the dissolution of Al into  $\text{CCl}_3\text{CH}_3$  is also an ionic reaction." (page 167, right column, line 25 to page 168, left column, line 6)

(12-d) " $\text{CCl}_3\text{CH}_3$  dissolving  $\text{AlCl}_3$  decomposes quickly as temperature gets higher, and at room temperature as time goes by, while generating hydrogen chloride<sup>4), 8)</sup>. Therefore, the conductivity measurement becomes difficult when a long time has passed. Further, to obtain solid measurement results, similar experiments were conducted for both ethylbromide and butylchloride, both of which are organic halogenated compounds that do not decompose in the presence of  $\text{AlCl}_3$ ." (page 168, left column, line 41 to right column, line 1)

(12-e) "3.1 Conductivity and induction period of  $\text{C}_4\text{H}_9\text{Cl}$  solution

$\text{AlCl}_3$  was dissolved into  $\text{C}_4\text{H}_9\text{Cl}$  at a concentration of  $250 \text{ mol/m}^3$ , and (a) nitrobenzene, (b) n-butylalcohol, (c) phenol, (d) benzylamine, (e) aniline and (f) 1,6-diaminohexane were respectively added to make a solution in various concentrations. The conductivity of the solution is shown in FIG. 1, and the induction period of Al dissolution reaction for such solutions is shown in FIG. 2. ... As shown in FIG. 1, the conductivity of nitrobenzene, n-butylalcohol and phenol of items (a) to (c) does not sufficiently lower conductivity. Such agent may not extend the induction period even when added in excess amount up to 10 to 12 mol for 1 mol  $\text{AlCl}_3$ , as shown in FIG. 2. Specifically, it does not at all impart inhibiting effects after the production of  $\text{AlCl}_3$ ." (page 168, right column, line 2 to page 169, left column, line 8)

(12-f) "3.2 Conductivity of  $\text{C}_2\text{H}_5\text{Br}$  solution

$\text{AlCl}_3$  was dissolved into  $\text{C}_2\text{H}_5\text{Br}$  at a concentration of  $210 \text{ mol/m}^3$ , to which (a) iso-propylether, (b) iso-propylalcohol, (c) nitrobenzene, and (d) m-dinitrobenzene were added as an organic agent in various concentrations. The conductivity of the solution is shown in FIG. 3. ... However, the addition of an excess amount of nitrobenzenes (c) and (d) does not increase conductivity. The induction period of Al dissolution reaction

against C<sub>2</sub>H<sub>5</sub>Br solution is not studied, but the nitrobenzenes of (c) and (d) are presumed to be a stronger inhibitor compared to ethers and alcohols of (a) and (b)." (page 169, left column, lines 12 to 27)

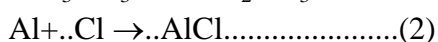
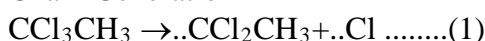
(12-g) "3.3 Conductivity of CCl<sub>3</sub>CH<sub>3</sub> solution

AlCl<sub>3</sub> was dissolved into CCl<sub>3</sub>CH<sub>3</sub> at a concentration of 210 mol/m<sup>3</sup>, to which (a) aniline and (b) n-butylalcohol were added in various concentrations. The conductivity of the solution and induction period of the reaction with Al are shown in FIG. 4. ... Note that a result similar to (a) is obtained also for iso-propylalcohol and n-butylether. Further, these results are similar to the results for C<sub>4</sub>H<sub>9</sub>Cl solution and C<sub>2</sub>H<sub>5</sub>Br solution mentioned in items 3.1 and 3.2 (Curve (b) of FIGS. 1 and 2, and curve (b) of FIG. 3)." (page 169, left column, line 28 to right column, line 12).

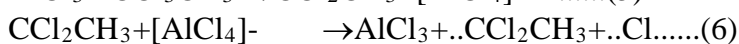
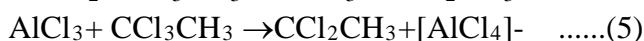
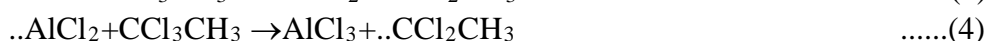
(12-h) "3.4 Inhibiting mechanism by the addition of organic agent

The mechanism of dissolving Al into CCl<sub>3</sub>CH<sub>3</sub> was explained in the previous report<sup>4</sup>), the major part of the reaction formula is set forth as in the following formulas (1) to (6):

Chain Generation

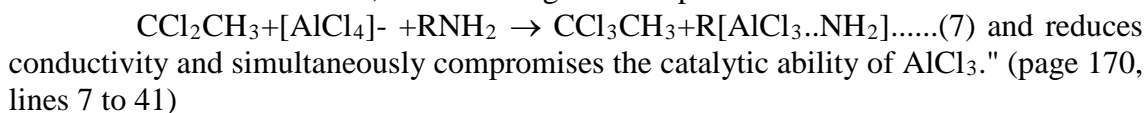


Chaining



The reactions of these formulas (1) to (6) continue repetitively until all Al is dissolved completely in the presence of excess CCl<sub>3</sub>CH<sub>3</sub>; i.e., chain reaction. The complex compound produced in the formula (5) from these formulas is disassociated into ions as aforementioned.

Incidentally, the mechanism of reaction inhibition by the addition of organic agent is presumed to be the following three i) to iii). i) Preferentially react with free radical  $\cdot\text{Cl}$  generated by formula (1) to prevent the progress until AlCl<sub>3</sub> of formula (6) is produced. ... Subsequently, ii) Form an adsorption film on Al surface like formula (2) to prevent the contact of CCl<sub>3</sub>CH<sub>3</sub> and prevent the reaction of the following formula (3) or later, ... Finally, iii) Make a stable complex compound with AlCl<sub>3</sub> to compromise the catalytic ability of CCl<sub>2</sub>CH<sub>3</sub> + [AlCl<sub>4</sub>]<sup>-</sup>. For example, when amines RNH<sub>2</sub> are added as a reaction inhibitor, the following reaction proceeds:



(2) Invention described in Evidence A No. 3 (Cited Invention 3)

It is as discussed in item 5(2).

(3) Comparison and Determination

(3-1) Invention 1

A Comparison

It is as discussed in item 5(3)(3-1)A.

## B Consideration of difference

A consideration is given to the difference (i').

As discussed in item 5(3)(3-1)B, cited Invention 3 includes an embodiment including "nitroalkane, 1,4-dioxane and butylene oxide" as stabilizers.

Evidence A No. 6 discloses that there are "1,3-dioxolane and 1,4-dioxane" as "an additive for effective stabilizing" "methylchloroform" "widely used for vapor degreasing operation" (see point 6-a) and these "additives prevent the decomposition of methylchloroform induced by aluminum" (see point 6-b).

Evidence A No. 7 relates to "the stabilization of halogenated saturated aliphatic hydrocarbons", and

"in particular a saturated fatty hydrocarbon containing chloride is instable when it is brought in contact with aluminum" (see point 7a), such "halogenated derivatives of saturated fatty hydrocarbons" include "dichloroethane, trichloroethane, 1,2-dichloropropane, 1,2 and 2,3-dichlorobutane, tribromoethane, and 1,2-dichloropropane" (see point 7-b).

Evidence A No. 7 is silent, however, about n-propyl bromide.

It only discloses the case of using mainly "trimethylorthoformate" as a stabilizer of "1,1,1-trichloroethane" and "1,1-dichloroethane" (see point 7-c, 7-d). It fails to suggest that "1,1,1-trichloroethane" (equivalent to "methylchloroform") and n-propyl bromide both were stabilized similarly by the same stabilizer as n-propyl bromide.

Further, Evidence A No. 12 discloses "a solution in which aluminum chloride anhydride (hereinafter abbreviated as  $\text{AlCl}_3$ ) is added to  $\text{CCl}_3\text{CH}_3$  shows conductivity. ... the dissolution of Al was presumed to be an ionic reaction." (see point 12- b), " $\text{AlCl}_3$  is well dissolved into ethyl bromide, butyl chloride and stearyl chloride to show conductivity. ... Therefore, it can be said that the dissolution mechanism of this case is an ionic reaction." (see point 12-c). Thus it can be seen that the dissolution of Al by  $\text{CCl}_3\text{CH}_3$  (methylchloroform), ethylbromide, butyl chloride is presumed to be a similar ionic reaction.

Further, Evidence A No. 12 investigated "an induction period of the reaction with Al and the conductivity of a solution to which (a) aniline was added for  $\text{CCl}_3\text{CH}_3$ ," and discloses that "a result similar to (a) is obtained also for iso-propylalcohol and n-butylether. Further, these results are similar to the results for  $\text{C}_4\text{H}_9\text{Cl}$  solution and  $\text{C}_2\text{H}_5\text{Br}$  solution mentioned in items 3.1 and 3.2 (Curve (b) of FIGS. 1 to 2 and Curve (b) of FIG. 3)." (see point 12-g). "The conductivity of the solution to which (b) n-butylalcohol were added to a solution ... in ... concentrations and the induction period of the Al dissolution reaction were shown ... for  $\text{C}_4\text{H}_9\text{Cl}$  ..." (see point 12-e), "... into  $\text{C}_2\text{H}_5\text{Br}$ , to which ... (b) isopropyl alcohol ... were added ... The conductivity of the solution is shown ..." (see point 12-f). Therefore, it can be understood that, when "isopropyl alcohol, n-butyl ether" are added as an organic agent to  $\text{CCl}_3\text{CH}_3$  solution, dielectric coefficient decreases like the case where "n-butyl alcohol" is added to  $\text{C}_4\text{H}_9\text{Cl}$  solution or the case where "isopropyl alcohol" is added to  $\text{C}_2\text{H}_5\text{Br}$  solution, and the induction period of Al dissolution reaction is extended.

Further, "induction period" means "induction period of dissolution reaction of ... aluminum (time to produce aluminum chloride by reaction, and which catalyzes the drastically increase of the dissolution rate of Al)" (see point 12-a). It can be recognized that the dissolution reaction of Al is extended if the induction period is extended, and

the effects of "delay of metal corrosion" (stabilization) in the Invention may be obtained.

Consequently, the above description of Evidence A No. 12 suggests that, when "isopropyl alcohol, n-butylether" are added as an inhibitor (stabilizer) of Al dissolution reaction to  $\text{CCl}_3\text{CH}_3$  solution, stabilizing effects may be obtained like the case where "n-butylalcohol" is added to  $\text{C}_4\text{H}_9\text{Cl}$  solution or the case where "isopropyl alcohol" is added to  $\text{C}_2\text{H}_5\text{Br}$  solution.

On the other hand, Evidence A No. 12 discloses that "The conductivity of the solution to which (a) nitrobenzene ... was added and the induction period of the Al dissolution reaction were shown ... for  $\text{C}_4\text{H}_9\text{Cl}$ ", and "nitrobenzene ... of the items (a) to (c) may not sufficiently lower conductivity. Such agent may not extend the induction period even when added in excess amount ... Specifically, it does not at all impart inhibiting effects after the production of  $\text{AlCl}_3$ ." (see the 12-e),

"The conductivity of a solution to which (c) nitrobenzene ... was added in various concentrations for  $\text{C}_2\text{H}_5\text{Br}$  ... was shown. ... However, the addition of an excess amount of nitrobenzenes (c) and (d) does not increase conductivity. The induction period of Al dissolution reaction against  $\text{C}_2\text{H}_5\text{Br}$  solution is not studied, but the nitrobenzenes of (c) and (d) are presumed to be a stronger inhibitor compared to ethers and alcohols of (a) and (b)." (see point 12-f). When "nitrobenzene" is added to  $\text{C}_4\text{H}_9\text{Cl}$  solution as an inhibitor (stabilizer) of Al dissolution reaction, the inhibiting effects may not be expected, but when "nitrobenzene" is added to  $\text{C}_2\text{H}_5\text{Br}$  solution, it is presumed to have inhibiting effects.

Consequently, Evidence A No. 12 suggests that, although there is an inhibitor showing stabilizing effects for different halogenated solvents like "isopropyl alcohol," there are some inhibitors like "nitrobenzene" that may not cause similar stabilizing effects when they are used as different halogenated solvents. Therefore, it is not recognized from the description of Evidence A No. 12 that there is a general law that the same stabilizer causes stabilization similarly, even though methylchloroform (1,1,1-trichloroethane) and n-propyl bromide are the same halogenated solvent.

Therefore, supposing that cited Invention 3 encompasses an embodiment of including "nitroalkane, 1,4-dioxane, and butylene oxide" as a stabilizer of "n-propyl bromide," even if Evidence A No. 6 discloses that 1,3-dioxolane and 1,4-dioxane are treated equivalently in methylchloroform different from n-propyl bromide, it cannot be said that the similar stabilizing effects may be obtained by replacing "1,4-dioxane" of cited Invention 3 with "1,3-dioxolane." Therefore, it cannot be said that the difference (i') was easily conceivable by a person skilled in the art.

## C Summary

For the above reasons, without considering the remaining differences and the effects, it cannot be said that Invention 1 was easily conceivable by a person skilled in the art on the basis of the inventions described in Evidence A No. 3, 6, 7, and 12.

### (3-2) Inventions 2 to 10

Inventions 2 to 8 include all the matters specifying the invention of Invention 1, and further confine the scope of Invention 1. Thus in circumstances where it cannot be recognized that Invention 1 was easily conceivable by a person skilled in the art on the basis of the inventions described in Evidence A No. 3, 6, 7, and 12, it cannot be



recognized similarly that Inventions 2 to 8 were easily conceivable by a person skilled in the art on the basis of the inventions described in Evidence A No. 3, 6, 7, and 12.

Further, Inventions 9 and 10 also use "a stabilized solvent composition which comprises: a solvent portion which includes at least 90 wt.% n-propyl bromide; and a 1,4-dioxane-free stabilizer system portion which includes nitroalkane, 1,2-butylene oxide and 1,3-dioxolane," which is a matter for specifying the invention common to Invention 1. This matter specifying the invention includes the above difference (i'). Therefore, it cannot be recognized similarly that Inventions 9 and 10 were easily conceivable by a person skilled in the art on the basis of the inventions described in Evidence A No. 3, 6, 7, and 12.

#### (4) Demandant's argument

##### A Gist of the demandant's allegation

The demandant argues that Evidence A No. 12 discloses "the reaction mechanism of dissolving Al into  $\text{CCl}_3\text{CH}_3$ " and that "the following i) to iii) are supposed to be a mechanism of reaction inhibition by the addition of organic agent" (see point 12-h), and this illustrates  $\text{CCl}_3\text{CH}_3$  (methylchloroform), a person skilled in the art could understand that a similar reaction proceeds for the other halogenated hydrocarbons, and stabilizing mechanism common to methylchloroform and ethylbromide is shown, and halogenated hydrocarbons including methylchloroform and bromide have similar reactivity, and will be stabilized similarly (Oral proceedings statement brief, page 24, line 10 to page 25, line 14).

##### B Consideration

Indeed, it can be deduced from the description of Evidence A No. 12 that halogenated hydrocarbons have a property of reacting with metal, but have the aforementioned reaction mechanism and the reason for inhibiting it in common, however, it does not suggest that all halogenated hydrocarbons may be stabilized by the same stabilizer in a mechanism of reacting with metal.

Specifically, the reactions of the above formulas (1) to (6) might proceed, the degree of the progress (reaction rate) differs depending on the kind of halogenated hydrocarbons.

For example, Evidence A No. 12 discloses that "similar experiments were conducted for both ethylbromide and butylchloride, both of which are organic halogenated compounds that do not decompose in the presence of  $\text{AlCl}_3$ " (point 12-d). The description suggests that the decomposition takes place by Al for  $\text{CCl}_3\text{CH}_3$  (methylchloroform), but does not for ethyl bromide. This means that methylchloroform and ethyl bromide differ in the reaction rate of the above formula (1). Further, the demandant argues that the above description is a description of methylchloroform "dissolving aluminum chloride," and the description relates to the stage after forming aluminum chloride by reacting aluminum metal and methylchloroform, formula (5), which differs from the reaction stage between aluminum metal and an organic halogenated compound (Oral proceedings statement brief, page 25, line 15 to page 26, line 9). Evidence A No. 12 discloses that "the reaction of this formula (1) to (6) continues repetitively until all Al is dissolved completely in the presence of excess  $\text{CCl}_3\text{CH}_3$ ; i.e., chain reaction." (see point 12-h). Even if aluminum chloride is formed, the reaction of formula (1) would take place. Thus this argument is not acceptable.

Further, as aforementioned, nitrobenzene does not cause stabilizing effect. This means that the reaction rate of the above formula (7) differs depending on solvents, and thus differs in the degree of decrease of conductivity and in the effect of compromising catalytic activity of  $\text{AlCl}_3$ , as it discloses that "For example, when amines  $\text{RNH}_2$  are added as a reaction inhibitor, the following reaction proceeds:

$\text{CCl}_2\text{CH}_3 + [\text{AlCl}_4]^- + \text{RNH}_2 \rightarrow \text{CCl}_3\text{CH}_3 + \text{R}[\text{AlCl}_3 \cdot \text{NH}_2] \dots$  (7), which reduces conductivity and simultaneously compromises the catalytic ability of  $\text{AlCl}_3$ " (see point 12-h).

Further, different kinds of halogenated hydrocarbons and different kinds of stabilizers inhibiting the reaction with metal may result in different reaction rate of the above formulas (1) to (7). As a result, if halogenated hydrocarbon is different, it cannot be recognized that the same stabilizer may not achieve a similar stabilizing effect.

As is discussed in the above item 5(4), this is supported by the description of Evidence B No. 20 and B No. 23 that a phenomenon of a stabilizer effective for one halogenated solvent being not necessarily effective for the other halogenated solvent takes place.

Accordingly, the demandant's allegation cannot be accepted.

#### (5) Summary

As described above, it cannot be recognized that Inventions 1 to 10 were easily conceivable by a person skilled in the art on the basis of the inventions described in Evidence A No. 3, 6, 7, and 12. It cannot be said on the basis of the above reasons and evidences that the patents for Inventions 1 to 10 were granted in violation of the provision specified in Article 29(2) of the Patent Act.

### 7 Invalidation Reason 4 (Article 29(2) of the Patent Act)

#### (1) Description of publication

Japanese Unexamined Patent Application Publication No. S56-25118, a publication distributed before the priority date of the Patent (Evidence A No. 8), has the following descriptions:

(8-a) "A stabilized methylchloroform comprising: at least one kind of unsaturated group-containing hydrocarbons selected from  $\alpha$ -methylstyrene, vinyltoluene and aromatic hydrocarbons with a carbon number of 10 or more having an unsaturated hydrocarbon side chain group; and an epoxides." (The scope of claims, Claim 1)

(8-b) "Methylchloroform has a large dissolution ability of various oils, is inflammable, and has less toxicity compared to other chlorinated hydrocarbons. Thus it has been widely used for the degreasing cleaning of metal and the other industrial solvent. However, methylchloroform has less stability compared to other chlorinated hydrocarbons, e.g. trichloroethylene, and perchloroethylene, in particular has defects of being decomposed when used as a degreasing cleaning agent of metal. Further, once the decomposition begins, it proceeds drastically while generating hydrogen chloride. Simultaneously, metal also corrodes vigorously." (page 1, right bottom column, line 17 to page 2, left upper column, line 8)

(8-c) "Particularly preferable epoxide is 1,2-butylene oxide." (page 3, left upper column, line 20 to right upper column, line 2)

(8-d) "The contents of unsaturated group-containing aromatic hydrocarbons and epoxides may be varied across a wide range. Normally on methylchloroform basis,

0.0001 to 1 wt.% of unsaturated group-containing aromatic hydrocarbons and 0.001 to 1 wt.% of epoxides may preferably be contained." (page 3, right upper column, lines 11 to 16)

(8-e) "A stabilized methylchloroform of the present invention may further comprise the other stabilizers, and further add two stabilizers of the present invention to the methylchloroform comprising the other stabilizer. For such other stabilizers, a variety of publicly-known or well-known ones may be exemplified. A part of these stabilizers may include, for example, cyclic ethers such as 1,4-dioxane and 1,3-dioxolane, nitroalkanes such as nitromethane and nitroethane, saturated alcohols such as t-butyl alcohol and benzyl alcohols, unsaturated alcohols such as propargyl alcohol and methylpentyl alcohol, amines, phenols, nitriles, ketones, and esters." (page 3, right bottom column, lines 6 to 20)

(8-f) "The content of these stabilizers may be selected within a publicly-known or well-known range. For example, on a methylchloroform basis, 0.0001 to 0.01 wt.% of amines or phenols, 0.1 to 5 wt.% of cyclic ethers, and 0.05 to 1 wt.% of nitroalkanes are selected respectively." (page 4, left upper column, lines 11 to 17)

(8-g) "<Accelerated oxidation test>

To a 500 ml conical flask equipped with a reflux cooler and an oxygen introduction tube, a 200 ml sample was fed. Each sheet of soft steel sheet was placed in a gas phase part and a sample liquid, respectively. While feeding oxygen in a sample liquid, heat reflux was conducted by a 150 W filament lamp. Forty-eight hours after heat reflux, the status of soft steel piece was observed, and the test liquid was extracted and separated with an equal volume of neutral pure water to measure water pH. Qualified for pH value of 5 to 7. Disqualified for an acidic pH value of less than 5 because it is supposed that an acidic substance such as HCl was produced by the decomposition of methylchloroform. The degree of corrosion of soft steel piece is represented by the following symbols. Qualified ○: No corrosion; Disqualified △: partially corroded; Disqualified ×: Whole surface corrosion." (page 4, left bottom column, lines 2 to 15)

(8-h) "Examples 1 to 9 and Comparative Examples 1 to 10

Stabilizers of the following Table 1 and Table 2 were added to methylchloroform in the additive amounts of Table 1 and Table 2 to produce a stabilized methylchloroform." (page 4, right bottom column, lines 1 to 6)

(8-i) "Examples 10 to 27 and Comparative Examples 11 to 25

In a similar manner to the aforesaid Examples 1 to 9 and Comparative Examples 1 to 10, a stabilization test was conducted for a stabilized methylchloroform comprising three component or more of stabilizers." (page 5, left bottom column, lines 1 to 4)

(8-j) "Table 3

Example	Stabilizers	Additive amounts ... (wt.%)	Status of soft steel piece
...			
25	α-methylstyrene	0.1	○
	1,2-butylene oxide	0.3	
	1,3-dioxolane	1.0	
	nitromethane	0.5"	(page 5, right bottom column to page 6, right upper column)

(2) Invention described in Evidence A No. 8 (Cited Invention 8)

Evidence A No. 8 discloses in Example 25 "a stabilized chloroform" comprising "a stabilizer" comprising "0.1 wt.%  $\alpha$ -methylstyrene, 0.3 wt.% 1,2-butylene oxide, 1.0 wt.% 1,3-dioxolane, and 0.5 wt.% nitromethane" "on the basis of methylchloroform" (see points 8-h, 8-I, and 8-j). Therefore, Evidence A No. 8 discloses the invention of "a stabilized chloroform comprising 0.1 wt.%  $\alpha$ -methylstyrene, 0.3 wt.% 1,2-butylene oxide, 1.0 wt.% 1,3-dioxolane, and 0.5 wt.% nitromethane" (hereinafter referred to as "cited Invention 8").

### (3) Comparison and Determination

#### (3-1) Invention 1

##### A Comparison

Invention 1 and cited Invention 8 are compared to each other.

"Methylchloroform" of cited Invention 8 "has been widely used for the degreasing cleaning of metal and the other industrial solvents" (see point 8-b), and thus corresponds to "solvent portion" of Invention 1.

Evidence A No. 8 discloses that "the status of a soft steel piece" is "observed 48 hours after heat reflux," and a sample achieving a test result of "qualified ○: No metal corrosion" is described as an example (see points 8-h, 8-i, and 8-j), whereas "chloroform" free of stabilizer has "a defect of being decomposed by the contact with metal," and "once the decomposition begins, it proceeds drastically while generating hydrogen chloride," and "simultaneously, metal also corrodes vigorously." "Stabilized chloroform" of cited Invention 8 obviously causes the delaying effect of metal corrosion on chloroform free of stabilizer. Thus it corresponds to "stabilized solvent composition" of Invention 1.

Further, cited Invention 8 only includes "0.1 wt.%  $\alpha$ -methylstyrene, 0.3 wt.% 1,2-butylene oxide, 1.0 wt.% 1,3-dioxolane, and 0.5 wt.% nitromethane" as a stabilizer, and the remaining only includes 98.1 wt.% "methylchloroform." Thus it can be said that it is free of "1,4-dioxane."

Consequently, Invention 1 and cited Invention 8 have in common that "a stabilized solvent composition which is comprised of: a solvent portion which includes a 1,4-dioxane-free stabilizer system portion which includes nitroalkane, 1,2-butylene oxide and 1,3-dioxolane," and differ in the following two points:

(i") The "solvent portion" of the former "includes at least 90 wt.% n-propyl bromide," whereas the latter "includes 98.1 wt.% chloroform"

(ii") As a "stabilizer system portion," the former includes nitroalkane, 1,2-butylene oxide, and 1,3-dioxolane, but does not include 1,4-dioxane," whereas the latter "comprises  $\alpha$ -styrene, nitroalkane, 1,2-butylene oxide, and 1,3-dioxolane, but does not include 1,4-dioxane."

In addition, the demandee objected to the determination of the difference (ii") in that the latter also "not include 1,4-dioxane" (Oral proceedings statement brief, page 48, lines 17 to 22). As discussed in the above item (2), cited Invention 8 was found on the basis of Example 25. Example 25 failed to use "1,4-dioxane" as a stabilizer. There was no common technical knowledge that "1,4-dioxane" was mixed with the other stabilizer or methylchloroform. Thus the demandee's argument is not reasonable.

##### B Consideration of difference

A consideration is given to the difference (i").

Evidence A No. 3 discloses "a deterging solvent composition comprising n-propyl bromide and/or isopropyl bromide," "comprising at least one stabilizer selected from the group consisting of nitroalkanes, ethers, epoxides and amines, wherein the solvent composition may contain an assistant stabilizer used as the stabilizers for chlorinated hydrocarbons," as discussed in the above item 5(2).

As already discussed in the above 6(3)(3-1)B, it cannot be seen, however, from the description of Evidence A No. 3 and Evidence A No. 8 (see points 8-a to 8-j) that n-propyl bromide and methylchloroform are stabilized similarly by use of the same stabilizer, nor can it be said that a stabilizer effective for the stabilization of methylchloroform is also effective for n-propyl bromide as is.

Consequently, "methylchloroform" of Evidence A No. 8 and "n-propyl bromide" of Evidence A No. 3 are in common from the viewpoint of the similarity of solvents; however, it cannot be said that n-propyl bromide shows a function as a stabilizer similar to the case of methylchloroform. Thus it cannot be said that a person skilled in the art could have easily conceived of replacing "methylchloroform" of cited Invention 8 with "n-propyl bromide" of Evidence A No. 3.

#### C Summary

For the above reasons, without considering the remaining differences and the effects, it cannot be said that Invention 1 was easily conceivable by a person skilled in the art on the basis of the inventions described in Evidence A No. 3 and A No. 8.

(3-2) Regarding Inventions 2, 3, 5, 6, 8, to 10

Inventions 2, 3, 5, 6, and 8 include all the matters specifying the invention of Invention 1, and further confine the scope of Invention 1. Thus in circumstances where it cannot be recognized that Invention 1 was easily conceivable by a person skilled in the art on the basis of the inventions described in Evidence A No. 3 and A No. 8, it cannot be recognized similarly that Inventions 2, 3, 5, 6, and 8 were easily conceivable by a person skilled in the art on the basis of the inventions described in Evidence A No. 3 and A No. 8.

Further, Inventions 9 and 10 also use "a stabilized solvent composition which comprises: a solvent portion which includes at least 90 wt.% n-propyl bromide; and a 1,4-dioxane-free stabilizer system portion which includes nitroalkane, 1,2-butylene oxide, and 1,3-dioxolane," which is a matter for specifying the invention common to Invention 1. This matter specifying the invention includes the above difference (i"). Thus it cannot be recognized similarly that Inventions 9 and 10 were easily conceivable by a person skilled in the art on the basis of the inventions described in Evidence A No. 3 and A No. 8.

(4) Summary

As described above, it cannot be recognized that Inventions 1 to 3, 5, 6, and 8 to 10 were easily conceivable by a person skilled in the art on the basis of the inventions described in Evidence A No. 3 and A No. 8. It cannot be said on the basis of the above reasons and evidences that the patents for Inventions 1 to 3, 5, 6, and 8 to 10 were granted in violation of the provision specified in Article 29(2) of the Patent Act.

8 Invalidation Reason 5 (Article 29(2) of the Patent Act)

(1) Description of Evidence A No. 9

The Specification of United States Patent No. 3238137, distributed before the priority date of the Patent (Evidence A No. 9), has the following descriptions: Note that the translation is a partial translation made by the demandant.

(9-a) "This invention relates to chlorinated solvents, and particularly to new and highly effective stabilized solvent compositions composed of chlorinated hydrocarbons containing mixture of stabilizing additives, said compositions being particularly suitable for the liquid and vapor phase degreasing of metals." (column 1, lines 8 to 13)

(9-b) "

Table II

Ex.	Dioxolane Compound	Nitroaliphatic Compound	Epoxide Compound
II	10 percent 5-methyl-1,3-dioxolane	80 percent nitroethylene	10 percent epichlorhydrin
III	30 percent 4-methyl-1,3-dioxolane	60 percent nitroacetylene	20 percent 3,4-epoxybutane
IV	50 percent 2,2-dimethyl-1,3-dioxolane	20 percent 1-nitropropane	30 percent 1,3-epoxypropane
V	30 percent 2-ethyl-1,3-dioxolane	10 percent 1-nitro-2-propene	60 percent 2-chloro-3,4-epoxybutane
VI	40 percent 4-methyl-1,3-dioxolane	20 percent 2-nitropropane	40 percent 1-chloro-2,3-epoxybutane
VII	40 percent 4-ethyl-1,3-dioxolane	10 percent 2-nitro-1-propene	50 percent 1-chloro-2,3-epoxybutane
VIII	60 percent 5,5-dimethyl-1,3-dioxolane	30 percent 2-nitro-1-propyne	10 percent 1-chloro-3,4-epoxybutane
IX	80 percent 5-methyl-5-ethyl-1,3-dioxolane	10 percent nitroethane	10 percent 2-chloro-3,4-epoxybutane
X	20 percent 1,3-dioxolane	60 percent nitromethane	20 percent 2-chloro-3,4-epoxybutane
XI	40 percent 5,5-dimethyl-1,3-dioxolane	20 percent nitropropane	20 percent 3,4-epoxybutane

" (column 5, line 30 to the following table)

表2

例	ジオキソラン化合物	脂肪族ニトロ化合物	エポキシド化合物
II	10 パーセント 5-メチル-1,3-ジオキソラン	80 パーセント ニトロエチレン	10 パーセント エピヒドリン
III	30 パーセント 4-メチル-1,3-ジオキソラン	50 パーセント ニトロアセチレン	20 パーセント 3,4-エポキシブタン
IV	50 パーセント 2,2-ジメチル-1,3-ジオキソラン	20 パーセント 1-ニトロプロパン	30 パーセント 1,3-エポキシプロパン
V	30 パーセント 2-エチル-1,3-ジオキソラン	10 パーセント 1-ニトロ-2-プロペン	60 パーセント 2-クロロ-3,4-エポキシブタン
VI	40 パーセント 4-メチル-1,3-ジオキソラン	20 パーセント 2-ニトロプロパン	40 パーセント 1-クロロ-2,3-エポキシブタン
VII	40 パーセント 4-エチル-1,3-ジオキソラン	10 パーセント 2-ニトロ-1-プロペン	50 パーセント 1-クロロ-2,3-エポキシブタン
VIII	60 パーセント 5,5-ジメチル-1,3-ジオキソラン	30 パーセント 2-ニトロ-1-プロピン	10 パーセント 1-クロロ-3,4-エポキシブタン
IX	80 パーセント 5-メチル-5-エチル-1,3-ジオキソラン	10 パーセント ニトロエタン	10 パーセント 2-クロロ-3,4-エポキシブタン
X	20 パーセント 1,3-ジオキソラン	60 パーセント ニトロメタン	20 パーセント 2-クロロ-3,4-エポキシブタン
XI	40 パーセント 5,5-ジエチル-1,3-ジオキソラン	40 パーセント ニトロプロパン	20 パーセント 3,4-エポキシブタン

"

(9-c) "The stabilizing mixtures, or corrosion inhibitor compositions, shown in Examples II through XI are added to 1,1,1-trichloroethane to form stabilized 1,1,1-trichloroethane compositions. The corrosion inhibitor compositions are added to the 1,1,1-trichloroethane in amount sufficient to form 0.3, 0.5, 1, 2, 4, 5, 6, 10, and 12 weight percent compositions of a stabilizing mixture in 1,1,1-trichloroethane." (column 5, lines 66 to 73)

(9-d) "As indicated above, stabilized liquid compositions of the present invention show little or no tendency to attack metals even at boiling conditions." (column 6, lines 47 to 49)

(9-e) "Nonlimiting examples of the highly preferred dioxolane compounds suitable to the practice of this invention include 1,3-dioxolane, 2-methyl-1,3-dioxolane, 4-methyl-1,3-dioxolane, 5-methyl-1,3-dioxolane, 2-ethyl-1,3-dioxolane, 4-ethyl-1,3-dioxolane, 5-ethyl-1,3-dioxolane, 2,2-dimethyl-1,3-dioxolane, 4,4-dimethyl-1,3-dioxolane, 5,5-dimethyl-1,3-dioxolane, 2,4-dimethyl-1,3-dioxolane, 2,5-dimethyl-1,3-dioxolane, 2,2-diethyl-1,3-dioxolane, 4,4-diethyl-1,3-dioxolane, 5,5-diethyl-1,3-dioxolane, 2,4-diethyl-1,3-dioxolane, 2,5-diethyl-1,3-dioxolane, 2-methyl-2-ethyl-1,3-dioxolane, 2-methyl-4-ethyl-1,3-dioxolane, 2-methyl-5-ethyl-1,3-dioxolane, 2-ethyl-4-methyl-1,3-dioxolane, 2-ethyl-5-methyl-1,3-dioxolane, and the like." (column 7, lines 27 to 53)

(9-f) "Nonlimiting examples of epoxides are such epoxides as epichlorohydrin, 2-chloro-3,4-epoxybutane, 1-chloro-2,3-epoxybutane, 1-chloro-2,4-epoxybutane, 1-

chloro-3,4-epoxybutane, 2-chloro-3,4-epoxybutane, 1-chloro-2,4-epoxybutane, epihydrin, 1,3-epoxypropane, 3,4-epoxybutane, 1,3-epoxybutane, 1,4-epoxybutane, 2,3-epoxybutane, and the like." (column 7, lines 54 to 68)

(9-g) "Nonlimiting examples of nitroaliphatic compounds employed pursuant to the practice of this invention include nitroethylene, nitroacetylene, 1-nitropropane, 1-nitro-2-propane, 2-nitro-1-propene, 2-nitropropane, 2-nitro-1-propene, nitroethane, nitromethane, 1-nitropropane, 2-nitropropane, 2-nitro-1-propene, nitroacetylene, and the like." (column 7, lines 69 to 74)

(9-h) "A stable solvent composition consisting essentially of 1,1,1-trichloroethane contacting from about 0.3 to about 12 weight percent of a mixture consisting essentially of from about 10 to about 80 weight percent of a dioxolane compound, from about 10 to about 60 weight percent of an epoxide compound, and from about 10 to about 80 weight percent of a nitroaliphatic compound dissolved therein, sufficient to inhibit the 1,1,1-trichloroethane against decomposition, said dioxolane compound being a 1,3-dioxolane compound containing up to 2 alkyl substituents each having 1 to 2 carbon atoms, said epoxide being a compound containing from about 3 to about 4 carbon atoms and up to 1 chlorine atom, and said nitroaliphatic compound having not more than 3 carbon atoms." (column 8, lines 32 to 46)

(2) The invention disclosed in Publication 9 (Cited Invention 9)

Evidence A No. 9 discloses "a stable solvent composition essentially consisting of 1,1,1-trichloroethane," "comprising about 0.3 to 12 wt.%" of "a mixture essentially consisting of about 10 to about 80 wt.% of dioxolane compound, about 10 to 60 wt.% epoxide compound, and about 10 to about 80 wt.% fatty nitro compound that are dissolved", "a stable solvent composition," "wherein said oxolane compound is 1,3-dioxolane compound having two alkyl substituent groups at a maximum respectively having 1 to 2 carbon atoms, and said epoxide compound comprises at a maximum one chlorine atom and about 3 to 4 carbon atoms, and further said fatty nitro compound has 3 or fewer carbon atoms" (see point 9-h).

Consequently, Evidence A No. 9 discloses

"A stable solvent composition consisting of 1,1,1-trichloroethane, comprising about 0.3 to about 12 wt.% a mixture essentially consisting of about 10 to 80 wt.% dioxolane compound, about 10 to 60 wt.% epoxide compound, and about 10 to about 80 wt.% fatty nitro compound, wherein said dioxolane compound is a 1,3-dioxolane compound having two alkyl substituent groups at a maximum respectively having 1 to 2 carbon atoms, and said epoxide compound comprises at a maximum one chlorine atom and about 3 to 4 carbon atoms, and further said fatty nitro compound has 3 or fewer carbon atoms" (hereinafter referred to as "cited Invention 9").

(3) Comparison and Determination

(3-1) Invention 1

A Comparison

Invention 1 and cited Invention 9 are compared to each other.

"1,1,1-trichloroethane" of cited Invention 9 corresponds to "solvent portion" of Invention 1, and the solvent composition "comprises about 0.3 to about 12 wt.% a mixture essentially consisting of about 10 to 80 wt.% dioxolane compound, about 10 to 60 wt.% epoxide compound, and about 10 to about 80 wt.% fatty nitro compound".

Thus it can be said that the remaining "1,1,1-trichloroethane" is contained in an amount of "88 to 99.7 wt.%."

Further, a mixture essentially consisting of "dioxolane compound," "epoxide compound," and "fatty nitro compounds" of cited Invention 9 is "a composition for corrosion suppression" (see point 9-c), and thus a stabilizer, and corresponds to "stabilizer system portion" of Invention 1.

Further, "a stable solvent composition" of cited Invention 9 "slightly shows or not at all shows a tendency of attacking metals even in a boiling condition" (see point 9-d). Thus it has achieved the delaying effect of metal corrosion compared to one free of stabilizers, and corresponds to "stabilized solvent composition" of Invention 1.

Consequently, Invention 1 and cited Invention 9 have in common that they are "a stabilized solvent composition comprising a solvent portion and a stabilizer system portion," whereas they are different from each other in the following two points: (i") The "solvent portion" of the former "includes at least 90 wt.% n-propyl bromide," whereas the latter "includes 88 to 99 wt.% 1,1,1-trichloroethane." (ii") As a "stabilizer system portion," the former "includes nitroalkane, 1,2-butylene oxide, and 1,3-dioxolane, but does not include 1,4-dioxane," whereas in the latter "said dioxolane compound is a 1,3-dioxolane compound having two alkyl substituent groups at a maximum respectively having 1 to 2 carbon atoms, and said epoxy compound comprises at a maximum one chlorine atom and about 3 to 4 carbon atoms, and further said fatty nitro compound has 3 or fewer carbon atoms."

## B Consideration of difference

The difference (i") is considered in the following.

Evidence A No. 3 discloses "a deterging solvent composition comprising n-propyl bromide and/or isopropyl bromide," "comprising at least one stabilizer selected from the group consisting of nitroalkanes, ethers, epoxides, and amines, wherein the solvent composition may contain an assistant stabilizer used as the stabilizers for chlorinated hydrocarbons," as discussed in the above item 5(2).

As already discussed in the above 6(3)(3-1)B, it cannot be seen, however, from the description of Evidence A No. 3 and Evidence A No. 9 (see points 9-a to 9-h) that n-propyl bromide and 1,1,1-trichloroethane are stabilized similarly by use of the same stabilizer, nor can it be said that a stabilizer effective for the stabilization of 1,1,1-trichloroethane is also effective for n-propyl bromide as is.

Consequently, "1,1,1-trichloroethane" of Evidence A No. 9 and "n-propyl bromide" of Evidence A No. 3 are in common from the viewpoint of the similarity of solvents; however, it cannot be said that n-propyl bromide shows a function as a stabilizer similar to the case of 1,1,1-trichloroethane. Thus it cannot be said that a person skilled in the art could have easily conceived of replacing "1,1,1-trichloroethane" of cited Invention 9 with "n-propyl bromide" of Evidence A No. 3.

## C Summary

For the above reasons, without considering the remaining differences and the effects, it cannot be said that Invention 1 was easily conceivable by a person skilled in the art on the basis of the inventions described in Evidence A No. 3 and A No. 9.

(3-2) Inventions 2 to 10



Inventions 2 to 8 include all the matters specifying the invention of Invention 1, and further confine the scope of Invention 1. Thus in circumstances where it cannot be recognized that Invention 1 was easily conceivable by a person skilled in the art on the basis of the inventions described in Evidence A No. 3 and A No. 9, it cannot be recognized similarly that Inventions 2 to 8 were easily conceivable by a person skilled in the art on the basis of the inventions described in Evidence A No. 3 and A No. 9.

Further, Inventions 9 and 10 also use "a stabilized solvent composition which comprises: a solvent portion which includes at least 90 wt.% n-propyl bromide; and a 1,4-dioxane-free stabilizer system portion which includes nitroalkane, 1,2-butylene oxide and 1,3-dioxolane," which is a matter for specifying the invention common to Invention 1. This matter specifying the invention includes the above difference (i"). Therefore, it cannot be recognized similarly that Inventions 9 and 10 were easily conceivable by a person skilled in the art on the basis of the inventions described in Evidence A No. 3 and A No. 9.

#### (4) Summary

As described above, it cannot be recognized that Inventions 1 to 10 were easily conceivable by a person skilled in the art on the basis of the inventions described in Evidence A No. 3 and A No. 9, nor it can be said on the ground of the above reasons and evidences that the patents according to Inventions 1 to 10 were granted in violation of the provision of Article 29(2) of the Patent Act.

#### 9 Invalidation Reason 6 (Article 29(2) of the Patent Act)

##### (1) Description of Evidence A No. 10

The Specification of United States Patent No. 3238137, distributed before the priority date of the Patent (Evidence A No. 9), has the following descriptions: Note that the translation is a partial translation made by the demandant.

(10-a) "Methylchloroform is subject to degradation and forms corrosive products in the presence of certain metals, especially aluminum, zinc, iron, copper, and their alloys. Most stabilized methylchloroform compositions contain a combination of compounds as the stabilizer, some of which are intended to stabilize either the vapor or liquid and others which will be effective in both." (column 1, lines 13 to 20)

(10-b) "This solvent is useful in cold cleaning, hot cleaning and in vapor degreasing." (Column 1, lines 21 to 23)

(10-c) "Since the introduction into the marketplace in 1957 - 1958 as a commodity, the largest volume of 1,1,1-trichloroethane sold throughout the world contained 1,4-dioxolane, nitromethane, and 1,2-butylene oxide as the sole inhibitors. The next largest volume has been that containing 1,3-dioxane (a five-membered dioxygen heterocycle, a compound very similar to 1,4-dioxane), nitromethane, 1,2-butylene oxide, and in most instances one or more materials (such as lower ketones and/or alcohols) which account for the remainder of the ten principal compounds used in industry to stabilize 1,1,1-trichloroethane." (Column 1, lines 21 to 23)

##### (2) Invention described in Evidence A No. 10 (Cited Invention 10)

Evidence A No. 10 discloses that "1,1,1-trichloroethane" comprising a "suppressant" of "1,3-dioxolane," "nitromethane," and "1,2-butylene oxide" "was sold worldwide as a product" (see point 10-c), and "the most part of stabilized

methylchloroform composition comprises the combination of a compound as a stabilizer" (see point 10-a), and thus it can be said that "stabilized" "1,1,1-trichloroethane (methylchloroform)" comprises as a suppressant all of "1,3-dioxolane," "nitromethane," and "1,2-butylene oxide." Thus it can be said that Evidence A No. 10 discloses

the invention of "a stabilized 1,1,1-trichloroethane composition comprising 1,3-dioxolane, nitromethane, and 1,2-butylene oxide as a suppressant" (hereinafter referred to as "cited Invention 10").

Incidentally, the demandee argues that Evidence A No. 10 is construed as meaning that each of "1,3-dioxolane," "nitromethane," and "1,2-butylene oxide" is a sole inhibitor, thus the above finding is incorrect (Written reply, page 75, lines 9 to 18, Oral proceedings statement brief, page 51, lines 23 to 29).

Further, in the original text, "the largest volume of 1,1,1-trichloroethane sold throughout the world" "contained" "1,3-dioxolane, nitromethane and 1,2-butylene oxide as the sole inhibitors," which is followed by the sentence of:

"the next largest volume" "has been that containing" "1,3-dioxane (a five-membered dioxygen heterocycle, a compound very similar to 1,4-dioxane), nitromethane, 1,2-butylene oxide."

According to this, "1,1,1-trichloroethane" sold by "the largest volume" and "the next largest volume" both contained "nitromethane" and "1,2-butylene oxide" in common. Thus it is unlikely that "nitromethane" and "1,2-butylene oxide" are contained as a separate inhibitor (If these compounds are contained as a sole inhibitor, both of "1,1,1-trichloroethane" sold by "the largest volume" and "the next largest volume" should not be contained in common). It is described as a "suppressant" including all of these three-components. Thus the above finding is not erroneous. Therefore, the demandee's argument is not acceptable.

### (3) Comparison and Determination

#### (3-1) Invention 1

##### A Comparison

Invention 1 and cited Invention 10 are compared to each other.

"1,1,1-trichloroethane" of cited Invention 10 corresponds to "solvent portion" of Invention 1.

Further, "nitromethane," "1,3-dioxolane," and "1,2-butylene oxide" of cited Invention 10 are "suppressant," and are thus stabilizers, and correspond to "stabilizer system portion" of Invention 1.

Further, "stabilized 1,1,1-trichloroethane (methylchloroform) composition" of cited Invention 10 "stabilizes either vapor or liquid" (see point 10-a). Thus the delaying effect of metal corrosion is achieved as compared to one free of stabilizers, and thus it corresponds to "stabilized solvent composition" of Invention 1.

Consequently, Invention 1 and cited Invention 10 have in common that they are "stabilized solvent compositions comprising a solvent portion and a stabilizer system portion," whereas they are different from each other in the following two points: (i) The "solvent portion" of the former "includes at least 90 wt.% n-propyl bromide," whereas the latter "includes 1,1,1-trichloroethane."

(ii) As a "stabilizer system portion," the former "includes nitroalkane, 1,2-butylene oxide and 1,3-dioxolane, but does not include 1,4-dioxane," whereas the latter "includes

1,3-dioxolane, nitromethane, and 1,2-butylene oxide."

#### B Examination of the difference

The examination of the difference (i''') is as follows.

Evidence A No. 3 discloses "a deterging solvent composition comprising n-propyl bromide and/or isopropyl bromide," "comprising at least one stabilizer selected from the group consisting of nitroalkanes, ethers, epoxides, and amines, wherein the solvent composition may contain an assistant stabilizer used as the stabilizers for chlorinated hydrocarbons," as discussed in item 5(2).

As already discussed in the above 6(3)(3-1)B, it cannot be seen, however, from the description of Evidence A No. 3 and Evidence A No. 10 (see points 10-a to 10- c) that n-propyl bromide and 1,1,1-trichloroethane are stabilized similarly by use of the same stabilizer, nor can it be said that a stabilizer effective for the stabilization of 1,1,1-trichloroethane is also effective for n-propyl bromide as is.

Consequently, "1,1,1-trichloroethane" of Evidence A No. 10 and "n-propyl bromide" of Evidence A No. 3 are in common from the viewpoint of the similarity of solvents; however, it cannot be said that n-propyl bromide shows a function as a stabilizer similar to the case of 1,1,1-trichloroethane. Thus it cannot be said that a person skilled in the art could have easily conceived of replacing "1,1,1-trichloroethane" of cited Invention 10 with "n-propyl bromide" of Evidence A No. 3.

#### C Summary

For the above reasons, without considering the remaining differences and the effects, it cannot be said that Invention 1 was easily conceivable by a person skilled in the art on the basis of the inventions described in Evidence A No. 3 and A No. 10.

#### (3-2) Inventions 2 to 5, 9, 10

Inventions 2 to 5 include all the matters specifying the invention of Invention 1, and further confine the scope of Invention 1. Thus in circumstances where it cannot be recognized that Invention 1 was easily conceivable by a person skilled in the art on the basis of the inventions described in Evidence A No. 3 and A No. 10, it cannot be recognized similarly that Inventions 2 to 5 were easily conceivable by a person skilled in the art on the basis of the inventions described in Evidence A No. 3 and A No. 10.

Further, Inventions 9 and 10 also use "a stabilized solvent composition which is comprised of: a solvent portion which includes at least 90 wt.% n-propyl bromide; and a 1,4-dioxane-free stabilizer system portion which includes nitroalkane, 1,2-butylene oxide, and 1,3-dioxolane," which is a matter for specifying the invention common to Invention 1. This matter specifying the invention includes the above difference (i'''). Therefore, it cannot be recognized similarly that Inventions 9 and 10 were easily conceivable by a person skilled in the art on the basis of the inventions described in Evidence A No. 3 and A No. 10.

#### (4) Summary

As described above, it cannot be recognized that Inventions 1 to 5, 9, and 10 were easily conceivable by a person skilled in the art on the basis of the inventions described in Evidence A No. 3 and A No. 10. It cannot be said on the basis of the above reasons and evidences that the patents of the Inventions 1 to 5, 9, and 10 were granted in

violation of the provision specified in Article 29(2) of the Patent Act.

No. 6 Written statement submitted by the demandee on June 21, 2012

#### 1 Procedures

After notice of conclusion of proceedings on June 15, 2012 (Dispatched on June 19), a written statement was submitted on June 21 from the demandee, because the demandee's allegation and explanation presented in the oral proceedings are not definitely described in the oral proceedings record. The demandee mentions that the content of this written statement should be considered.

However, the oral proceedings record confirmed both parties orally after the completion of oral proceedings, and later confirmed in a document. In the meantime, if the content of the oral proceedings record has some deficiencies, the demandee had a chance to express an opinion in a written statement, but began to express a further opinion after the notice of conclusion of proceedings. Thus this content of the written statement should not be considered first of all.

Furthermore, the present written statement includes a counterargument against the written statement submitted on May 30, 2012 by the demandant that could not be presented in the oral proceedings (page 12, last line to page 20, line 1). Therefore, the demandee's allegation of the content of the written statement being considered is not reasonable.

#### 2 Argument in the written statement

Nevertheless, the argument in the written statement was taken into consideration.

##### (1) Invalidation Reason 1

The demandee alleges that the certificate of experimental results 3 (reference document 1) showed an experimental result that indicates how long it takes for metal corrosion in a solvent composition comprising 1,2-butylene oxide, nitroethane, and isopropanol as a stabilizer together with a solvent portion of n-propyl bromide for aluminum alloy (JIS ADC14), and no delaying effect of metal corrosion was observed when isopropanol was used as a stabilizer to be used in combination, and thus even if the specification of earlier application describes the use of 1,3-dioxolane as a stabilizer to be used in combination, it cannot be said that it is a completed invention (page 3, line 14 to page 5, line 9).

Indeed, the reference document 1 was submitted once by the demandee in the oral proceedings, but the body pointed out that the experimental results therein was inconsistent with the experimental results shown in Evidence B No. 15 and B No. 16, and the demandee withdrew the submission accordingly, and thus it was not described in the oral proceedings record.

Specifically, regarding a blank of Table 1 of reference document 1 (the one including only 1,2-butylene oxide and nitroethane as a stabilizer together with a solvent portion of n-propyl bromide), completely the same solvent composition is described as a blank of Table 1 of Evidence B No. 15 and B No. 16. For them, the metal corrosion test was conducted in the same condition. Thus it should have created the same result originally. By contrast, the metal corrosion starting time of reference document 1 was 280 minutes, whereas the metal corrosion starting times of Evidence B No. 15 and B No. 16 were respectively 75 minutes. The body pointed out the inconsistency of these

experimental results in the oral proceedings. In response, the demandee replied that the difference in the way of polishing a test piece makes a difference in experimental results. The body further pointed out that the experiments of Evidence B No. 15 and B No. 16 may also create a different experimental result depending on the way of polishing a test piece, and thus it cannot be said that the accurate experimental results are reflected. Accordingly, the demandee withdrew the submission of the reference document 1. The oral proceedings record is silent about this; however, the existence of such proceedings is supported by the fact that, since the demandee alleged that an experimental result differs depending on the way of polishing a test piece, the demandant inquired of the demandee about the "standard or product name of emery cloth" for polishing a test piece with regard to the implementation condition to conduct an additional test for the examples of the specification (see the written statement on April 10, 2012).

Consequently, the experimental results shown in reference document 1 further raise doubts about the accuracy of the experimental results of Evidence B No. 15, B No. 16, and B No. 28 although all of them referring to similar experiments. Therefore, even if the argument of the written statement is considered, it does not affect the determination of the Invalidation Reason 1 as stated in the above "No. 5 4."

## (2) Invalidation Reason 9

The demandee alleged that the term "stabilized" means a state of metals that were less corroded in a solvent including a stabilizer than in a solvent excluding a stabilizer. This meaning is definite to present a counterargument against the demandant's argument presented in the written statement on May 30, 2012 (page 13, line 13 to page 17, line 1).

As is discussed in the above "No. 5 1(2)E", however, even if there might be a room to construe the term "stabilized" as having the aforementioned meaning, it cannot be said that the meaning of "stabilized composition" that does not specify the use condition is definite. Further, in view of the specification, the term "stabilized" may not be first of all construed necessarily as having the aforementioned meaning, and thus the demandant's argument is not acceptable.

Consequently, given the argument of the written statement to be considered, it does not affect the determination of the Invalidation Reason 9 as stated in the above "No. 5 1."

## No. 7 Conclusion

As seen above, the patents of the inventions according to Claims 1 to 10 correspond to Article 123(1)(iv) of the Patent Act, and thus should be invalidated. Further, the patents of the inventions according to Claims 1 to 3, 5, 9, and 10 correspond to Article 123(1)(ii) of the Patent Act, and thus should be invalidated.

The costs in connection with the trial shall be borne by the demandee under the provisions of Article 61 of the Code of Civil Procedure as applied mutatis mutandis to the provision Article 169(2) of the Patent Act.

July 2, 2012

Chief administrative judge: INOUE, Masahiro

Administrative judge: KIMURA, Toshiyasu  
Administrative judge: OHATA, Michitaka