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**D E C I S I O N**  
**of 7 December 1999**

**Case Number:** T 0488/96 - 3.3.1

**Application Number:** 89906459.6

**Publication Number:** 0377750

**IPC:** C07D 277/56

**Language of the proceedings:** EN

**Title of invention:**

Process for preparing thiazolecarboxylic acid chlorides

**Applicant:**

Mitsui Chemicals, Inc.

**Opponent:**

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**Headword:**

Acid chlorides/MITSUI

**Relevant legal provisions:**

EPC Art. 84, 111(1), 123(2)

**Keyword:**

"Definition of the invention in claim (no) - essential  
technical features missing"

"Remittal (yes) - fresh case"

**Decisions cited:**

G 0010/93, T 0032/82, T 0115/83, T 0063/86, T 0047/90,  
T 0409/91, T 0615/95

**Catchword:**

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Boards of Appeal

Chambres de recours

**Case Number:** T 0488/96 - 3.3.1

**D E C I S I O N**  
**of the Technical Board of Appeal 3.3.1**  
**of 7 December 1999**

**Appellant:** Mitsui Chemicals, Inc.  
2-5, Kasumigaseki 3-chome  
Chiyoda-ku  
Tokyo (JP)

**Representative:** West, Alan Harry  
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**Decision under appeal:** Decision of the Examining Division of the  
European Patent Office posted 22 February 1996  
refusing European patent application  
No. 89 906 459.6 pursuant to Article 97(1) EPC.

**Composition of the Board:**

**Chairman:** A. J. Nuss  
**Members:** R. Freimuth  
J. P. B. Seitz

## Summary of Facts and Submissions

- I. The appeal lodged on 25 April 1996 lies from the decision of the Examining Division posted on 22 February 1996 refusing European patent application No. 89906459.6 (European publication No. 377 750).
- II. The decision was based on claim 1 submitted on 16 March 1993 and claims 2 to 8 as originally filed according to the then pending main request. The Examining Division found that claim 1 did not involve an inventive step in the sense of Article 56 EPC, having regard to the following documents:
- (A) CH-A-440 283,
  - (B) Houben-Weyl, Methoden der organischen Chemie, Volume E5 (1985), pages 596 to 599 and
  - (F) J. V. Metzger, Chemistry of Heterocyclic Compounds, Volume 34, Thiazole and its derivatives, part 1 (1979), page 528.

More particularly, the Examining Division held that either document (A) or (F) represented the closest prior art. The problem underlying the application was to provide an improved method for producing thiazolecarboxylic acidchlorides from the corresponding acids. However, document (A) taught to prefer phosgene as chlorinating agent and from document (B) the advantageous use of phosgene was known.

- III. In a communication from the Board pursuant to Article 11(2) of the rules of procedure of the Boards

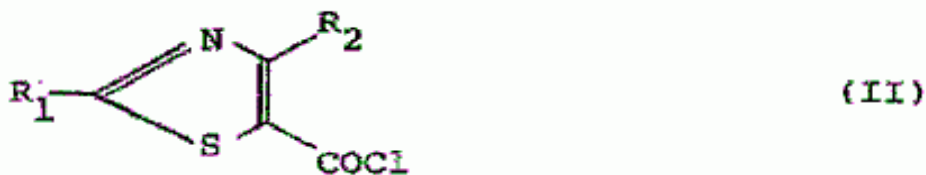
of Appeal, the Appellant's attention was drawn to different aspects in the assessment of inventive step, *inter alia* to document

(D) J. Chem. Soc. 1945, pages 601 to 603

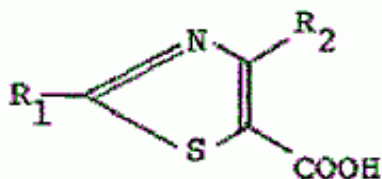
as possible closest prior art, to the question whether the problem underlying the invention was successfully solved and to the particular teaching of document (B) with respect to the use of phosgene.

IV. At the oral proceedings before the Board held on 7 December 1999 the Appellant filed two alternative sets of amended claim 1, claim 1 according to the main request reading as follows:

"1. A process for the preparation of a thiazolecarboxylic acid chloride represented by the following general formula (II):



wherein R<sub>1</sub> represents a lower alkyl group or a lower alkyl group substituted by a halogen atom or lower alkoxy group, and R<sub>2</sub> represents a hydrogen atom, a lower alkyl group, or a lower alkyl group substituted by a lower alkoxy group, which comprises reacting a thiazolecarboxylic acid represented by the following general formula (I):



wherein R<sub>1</sub> and R<sub>2</sub> have the same meaning as defined with respect to formula (II), with phosgene in the presence or absence of a catalyst."

Claim 1 according to the auxiliary request differed from that according to the main request exclusively by incorporating the additional feature to carry out the reaction "at a temperature from 20°C to reflux".

- V. The Appellant submitted that document (D), which was referred to in document (F), represented the closest state of the art describing the conversion of 2,4-dimethylthiazole-5-carboxylic acid into the corresponding acidchloride using thionyl chloride as chlorinating agent in the presence of pyridine at 0°C. The process of the present application using phosgene as chlorinating agent resulted in an improved yield and purity of the prepared 2-alkyl-thiazole-5-carboxylic acidchlorides. Though document (B) stated that phosgene was a milder chlorinating agent than thionyl chloride and that acidchlorides were obtained in "nearly quantitative yield" when using phosgene, that document was silent about the feature essential in the performance of the invention to carry out that process at a reaction temperature of from 20°C to reflux. To evidence the impact of this essential feature the Appellant pointed to comparative example 2 as filed on 4 November 1999 using phosgene as chlorinating agent

and showing a very inferior yield when preparing 2-alkyl-thiazole-5-carboxylic acidchloride at the lower reaction temperature of 5°C.

- VI. The Appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of claim 1 according to the main request or on the basis of claim 1 according to the first auxiliary request, both requests filed during the oral proceedings before the Board.

### **Reasons for the Decision**

1. The appeal is admissible.

#### *Main request*

2. In claim 1 both substituents  $R_1$  and  $R_2$  of the generic chemical formulae I and II have been limited to specific definitions by excising certain definitions from the respective independent lists given in claim 1 of the application as filed specifying alternative definitions of these substituents. That shrinking of both lists of alternative definitions disclosed in the application as filed is not objectionable as that limitation does not result in singling out a particular combination of specific definitions but maintains the remaining subject-matter of claim 1 as generic lists of alternative definitions differing from the original lists only by their smaller size (see decision T 615/95, point 6 of the reasons, not published in OJ EPO).

Furthermore, claim 1 has been restricted to the alternative embodiment of using phosgene as chlorinating agent which finds support in claim 1 of the application as filed.

Therefore all these amendments comply with the requirements of Article 123(2) EPC.

3. It is the established jurisprudence of the Board of Appeals that a European patent may only be granted on the basis of a claim defining the matter for which protection is sought by stating **all essential features** of the invention. This requirement arises from Article 84, first sentence, in combination with Rule 29(1) and (3), EPC. It follows therefrom that an independent claim must comprise all the technical features necessary to solve the problem underlying the application. Insofar as an independent claim fails to include any essential feature, it is not a definition of the invention but a mere incomplete description of it (see decisions T 32/82, OJ EPO 1984, 354, point 15 of the reasons; T 115/83, point 4 of the reasons, not published in OJ EPO; T 409/91, OJ EPO 1994, 653, point 3.2 of the reasons).

In the present case, the problem to be solved, i.e. the technical effect to be achieved, as indicated in the application (page 2, lines 22 and 23), which the Appellant also emphasized in appeal proceedings, consists in improving the yield and the purity of the 2-alkylthiazole-5-carboxylic acidchlorides obtained in the preparation process of the invention. The Appellant submitted at the oral proceedings before the Board that the reaction temperature of that preparation process is



a feature **essential** in the performance of the invention. Once the reaction temperature is not within the range of **from 20°C to reflux**, so the Appellant, the 2-alkylthiazole-5-carboxylic acidchlorides are not obtained with an improved yield and purity; hence, the desired technical effect is not achieved in that case and the problem underlying the application is not solved. In support of his submission, he referred to example 1 according to the invention and to fresh comparative example 2 filed on 4 November 1999. Both examples prepared the identical 2-alkylthiazole-5-carboxylic acidchloride and were carried out in the same way, apart from the reaction temperature: it was 5°C in comparative example 2, whereas example 1 according to the invention was carried out under heating and reflux of the solvent xylene. Comparative example 2 yielded merely 41% of 2-alkylthiazole-5-carboxylic acidchloride, example 1 according to the invention, however, 98% thereof. Thus, the comparison of the yields of both examples truly reflects the impact of the reaction temperature on the yield and backs up the Appellant's submission that any improvement in yield and purity aimed at is obtained only, i.e. the problem underlying the application is solved only, when the reaction temperature is **from 20°C to reflux**, with the consequence that this feature is indeed essential in the performance of the invention.

However, it is precisely this feature that is missing from independent claim 1, which, therefore, does not meet the requirement of Article 84, first sentence, EPC, since it does not define the claimed subject-matter by reference to **all** its essential technical features.

4. In these circumstances, the Appellant's main request is not allowable for contravening Article 84 EPC and must be rejected.

*Auxiliary request*

5. Claim 1 of the auxiliary request differs from that according to the main request exclusively in adding the feature "at a temperature from 20°C to reflux". This amendment is supported by page 11, lines 5, 8 and 14 of the application as filed which is in keeping with the requirements of Article 123(2) EPC.
6. Thus, contrary to claim 1 according to the main request, independent claim 1 according to the auxiliary request includes the feature to carry out the process at a temperature from 20°C to reflux (see point IV above), i.e. all the essential features of the invention (cf. point 3 above ). Therefore, the deficiency objected to is rectified, with the consequence that claim 1 according to the auxiliary request satisfies the requirement of Article 84, first sentence, EPC.

*Remittal*

7. Having so decided, the Board has not, however, taken a decision on the whole matter, since substantial amendments have been made to independent claim 1 according to the auxiliary request by including a temperature condition which, although mentioned in the description of the application as filed, was only presented at the oral proceedings before the Board as an essential feature of the invention for which

protection was sought. The decision under appeal dealt exclusively with lack of inventive step of claim 1 according to the then pending main request and did not consider claim 1 in the form of the present auxiliary request as such request was never submitted to the first instance. The amendments made, in particular the added feature requiring a temperature of from 20°C to reflux, have the effect that the reasons given for refusing the present application no longer apply since that particular amendment is substantial in the sense that the assessment of inventive step has to be done on a new basis. It is only before the Board that the Appellant has pointed to fresh facts, arguments and even evidence in support of his case, emphasizing that the reaction temperature of from 20°C to reflux is now the **essential** feature to be considered in the assessment of inventive step. Thus, claim 1 according to the first auxiliary request gives rise to fresh issues not yet addressed in examination proceedings constituting a "fresh case" (see e.g. decisions T 63/86, OJ EPO 1988, 224; T 47/90, OJ EPO, 1991, 486).

While Article 111(1), second sentence, first alternative, EPC gives the Boards of Appeal the power to decide in ex-parte proceedings on fresh issues where the application has been refused on other issues, proceedings before the Boards of Appeal in ex-parte cases are primarily concerned with examining the contested decision (see decision G 10/93, OJ EPO 1995, 172, points 4 and 5 of the reasons), fresh issues normally being left to the Examining Division to consider after a referral back, so that the Appellant has the opportunity for these to be examined and decided upon without loss of an instance.

Under these circumstances the Board considers it appropriate to exercise its power conferred to it by Article 111(1), second sentence, second alternative, EPC to remit the present fresh case to the Examining Division for further prosecution.

8. The Board has made out the issues outlined below as meriting consideration when resuming examination proceedings on the basis of claim 1 of the auxiliary request.

The relative term "lower" in claim 1 indicating the chain length of the alkyl and alkoxy groups of the substituents  $R_1$  and  $R_2$  needs to be examined as to its suitability for **clearly** defining the subject-matter for which protection is sought as required by Article 84 EPC, second sentence (see decision T 337/95, OJ EPO 1996, 628).

The reflux temperature in claim 1 appears to refer to the boiling point of the solvent present in the claimed preparation process (cf. page 11, paragraph 2 of the application as filed). The question therefore arises whether or not to include the presence of a solvent in claim 1.

The amendment made to the description on page 9, line 10 before the Examining Division should also be reviewed to establish whether or not it has a proper basis in the application as filed.

When assessing the inventive step of the subject-matter of claim 1 with respect to the fresh feature of maintaining a reaction temperature of from 20°C to

reflux, particular attention should be drawn to the documents cited as footnotes in the general text book (B). The remittal of the present case to the Examining Division ensures that the Appellant is given the opportunity to present any comment on any possible fresh objection or document which might become relevant as a consequence of that amendment, if he so wishes, in conformity with his right to be heard pursuant to Article 113(1) EPC.

## **Order**

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

1. The decision under appeal is set aside.
2. The case is remitted to the first instance for further prosecution on the basis of claim 1 of the first auxiliary request filed during the oral proceedings.

The Registrar:

The Chairman:

E. Görgmaier

A. Nuss