Examiners' Report on Paper B/1995 (Chemistry)

Before turning to particular points important for this year's paper B, some general remarks should receive the candidates' attention.

The candidates are reminded that argumentation is an important part of their expected scripts in Paper B. Arguments are often helpful to clarify the candidates' position with respect to the objections raised in the communication and their solution proposed to meet those objections.

Arguments can only be convincing if they relate to mandatory features of the invention as defined in the independent claims and if the arguments are consistent with the claims and if they are based on the given facts or evidence (in the description). Not all candidates were aware of this fact and they tried to argue only on the basis of optional features to distinguish their claims from the prior art or their claims were inconsistent with their arguments. The presence of wrong arguments reduces the value of the argumentation as a whole and may therefore result in less marks than would have been possible otherwise. Such wrong arguments give rise to the question whether the concepts discussed (e.g. novelty and inventive step) have been fully understood.

It is a prerequisite for any amended claims in order to contribute to a successful reply that the requirements of Art. 123(2) and of Art. 84 EPC are fulfilled. The other two main prerequisites for successful claims in this paper are their novelty over the prior art and the presence of an inventive step with respect to the prior art. These are separate requirements of the EPC and, therefore, they should be dealt with separately, instead of being mixed up.

From these remarks follows that the candidates were not only expected to suggest claims which fulfil these requirements but they were also expected to present appropriate arguments. These arguments should be clearly based on the application as presented to them in this examination and - with respect to novelty and inventive step - they should also be based on a fair reading of the cited documents, in order to support the claims with respect to each of these requirements. Thus, too many candidates stated that their claims comply with Art. 123(2) EPC when this was not so. Fair reading of the documents means that the features referred to are not read out of their context. The remark in the report to Paper A that the context of a particular feature has to be taken into account applies to Paper B as well. Examples will be given later.

The candidates were expected to establish ***novelty*** of their claims and to provide arguments at least for each of the independent claims with respect to each document of the cited prior art. The communication should also be taken into account, because it refers to the significant parts of the prior art with respect to each claim in the application. Surprisingly, there was a number of candidates not dealing with the arguments of the communication at all, let alone refuting them.

The question of ***inventive step*** should be discussed for the subject-matter of each independent claim separately. Reference is made to the Guidelines C-IV, 9.5 as regards the generally preferred and most promising method for dealing with this question, the so-called problem-solution approach. According to this approach, the closest prior art and the differences between this closest prior art and the invention claimed have to be determined. Then, the technical problem to be overcome with respect to this prior art has to be formulated. In this step, care must be taken not to include therein parts of the solution found in the claim. Finally, it must be determined whether any one of the documents of the prior art provides or suggests a solution to the above problem which falls inside the scope of the claim in question.

Point 8 of the communication made clear what was expected from the candidates: to identify the difference between the new claims and the prior art and its significance and to present the invention in such a way that both the problem to be solved vis-a-vis the prior art and the solution found could be understood.

It was noted that the arguments to inventive step in the communication were simply disregarded by a number of candidates instead of - with respect to the subject-matter of new claims - being discussed and refuted by them.

The crucial documents for the assessment of novelty and inventive step in paper B are Documents III (**DIII**) and IV (**DIV**). This fact is evident from the communication where emphasis has been put on the contents of DIII and DIV. The examiners are of the opinion that the facts and arguments given in the communication are well founded in view of the documents. Hence, they are also of the opinion that all claims of Paper B except for claim 9 could not be maintained. The client's letter clearly gave the clear and unambiguous instruction not to pursue the subject-matter of claim 9 further.

Therefore the candidates should have been aware of the fact that maintaining any one of the claims presented in Paper B would not contribute to a successful reply.

In view of the prior art and of the clear instruction from the client, the candidates were expected to present a claim to a reactor. Surprisingly, a number candidates did not draft such a claim.

The closest prior art with respect to the reactor is DIV which discloses a reactor made up from plates of a homogeneous Pb-Sb alloy. As indicated in the communication, DIII gave the particulars for making the plates as used in the reactor of DIV which fulfil the chemical and mechanical requirements for such plates. In DIV the joints between these plates were filled by pure lead. As demonstrated in example 2 and as referred to in more general terms in the passage bridging pages 95/B(C)/e/3-4 of the application, the problem of contact corrosion could be overcome by filling the joints between the plates of the reactor with an alloy having the same chemical composition as these plates.

In order to comply with Art. 84 and 123(2) EPC, it was not sufficient to define the distinguishing feature in the claim, i.e. the joints, but all the essential parts of the reactor had to be specified in the expected claim to the reactor. Thus, it had to be clear in this claim that those parts of the surfaces of the reactor which come into contact with the reaction mixture had to be lined with plates of the hardened Pb-Sb alloy containing 1 to 15 wt.% of Sb.

In view of the mechanical and chemical resistance required, homogeneity and improved hardness had to be achieved. In view of the original disclosure and of the requirements of Art. 123(2) EPC the only way to define the reactor having these properties apparently was a product-by-process claim defining the plates and the joints filling the gaps between the plates. Essential features expected were in the preparation of the plates: quenching immediately after the casting step to below 200°C, rolling at 135 to 175°C with a thickness reduction per pass of 10 to 20%, followed by finish-rolling at 20 to 125°C with a total further thickness reduction of at least 10% and a thickness reduction of 1 to 5% per pass. For the joints it was essential that the gaps between the plates were filled with the molten alloy and that forming of inhomogeneities was avoided by quenching (rapid dissipation of the heat).

With respect to such a product-by-process claim it was deemed necessary that the objections in the communication were taken into account and were refuted (e.g. the objection under point 5 of the communication).

Of course, a claim to the manufacture of such a reactor was also expected (cf. the Guidelines C-IV, 9.5a).

A second aspect of the invention was the possibility to prepare urea of particular pureness which allowed the preparation of biuret for animal feed without intermediate purification to remove traces of reactor corrosion products. This aspect could be covered by two types of claims: A process claim to the preparation of urea in the above reactor or a claim to the use of the above reactor in such a process.

A claim to the urea per se was deemed not to be possible in view of the fact that a different content of impurities does not amount to novelty (cf. the remarks in the report to Paper A with respect to Decision T 205/83).

A still further aspect that was expected to be covered by claims could be found in example 3 of the application. In this example particular good results with respect to corrosion resistance of specific alloys against sulphuric acid have been demonstrated. The closest prior art for this aspect is DII.

As in previous years, these different aspects of the invention could no longer be covered by one application because of lack of unity. Unity is accepted for those aspects which are linked together by a common feature which contributes to the state of the art. This means that this common feature must be new and inventive (Guidelines C-III, 7.2).

Taking this requirement into account, the last aspect relating to particular low corrosion to fuming sulphuric acid was different from the other aspects. While the other aspects were based on the problem of reducing or preventing contact corrosion of the reactor which results in urea having an improved purity and on the solution of filling the gaps between the hardened plates with joint material of the same composition but being more ductile, the last aspect was based on the problem of improving the corrosion resistance as such. This was achieved by selecting alloys having a specific Sb content.

Although it is not necessary to draft the wording of the claim for a divisional application in accordance with the instructions to candidates, it is nevertheless deemed indispensable to explain the scope of such a claim e.g. by reference to the relevant passages of the application. Thus, a statement that the reactor would be claimed in a divisional application without giving any particulars has been considered insufficient to get any marks.

As pointed out above, fair reading of the application or of the prior art excludes reading a feature out of its context. If this observation was not complied with in amending the claims, a violation of Art. 123(2) EPC was often the result. Reference is made to the Guidelines C-VI, 5.4 wherein the limits for the allowability of amendments are explained. To give an example: the application clearly referred to alloys only wherein the Sb content was limited to 1 to 15 wt.%. The 3rd paragraph (This presents ...) on 95/B(C)/e/4 could only be read properly in this context, but it did not provide a basis for a claim to any reactor comprising plates of hardened alloy and of joints made of unhardened alloy without further definitions or limitations.

The terms "hardened" and "unhardened" as such without further definitions in a claim to a reactor were considered unclear and ambiguous.

Some candidates appeared not to have been aware of the fact that novelty has to be assessed vis-a-vis each document separately (Guidelines C-IV, 7.1).

Some candidates did not realise that a range of e.g. "1 - 3 %" is anticipated by "1 %" disclosed in a range of "1 - 5 %". Of course, "5%" is anticipated as well (cf. T 181/82 [OJ 9/1984, 401 - 414] especially point 8 of the reasons for the decision). "The question - is there inventive step? - only arises if there is novelty" (Guidelines C-IV, 9.1). If there may be an argument in favour of inventive step, it cannot be taken into account for the different requirement of novelty.

Some marks were lost by a number of candidates because they did not include in the reactor claim the essential feature disclosed in the last sentence of the 3rd paragraph on 95/B(C)/e/4 which would prevent inhomogeneities from forming in the joints.

Maintenance of claim 9 (use of the ternary alloy) contrary to the client's instructions would result in a new communication due to lack of unity instead of the possible grant. Therefore the candidate could not be awarded the full marks available in Paper B.

Some candidates chose the two-part form for the reactor claim but they did not word the two parts correctly in accordance with Rule 29 (1) EPC. In such a wording only the distinguishing feature with respect to the prior art may be included in the second part of the claim. This resulted in the loss of some marks.

It has been found that a number of candidates do not define ranges in an exact way. They are apparently not aware that "less than", "weniger als" and "moins de" is different from "(up) to", "bis (zu)" and "(jusqu')à".

Reference has already been made to the fact that argumentation should be based on a fair reading of the documents. What has been stated or admitted in the application, e.g. about homogeneity and properties depending thereon, cannot be ignored when discussing prior art; e.g. Documents III and IV, if the argument is to be persuasive. In the description of the application there is a clear statement in the last paragraph on page 5 that mechanical strength of the alloy is greater, the nearer the finish-rolling temperature is to the upper limit of the stated range (of 20 to 125°C). In view of this statement, an argument to support a range of 20 to 110°C against DIII, based on the results in tables 1 and 2 of the application, has not been deemed convincing.

Definitions in a claim must be unambiguous and meaningful. A claim to a rolled article defined in terms of corrosion losses expressed as a percentage does not appear to fulfil this requirement because corrosion certainly depends on the ambient conditions (temperature, medium, time). This is true for nearly all measured physical and chemical properties.

Limiting the rolling temperature to less than 170°C (which does not even have a basis in the application) or finish rolling temperature to 20°C excludes e.g. example 2 and seriously reduces the number of good arguments for patentability.

Care should be taken by the candidates to use correct unit signs (see e.g. the Guidelines C-II, Annex I, 1.3). MPa differs by 9 magnitudes from mPa.

The candidates' attention is drawn to the Instructions to candidates concerning the conduct of the examination 5.5.

EXAMINATION COMMITTEE I

Candidate No. .....

Paper B (Chemistry) Schedule of marks

Category	Maximum possible	Marks awarded by first examiners		Revision of marks / grade (if any) or marking of further examiners (if appropriate)	
		Exr	Exr	Exr	Exr .....
Claims	24				
Argumentation	24				
Total	48				
Corresponding Grade					

Translation of marks into grades

	Grade
0 - 11	7
12 - 17	6
18 - 23	5
24 - 29	4
30 - 35	3
36 - 41	2
42 - 48	1

Remarks by examiners which must be given if both the following requirements are fulfilled:
(a) the grades awarded by the two first examiners before their discussion differ by two grades or more;
(b) the marks awarded by at least one of the two first examiners have been changed during their discussion.
If marks are revised, brief explanation should be given.

Sub-Committee for Chemistry

☐ Sub-Committee agrees on _____ marks and grade _____

☐ Sub-Committee does not agree on a grade

Remarks by Sub-Committee which must be given where the Sub-Committee does not agree on a grade

Grade recommended to Board by Committee I _____

Remarks by Committee I

18.08.95

Date

Signature of Chairman of Committee I