

EXAMINERS' REPORT - PAPER B (ELECTRICITY/MECHANICS)

General Considerations

1. Paper B is a test of the candidate's skill in revising the claims to the extent necessary to overcome the objections raised in a communication of the European Patent Office with regard to the cited prior art documents, and in drafting a letter of response to the European Patent Office in which according to the "Instructions to Candidates For Preparing Their Answers" arguments in defence of the revised claims should be presented.

Claims

2. Independent Claims - General

D1 and D2 describe foams containing a single layer of graphite particles. The most important feature of the application is the plurality of graphite-particle containing bands within the foam, which result in more easily reproducible electrical resistance characteristics. It is this feature which underlies the more accurate and consistent results referred to by the client in his letter. This feature also provides a general inventive concept for claims of different categories. Candidates should have recognised that the broadest possible protection required appropriate independent claims for at least:

- (a) a foam product, **and either**
- (b) a method **or** an apparatus for making the foam product

Some additional credit was available to candidates who submitted both a method and apparatus claim.

3. Independent Product Claim

- 3.1 A **good solution** starting from D1 or D2 is the following:

"Polymeric foam (6") comprising graphite particles, **characterised in that** said graphite particles are dispersed within said foam in the form of a plurality of bands (61,62,63,64)".

- 3.2 Similar characterising features e.g. defining a particle distribution whose concentration varies in an oscillatory manner throughout the foam which gives rise to "bands" are also acceptable. The addition of a feature defining a varying particle distribution within each band (e.g. a denser distribution at the centre of each band), whilst not necessary, was not penalised.

3.3 Inferior Solutions

- 3.3.1 Solutions not directed to the foam itself, e.g. a sensor comprising the foam, attracted fewer points. Further points were lost if the foam comprised in the claim was not the same as in the preferred solution.
- 3.3.2 Claims for a polymeric foam comprising a single or "at least one" graphite-particle containing band offended against Art. 123(2) EPC, as such an embodiment was not originally disclosed in the application as filed. Moreover, the novelty of such claims characterized solely by differences in the particle distribution was dubious with respect to D2. Accordingly, very few points were available for such claims.
- 3.3.3 In view of the presence of physically definable features of the foam, the use of a product by process claim. e.g. "A polymeric foam comprising graphite particles obtainable by a process according to claim..." was considered an inferior solution.
- 3.3.4 A claim based on features defining a desired result such as reproducible or pre-determined electrical performance/resistance characteristics of the foam (possibly related to changes in pressure) attracted very few points. Such claims also often lacked clarity.

4. Independent Method Claim

- 4.1 A **good solution** starting from D2 is the following:

A method for making polymeric foam comprising graphite particles, whereby the foam is produced continuously and the graphite particles are sprayed onto the foam before the foam has fully cured, **characterised in that** the graphite particles are sprayed onto the foam by a plurality of spray heads, and **either**

- (a) with a physical requirement for the spraying that leads to graphite bands e.g. the spraying takes place at intervals along the path of movement of the foam (this solution was able to obtain maximum points).
or
- (b) a "so that" feature concerning the creation of graphite bands e.g. so that the particles are dispersed within said foam in the form of a plurality of bands (this solution received fewer points as it relies unnecessarily on a desired effect rather than a discernible method feature (Guidelines for Examination in the EPO-III-4.7)).

- 4.2 In solution (a), if the physical spraying positions were sufficiently defined in the claim, the addition of a "so that" feature (i.e. resulting in a combination of solutions (a) and (b) above), whilst not necessary, was not penalised.

4.3 Inferior Solutions

- 4.3.1 The scope of a method claim without either of features (a) or (b) includes any arrangement of the spraying heads, e.g. perpendicular to the path of movement of

the foam. Such an arrangement would not only fail to produce clearly identifiable particle bands, but also has no basis or support in the application as filed (Articles 123 (2) and 84 EPC). Such solutions received significantly fewer points.

- 4.3.2 A minor number of points were available for solutions based solely on the regulation of process parameters in conjunction with spraying from a plurality of undefined locations.
- 4.3.3 Only very few points could be obtained if the feature of spraying from a plurality of locations was entirely missing. Such claims were also likely to lack novelty with respect to D2.

5. Independent Apparatus Claim

- 5.1 A **good solution** starting from D1 is the following:

An apparatus for (continuously) making polymeric foam comprising graphite particles comprising a curing chamber **characterised in that** the apparatus also comprises a plurality of spray heads (36) for spraying graphite particles, **and either**

- (a) the spray heads being spaced from each other along the path of movement of the foam in the curing chamber/in an area where the foam is not fully cured (this solution was able to obtain maximum points).
- or**
- (c) the spray heads being positioned so as to produce bands of graphite particles in the foam (this solution received fewer points as it relies on a desired effect rather than a structural feature (Guidelines for Examination in the EPO-III-4.7)).

- 5.2 In solution (a), if the physical spraying positions were sufficiently defined in the claim, the addition of a "so that" feature (i.e. resulting in a combination of solutions (a) and (b) above), whilst not necessary, was not penalised.

5.3 Inferior Solutions

The scope of an apparatus claim without either of features (a) or (b) is subject to the same observations as made in paragraph 4.3.1 above.

6. Amendments not Supported by the Application as Originally Filed, Art. 123(2) EPC

Amendments which offend against Art. 123(2) EPC lost a significant numbers of points. These amendments fall into two categories; those which would be recoverable in opposition proceedings (e.g. a claim directed to the use of "conductive particles" rather than "graphite particles"), and those which would not be recoverable due to the Art. 123(2)/123(3) trap. The latter "trap" penalties were more severely penalised.

7. Lack of Novelty

Claims lacking novelty were heavily penalised. Attention is drawn to paragraphs 3.3.2 and 4.3.3 regarding specific examples of claims potentially lacking novelty.

8. Lack of Clarity

Unclear features e.g. referring to the "resistance of the foam changing with changes of pressure", without any further reference as to how this is achieved or further detail of how the result is to be measured, were penalised in each claim in which they appeared.

9. Unnecessary Limitations

Deductions were dependent on the severity of the limitation and took into consideration which potential embodiments were excluded from protection. Limitations contrary to the clients wish lost more points than others. The basis for common limitations for the independent product and process claims included the thickness of the particle bands, the specification of polyurethane foam, and the desired electrical resistance characteristics of the foam. Unnecessary limitations of the independent apparatus claim were commonly based on further features of the apparatus of Fig. 3, such as the extruder, conveyor belt and heaters.

10. Lack of Unity Between Claims

Any obvious lack of unity between the independent claims incurred a deduction. This aspect was marked independently of the argumentation for unity.

11. Formal Matters

A small number of points were lost for formal objections such as a clearly incorrect two-part claim formulation.

12. Dependent Claims

After amendment/creation of the independent claims candidates were expected to retain those original dependent claims which remained valid. Candidates were further expected to introduce new dependent claims representing improved fall-back positions. For the dependent product claims, a logically constructed set of dependent product claims which included original claims 2-5 **and** a claim covering the denser particle distribution at the centre of each band could attract good points. For the method and apparatus claims, a logical construction of fall-back positions based on the features of fig. 3 and/or their corresponding uses could also attract good marks.

Argumentation

- 13.** Candidates were expected to present argumentation for all independent claims. Argumentation could be presented for each claim separately, or could rest on a case already presented for a previous claim. The latter approach needed to be clearly stated and supported. A surprising number of candidates did not appear to be aware of what constitutes an independent claim. For instance, a claim that incorporates all of the features of a preceding claim in the same claim category (e.g. a sensor comprising a foam according to claim 1), is a dependent claim.

14. Source of the Amendments

When identifying the source of amendments made, the examiners looked for a correct citation. In the case of amendments which were explicit in the application as originally filed, a citation was considered sufficient to prove compliance with Art. 123(2) EPC. Amendments which defined features which were to some extent merely implicit in the application as originally filed required arguments to justify why these features should be allowed. Candidates who only provided a citation for such implicit features lost marks.

15. Novelty

Candidates needed to identify novel features with respect to both D1 and D2. In principle, for a given prior art, it is sufficient to identify a feature which is not disclosed in either of the prior art documents. The identification should be clear and precise. In most cases it was immediately evident that the feature (e.g. multi-band particle layers) is absent in the prior art, and full marks awarded. However, in certain cases it was necessary to reason why the relevant feature is not even implicitly disclosed. Without such reasons considerably fewer points were allocated. The available points were divided equally between the independent claims.

16. Arguments Concerning Inventive Step

16.1 Identification of the Closest Prior Art

To attract full marks, candidates were expected to discuss both D1 and D2 with respect to each independent claim, and to provide convincing arguments for the preferred choice. The closest prior art could have been D1 or D2, depending on the claim under discussion and the problem identified by the candidate.

- 16.2** Too many candidates chose the closest prior art with the simple justification that "...it teaches the greatest number of features of claim x..." without making a feature-by-feature analysis. Such an analysis is not only clearer to the examiner, but is a safeguard against making wrong assumptions.

16.3 Derivation of a problem and solution

Candidates were expected to apply the problem-solution approach, starting from the document identified as the closest prior art for the claim under discussion.

16.4 For the case where the claims were based on a plurality of graphite-particle containing bands within the foam, a convincing approach for the product claim started by noting that the subject matter of the claim differs from D1 by its use of a **plurality** of such bands. By drawing on the fact that it is difficult to regulate particle distribution in thick, single bands (as taught by the application), the objective problem could be identified as the need to improve the determinability and reproducibility of graphite-particle containing foam, and the solution as the use of multiple-bands of graphite particles within the foam. These bands can then be made thinner and hence have a more predictable particle distribution. The same argument could be extended to a corresponding process claim having multiple spraying locations.

16.5 Approaches based on mere adoption of the problem cited on page 1, paragraph 2, of the description, or a solution simply aimed at "improving" the state of the art, were worth very few points. Any inconsistency between the problem and the claimed solution was penalised, as was any inconsistency between the problem-solution analysis and the features of the claim under discussion. As in previous years, a few candidates developed satisfactory problem-solution arguments, but carelessly omitted from the independent claim(s) the very feature(s) which actually overcame the stated problem. Candidates need to be careful that their arguments are consistent with the features actually claimed.

17. Arguments as to Why the Prior Art does not Lead the Skilled Person to the Invention

17.1 Candidates who based their claims on a plurality of graphite-particle containing bands within the foam needed primarily to note that D1 and D2 both taught foams based on single bands. Any dissatisfaction with the foam of D1 due to particle agglomeration may lead the skilled man to adopt the spray foam method of D2, but although this would overcome the identified problem, it would still only result in a single band of particles.

17.2 In the context of a claim directed to a foam or the manufacture of a foam, arguing solely that the teaching of D1 and D2 would not be combined because these documents deal with different products is not in itself sufficient, as it overlooks the fact that the person skilled in producing foam may well not make such a distinction. Such an argument received low marks. Pure assertions such as "this solution is not hinted at" or "the skilled person would not turn to the field represented by D1" also received low marks unless supported by credible reasoning.

18. Unity of Invention

- 18.1 In many cases where candidates had multiple independent claims, the arguments advanced in defence of the unity of invention were poor or entirely lacking, despite the fact that the examiner's communication invited the submission of such arguments. Candidates with only one independent claim received no marks for this section.

In order to establish unity, candidates were expected to demonstrate the existence of a single general inventive concept (Art. 82 EPC). This could be achieved by the identification of the common subject matter for each of the independent claims and an analysis as to why this respective common subject-matter is an invention (e.g. the common subject-matter could, for example, be the plurality of graphite particle/foam bands). A candidate could use the approach set out in R. 30 EPC by defining a technical relationship between the inventions of the independent claims in terms of the same or corresponding "special technical features".

- 18.2 The discussion of unity will typically be based on an analysis of the problem and its solution, and should relate to features which have been explicitly claimed in the independent claims. It is not adequate to simply state that e.g. "the method/apparatus claims are all for making the novel and inventive foam of claim 1" or to cite formal reasons from the EPC or Guidelines. Such arguments alone attracted few marks.

19. Presentation

Candidates lost marks for muddled or illogical presentation. It should always be clear which arguments are considered by the candidate to be relevant to which issue.

EXAMINATION COMMITTEE I

Candidate No.

Paper B (Electricity/Mechanics) 2002 - Schedule of marks

Category	Maximum possible	Marks awarded		Marking by further examiners if any	
		Marker	Marker	Marker	Marker
Claims	50				
Argumentation	50				
Total	100				

Sub-Committee for Electricity/Mechanics agrees onmarks and recommends the following grade to the Examination Board:

- PASS (50-100)
- FAIL (0-49)
COMPENSABLE FAIL (45-49, in case the candidate sits the examination for the first time)

Southampton, 30 August 2002

I. Harris - Chairman of Examination Committee I