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# D E C I S I O N
# of 7 May 2002

**Case Number:** T 0284/98 - 3.3.6

**Application Number:** 89304522.9

**Publication Number:** 0341071

**IPC:** C11D 1/83

**Language of the proceedings:** EN

**Title of invention:**
Detergent compositions

**Patentee:**
UNILEVER PLC, et al

**Opponent:**
Henkel Kommanditgesellschaft auf Aktien
Colgate-Palmolive Company

**Headword:**
primary alkyl sulphate/UNILEVER

**Relevant legal provisions:**
EPC Art. 56, 83, 84, 123
EPC R. 67

**Keyword:**
"Inventive step (yes) - compositions having inter alia a specific ratio of surfactants not suggested by prior art documents"
"Reimbursement of appeal fee (no) - no procedural violation"

**Decisions cited:**
T 0344/89, T 0386/89, T 0564/89

**Catchword:**

-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

**Case Number:** T 0284/98 - 3.3.6

**D E C I S I O N**
**of the Technical Board of Appeal 3.3.6**
**of 7 May 2002**

**Appellant I:** (Opponent 01)
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**Representative:**
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**Decision under appeal:** **Interlocutory decision of the Opposition Division of the European Patent Office posted 29 January 1998 concerning maintenance of European patent No. 0 341 071 in amended form.**

**Composition of the Board:**

**Chairman:** P. Krasa
**Members:** G. N. C. Raths
C. Holtz

## Summary of Facts and Submissions

I. This appeal is from an interlocutory decision of the Opposition Division concerning the maintenance of European patent No. 0 341 071 in amended form on the basis of a request submitted during oral proceedings before the Opposition Division. Said patent was directed to detergent compositions.

Claim 1 as amended read as follows:

"1. A aqueous, liquid, detergent composition comprising:

(a) a C8-C18 alkyl polyglycoside surfactant having an average degree of polymerisation of from 1 to 1.4,

(b) a primary alkyl sulphate surfactant,

(c) a surface active betaine and/or amine oxide; and optionally;

(d) an ethanolamide,

wherein:

- the amount of anionic surfactant is not greater than 1.5 times (on a molar basis) the level of betaine and/or amine oxide, and,

- the level of betaine and/or amine oxide and, if present, ethanolamide is from 12 to 30 %wt of the total active."

Dependent Claims 2 to 4 represent preferred embodiments

of Claim 1.

II. Two notices of opposition, both based on lack of inventive step (Articles 100(a), 56 EPC), and one based, in addition, on lack of sufficiency of disclosure and lack of novelty (Articles 100(a), 54 and 100 (b) EPC) cited, inter alia, the following documents:

(C1) US-A-4 483 779;

(C4) US-A-4 595 526;

(C5) Second World Conference on Detergents. A.R.Baldwin, American Oil Chemists' Society.

(C14) US-A-4 732 704;

(C14') EP-A-0 216 301 (equivalent to document (C14));

(C19) J.C.Blake-Haskins, et al. "Predicting surfactant irritation from the swelling response of a collagen film", J. Soc. Cosmet. Chem., 37, July August 1986, 199-210;

(D2) Triton CG110; and

(D3) Charles F. Putnik et al., "Alkyl Polyglycosides", Soap, Cosmetics, Chemical Specialities, June 1986.

III. The Opposition Division held the claims of the patent in suit as amended to meet the requirements of Articles 54, 56, 83, 84 and 123 EPC.

IV. The appellants (opponents) lodged an appeal against this decision.

IV.1 Appellant I (opponent 01) argued in essence, orally and in writing, as follows:

- Claim 1 contravened Article 123(3) because, in spite of the restriction to primary alkyl sulphates, Claim 1 allowed for further anionic surfactants such as ethoxylated material, eg ether sulphates.

- The "ratio anionic surfactants:betaine and/or amine oxide" could not be equated to "ratio primary alkyl sulphates:betaine and/or amine oxide"; although the latter ratio was not a feature of Claim 1, the Opposition Division retained this feature in order to have a basis for finding an inventive step. This constituted a procedural violation, justifying reimbursement of the appeal fee.

- The term "total active" in the expression "%wt of the total active" was not clear, since the 100 wt% basis was disputable (Article 84 EPC).

- In the light of document (C14'), or in the light of documents (C4) and (C19) the degree of polymerization of alkyl polyglycoside (APG) and the presence of alkyl sulphates and betaine and/or amine oxide, and, therefore, the compositions of Claim 1 were obvious.

IV.2 Appellant (II) (opponent 02) submitted in essence, orally and in writing, the following arguments:

- It resulted from document (C13) that a certain proportion of non-ethoxylated material was present when ethoxylated detergents were made by the reaction of ethylene oxide with a primary alcohol. Claim 1 does not exclude, but may comprise ethoxylated alkyl sulphate. Ethoxylated alkyl sulphates, however, are obtained from the alkanol ethoxylate sulphation process generating toxic dioxane (see, for instance, document (C4), column 3, lines 1 to 6). Therefore, because it was not clear whether ethoxylated alkyl sulphate was present or not, Claim 1 did not meet the requirements of Article 84 EPC. Further, in case ethoxylated alkyl sulphate was present, the dioxane toxicity problem was not solved, which would be in contradiction with the objective of an ecologically safe detergent. This could amount to an objection under Article 83 EPC.

- The composition according to example 12 of document (C1) comprised an APG and also a quantity of non ethoxylated primary alkyl sulphate; the APG contained about 1.5 glycosyl units per molecule; however, according to examples 4 and 9 of the patent in suit, there was no difference in foam height between an APG having a degree of 1.4 and of 1.8. Each of the scores, 37 and 29, was within the insignificant difference of +/- 6.

- Document (C4) already taught to exclude the ethoxylated alkyl ether sulphates from compositions containing nonionic and anionic surfactants, together with betaine and a fatty acid alkanolamide in order to eliminate the dioxane toxicity problem. Document (C4) suggested to use alkyl sulphates as

anionic surfactants. Their use was thus obvious.

- Document (D2) disclosed Triton CG-110, an alkyl glycoside displaying very low skin irritating properties and having, inter alia, excellent foaming properties, foam stability, good detergency, wetting and soil removal properties. It would therefore have been obvious to use Triton CG-110 in the compositions of document (C4) as nonionic surfactant.

- Document (D3) disclosed that APG surfactants, unlike ethoxylated fatty alcohols, bring non-ionic grease cutting strength and mildness to hand dish washing. These properties made them an ideal surfactant for this end use. Document (C5) disclosed also the detergency performance of APG being similar to the performance of alcohol ethoxylates. These were suggestions to replace APG for ethoxylated primary fatty alcohol (Neodol) used according to document (C4) (see Tables 3, 4, 7 and 8).

- Since document (C14) disclosed already improved foaming and detergent power obtainable with APGs with 1.4 or less glucose units per fatty acid group, this particular feature of the subject-matter of Claim 1 of the patent in suit could not render the claimed composition inventive, for which the proprietors did not show any advantages over the prior art examples.

- In the wheatgerm acid phosphate (WPAG) test APG and nonionic formulations gave similar low enzyme inhibition, and hence had similar mildness (see

patent in suit, table on page 7; see Neodol 91-8 of document (C4) (a primary $C_9$-$C_{11}$ alcohol, condensed with 8 mols of ethylene oxide)).

- The "zein" results (ie a measure of harshness in terms of "zein", a protein, dissolved by a surfactant (a low score corresponds to "mild")) referred to by the respondents (proprietors) did not show an improvement of mildness with respect to the mildness of prior art compositions. Therefore the respondents attempted to change the technical problem. This, however, was a violation of Articles 123(2) EPC (see T 386/89 and T 344/89).

- The molar ratio of anionics to betaine and/or amine oxide had no effect on the properties of the composition. The compositions of Examples 1 and 7 as originally filed allegedly displayed the same properties as those of the other examples, while their molar ratio of anionics to betaine and/or amine oxide was outside the claim.

- The ratio of sodium lauryl sulphate (SLS): cocoamidopropyl betaine of 1.5:1 was known from documents (C19) and (C15).

- There was a procedural violation committed by the Opposition Division since it ignored the lack of significance of the new results regarding the foam performance (annexe II and the comments by Dr Paye).

V. The respondents refuted the arguments of the appellants and submitted in essence:

- Claim 1 was clear (Article 84 EPC). The "wt%" referred to the weight percentage in the active detergent mixture, which concerned the surfactants and not the total composition. Therefore Claim 1 also met the requirements of Article 123 EPC.

- Document (C14') did not disclose that APGs were gentle to the skin, nor how to combine them in order to get a mild foaming formulation.

- The choice of the particular type of APG was important; the appellants failed to show why the nonionic surfactants of document (C4) should be replaced by the specific APG of Claim 1 of the patent in suit.

- The appellants interpreted graph 5 of document (C19) with hindsight in order to arrive at the ratio of 1.5. Document (C19) taught to use a higher amount of betaine than that of the invention as claimed.

- Document (C1) concerned a different technical field and was therefore not relevant for the evaluation of inventive step.

- The composition of Example 12 of document (C1) did not contain an APG with the required degree of polymerization. Further the combination of documents (D3), (D2) and (C5) did not lead to an APG with a degree of polymerisation from 1 to 1.4 which, therefore, rendered the claimed subject-matter inventive.

The "zein test" was a method routinely used by the

proprietors to measure the mildness and the calculation method for obtaining the "zein" scores was correct. Therefore, the results obtained were a valid basis for the evaluation of the inventive step of the claimed invention.

VI. Oral proceedings took place on 7 May 2002.

On request by appellant I, the following statement was explicitly mentioned in the minutes: "The respondents acknowledged that the phrase in Claim 1: "the amount of anionic surfactant is not greater than 1.5 times", referred only to component (b) in Claim 1."

Appellant II withdrew its objection relating to a procedural violation.

VII. Appellant I requested that the appeal fee should be reimbursed.

Both appellants requested that the decision under appeal be set aside and the patent be revoked.

The respondents requested that the appeals be dismissed.

VIII. At the end of the oral proceedings the Chairman announced the decision of the Board.

## Reasons for the Decision

1 *Article 123(2) EPC*

1.1. Claim 1 as maintained by the Opposition Division

differed from Claim 1 as originally filed in that "3" under (a) was replaced by "1.4" and "an anionic active" under (b) was replaced by "a primary alkyl sulphate surfactant".

1.2 Both amendments find their basis in the application as originally filed (page 4, line 26 and page 5, lines 9 and 10, or Claim 3, respectively). Therefore, the amendments do not violate Article 123(2) EPC.

1.3 The results of the "zein" tests, the significance of which was no more contested during oral proceedings, were submitted by the respondents with the letter of 17 November 1995 for proving the mildness effect. With reference to T 344/89 and T 386/89, appellant II saw herein a shift to a problem (namely improved mildness) different from the problem as originally stated in the patent in suit (mildness of APG containing compositions identical to mildness of ethoxylated nonionic surfactant containing compositions). It concluded that such a redefinition of the technical problem would violate Article 123(2) EPC.

1.3.1 For the assessment of inventive step, it is standard practice to take test results into account, which are submitted during the examination or opposition procedure, or even during the appeal procedure depending on the circumstances of the case. As in the present case, mildness to the skin was mentioned in the application as originally filed (page 2, lines 23 and 28; page 12, line 16), there was no assertion of a new effect. Therefore T 344/89, which dealt with shifting the emphasis of one property (wear) to another property (adhesion) is not applicable. Nor is T 386/89 applicable which concerned an alleged effect of a

described feature, the skilled person being not able to deduce the effect from the description. In the present case, the skilled person not only was aware of all the features but also of all the effects now used for redefining the technical problem which, thus, was therefore deducible for the skilled person from the application as filed.

1.3.2 It is also to be noted that Article 123(2) EPC governs amendments of a European patent application or - as in the present case - of a European patent. This article is not concerned with the issue whether or not an objectively reformulated technical problem may be used in the course of the so-called "problem-solution approach" which was developed by the Boards as a tool for achieving objectivity and to avoid **ex post facto analysis** in the assessment of inventive step. Therefore, Article 123(2) EPC would only come into play if an amended technical problem was incorporated into the description itself, which is not the case here. Thus, the appellant's objection fails also on this ground (see also T 564/89, not published in the OJ EPO, point 4.3 of the Reasons for the Decision).

1.4 The appellant further argued that the amendments to the description, in particular, the amendments to the paragraph entitled "anionic active" (see patent in suit, page 3, in the form as amended) resulted in subject-matter which extended beyond the content of the application as filed.

For the Board, the restriction from "anionic surfactant" to "primary alkyl sulphate" was allowable since in the description as originally filed the term "anionic surfactant" encompassed the definition of

"primary alkyl sulphate"; Claim 3, as originally filed, explicitly stated that "the anionic surfactant is a primary alkyl sulphate".

The amendments to the description concerned only an adaptation to Claim 1 as amended.

1.5 Therefore, the patent in suit meets the requirements of Article 123(2) EPC.

2 *Articles 83 and 84 EPC*

2.1 The objection raised under Article 84 EPC against "% wt of total active" - not as a ground of opposition, but for the purpose of interpreting the claim - was not pursued during oral proceedings. The respective passage reads: "The total amount of amine oxide and betaine, and, if present, ethanolamide is from 12 to 30% by weight of the active detergent mixture." (patent in suit, page 3, lines 45 and 46). The amendments found their basis in the description. "The total amount of amine oxide and betaine is from 12 to 30% by weight of the active detergent mixture."(application as originally filed, page 6, line 14). The concentrations of betaine and/or amine oxide and/or ethanolamide of the examples of the patent in suit (page 6) are within the range of 12 to 30% by weight of the components (a), (b), (c) and (d) as defined in Claim 1.

With respect to the expression "% wt of total active", the requirements of Article 84 EPC are met.

2.2 The appellants pointed to the term "comprising" in Claim 1 and objected against the lack of clarity of the expression "primary alkyl sulphate surfactant"

(Article 84 EPC). Further, appellant II raised in this context an objection under Article 83 EPC in a passing remark.

In support of its argument, appellant II pointed to document (C13): "..alkyl ether sulphate tensides always contain a certain amount of nonethoxylated alkyl sulphates depending on the ethoxylation degree" (page 63, right-hand column, summary, lines 4 to 6). They objected that the term "comprising" left room for alkylether sulphates being present together with the required alkyl sulphates.

(a) In view of the examples of the patent in suit, a person skilled in the art was able to prepare the claimed compositions. There was no evidence to the contrary submitted by the appellants.

Therefore, the Board is satisfied that the requirements of Article 83 EPC are fulfilled. Since this issue, which was only raised in the grounds of appeal, was not further substantiated in the written procedure and not pursued during the oral proceedings, it is not necessary to give a more detailed reasoning.

(b) With respect to Article 84 EPC, the expression "primary alkylsulphate surfactant" is clear in itself and excludes any other material. Traces of impurities and of any other material are not relevant as long as they are not present in effect influencing amounts. The presence of non-reacted alkyl sulphate as a residual product when ethoxylated alkyl sulphate is produced appears to be logical, however the presence of ethoxylated alkyl sulphate when alkyl sulphate alone is to be used would imply the use of a mixture of both

ethoxylated and non-ethoxylated alkyl sulphate what appears not to be logical at all, since a skilled person would just use alkyl sulphate.

(c) Further, since the respondents acknowledged that the phrase in Claim 1: "the amount of anionic surfactant is not greater than 1.5 times", referred only to component (b) in Claim 1, ie the primary alkyl sulphate, there was no more any ambiguity as to the meaning of "anionic surfactant".

The requirements of Article 84 EPC are met.

2.3 For these reasons, the Board concludes that the subject-matter of Claim 1 as amended and as underlying the decision under appeal does not contravene Articles 83 and 84 EPC.

3 *Novelty*

The Board is satisfied that neither document (C1) nor any other cited prior art documents anticipated the subject-matter of Claim 1.

Therefore, the subject-matter of Claim 1 of the patent in suit is novel. Since the objection raised by the appellants under Article 54(1)(2) EPC during the written procedure was no longer maintained during oral proceedings, it is not necessary to give further arguements.

4 *Inventive step*

4.1 The patent in suit relates to safe, mild liquid detergent compositions with a good foam stability and a

good cleansing ability. (page 2, lines 30 and 31).

4.2 The problem as indicated in the patent in suit was to provide ecologically safe, high-foaming, mild, liquid detergent compositions with a good foam stability and a good cleansing ability (page 2, lines 30 to 33).

4.3 Similar compositions were known from document (C4). The Opposition Division and the parties took this document as the starting point for evaluating inventive step. The Board can agree.

4.4 The goals to be achieved according to document (C4) were high foaming and cleansing properties and mildness to skin; also an ecological aspect was implicitly addressed in this document, ie avoidance of the dioxane toxicity problem associated with the sulphation process of manufacturing anionic ethoxylated alcohol ether sulphates (column 2, lines 50 to 54; lines 66 to 68).

4.5 The compositions according to document (C4) differed from the compositions of the patent in suit in that the nonionic surfactant was an alcohol condensate with ethylene oxide whereas it was an APG in the patent in suit.

4.6 Comparative data in respect of mildness and foaming capacity between the compositions of the patent in suit and the compositions of the state of the art as represented by document (C4) were not available. In the absence of any data demonstrating a particular effect displayed by the compositions of the patent in suit as compared to those of document (C4), the problem underlying the patent in suit has to be reformulated as the provision of further detergent compositions

displaying the properties aimed at.

Claim 1 of the patent in suit suggests as a solution to this technical problem a detergent composition comprising an alkyl polyglycoside surfactant, a primary alkyl sulphate (PAS) surfactant, and betaine and/or amine oxide, the ratio of anionic surfactant:betaine and /or amine oxide being less than 1.5 (see above point I).

The examples 1 to 8 of the patent in suit prove that the problem as defined was plausibly solved by the subject-matter of Claim 1.

4.7 The question remains whether or not the replacement of an alcohol condensate with ethylene oxide by an APG having an average degree of polymerisation of 1 to 1.4 as well as the specific ratio of anionic surfactant:betaine of less than 1.5 involved an inventive step.

4.8 Document (C4) addressed cleansing properties and mildness to the human skin. This document disclosed that betaine, the zwitterionic surfactant, provided good foaming properties and mildness to compositions containing alcohol ethoxylates, the nonionic surfactant (column 6, lines 62 to 69). However, there was no incentive in document (C4) for exchanging the alcohol ethoxylate by APG.

Document (C5) however disclosed that alkyl polyglycosides exhibit detergency performance similar to alcohol ethoxylates (page 369, lines 13 to 15). appellant II was of the opinion that this could be regarded as an incentive for replacing alcohol

ethoxylates by alkyl polyglycosides. In support of this argument, appellant II also pointed to documents (D3) and (D2).

With respect to document (D3), appellant II drew the attention to the following passage:

""APG" surfactants are more soluble than other surfactants and are stable under a wide range of conditions. They are milder to the skin than L*(inear)* A*(lkylbenzene)* S*(ulphonate)* and L*(inear)* A*(lcohol)* E*(thoxylate)* and are non-toxic and readily biodegradable....their foam characteristics in combination with anionic surfactants, combined with their mildness and solubility, allows the formulation of a mild, high performance hand dishwashing product with nonionic grease-cutting ability, but requiring less hydrotrope and no foam booster."(Document (D3), page 34, middle column, lines 3 to 22; *italic type added*).

Triton CG 110, disclosed in document (D2) derived from natural glucose, is an alkyl glucoside formed by the reaction of glucose and a fatty alcohol. It featured a number of characteristics over conventional surfactants, which made it suited for household products: very low skin irritation, excellent foaming properties and foam stability, good detergency, compatible with anionic, nonionic and amphoteric materials (Document (D2), page 4, left column).

The appellants concluded that therefore in the light of these documents (C4),(D2),(D3) and (C5) the skilled person could arrive at compositions comprising the components (a), (b), (c) and, optionally, (d) as defined in Claim 1 of the patent in suit.

The Board cannot accept this conclusion since documents (C4), (D2), (D3) and (C5) fail to suggest the specific ratio of anionic surfactant: betaine (and/or amine oxide) of less than 1.5 and to specify the average polymerisation degree of 1 to 1.4 for the APG.

Further, the appellants hinted to document (C14) which disclosed compositions having a good foaming and detergent power and being gentle to skin, said compositions comprising fatty acid alkanolamides (component (d) of the patent in suit), anionic surfactants of the sulfate surfactant type (component (b)) and fatty alkyl $C_{12}$-$C_{14}$ monoglucosides containing less than 2 glucose units per fatty alkyl group, in particular 1 to 1.4 glucose units.

Glycosides, as mentioned in the patent in suit, encompassed glucosides, as mentioned in document (C14)).

Therefore, so the appellants concluded, the skilled person had to select only APGs having the specific average degree of polymerisation of 1 to 1.4 in order to arrive at the compositions of Claim 1 of the patent in suit. However, the Board cannot accept this argument since the molar ratio anionic surfactant (being the primary alkyl sulphate):betaine was less than 1.5 was not disclosed by any of the cited prior art documents which contain no information rendering such ratio

obvious for a skilled person.

In order to prove the obviousness of this ratio, both appellants relied on document (C19). This document contains a graph which shows the reduction in SLS (an anionic surfactant)-induced swelling by cocamidopropyl betaine (CAPB). The amount of water absorption (collagen swelling) was rated against the SLS concentration and against the ratio SLS:CAPB. Appellant II was of the opinion that the curve of swelling versus the surfactant SLS alone and versus the ratio SLS:CAPB approached each other above a ratio of 1.5; it concluded that the protective effect of CAPB falls off at molar ratios of SLS:CAPB greater than 1.5. This would indicate that the 1.5 requirement was known. Appellant I came to the same conclusion by drawing a line through three points, arbitrarily chosen.

The reasoning of both appellants cannot be accepted by the Board. The discussion of figure 5 in document (C19) did not focus on the value of 1.5 of the ratio SLS:CAPB. It also did not mention any particular effect at a ratio SLS:CAPB of 1.5. Further, the curves of figure 5 are such that they would allow a lot of interpretations. However the molar ratio of 1.5 as an upper acceptable limit of said concentration ratio could only be arrived at with the knowledge of the patent in suit, i.e. by hindsight.

The technical relevance of the ratio anionic surfactant:betaine was proved by a triangular graph, submitted by the respondents and entitled appendix B and dated 29 October 1995. A line representing the ratio of 1.5 divided the graph into two parts, the lower one being the invention region where the

condition anionic surfactant: betaine (and/or amine oxide) of less than 1.5 is fulfilled. Visibly, the invention examples were concentrated between the lines 6o:40 (=1.5) and 40:60 (=0.66). Said triangular graph was not contested during oral proceedings. In particular, the objection against the ratio in Examples 1 and 7 was not maintained. Example 7 was no more part of the patent specification as granted since it had been deleted by the respondents. The ratio of 1.38, as calculated by the respondents for Example 1 was no longer contested by appellant II during oral proceedings.

This triangular graph further corroborates the representation of the graph entitled "Relation of mildness to foaming" submitted by the respondents as appendix A and dated 27 October 1995. The invention examples, all regrouped on the graph between plunger score values of 36 and 40 (X-axis) and between "% Zein solubilised"-results of 0 and 12.5 (Y-axis) have a good mildness and a good foaming score.

It follows, that there was no hint in the cited prior art documents how to arrive at the specific ratio of anionic surfactant:betaine (and/or amine oxide) of less than 1.5. There was no evidence to the contrary that all the invention compositions which displayed both good mildness to skin and a high foaming power had to satisfy the following criteria:

- The ratio of anionic surfactant:beatine (and/or amine oxide) had to be less than 1.5.

- The nonionic surfactant had to be an APG with an average degree of polymerisation of 1 to 1.4.

- The anionic surfactant had to be a primary alkyl sulphate.

A detergent composition combining all these features could not be deduced from the cited prior art documents. The provision of such a composition displaying the above-mentioned properties was not obvious for a person skilled in the art.

Document (C1) was not relevant since it does not address foaming power and mildness to skin.

4.9 Therefore, the subject-matter of Claim 1 involves an inventive step.

5 *Procedural violation*

The fact that the Opposition Division and appellant I did not agree on the scope of Claim 1 cannot in itself give rise to any ground for reimbursement of the appeal fee. The conclusion in the decision under appeal as to the significance of a specific feature for the inventive step of the claim, which runs contrary to the view of appellant I that the claim does not even cover this feature does not constitute any procedural violation, but is an opinion on a substantive technical issue, which does not fall under Rule 67 EPC.

Moreover the appellants did not succeed in these appeal proceedings.

Therefore, neither of the two preconditions for reimbursement set out in Rule 67 EPC is fulfilled and consequently the appeal fee cannot be reimbursed.

## Order

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

1. The appeals are dismissed.

2. The request for reimbursement of the appeal fee is refused.

The Registrar: The Chairman:

G. Rauh P. Krasa