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**Datasheet for the decision
of 4 July 2006**

Case Number: T 0378/03 - 3.3.01

Application Number: 95926943.2

Publication Number: 0772609

IPC: C07D 323/00

Language of the proceedings: EN

Title of invention:
Cyclic ketone peroxide formulations

Patentee:
Akzo Nobel N.V.

Opponent:
ARKEMA FRANCE

Headword:
Cyclic peroxides/AKZO NOBEL

Relevant legal provisions:
EPC Art. 56

Keyword:
"Main and auxiliary request: inventive step (no) - no improvement - no teaching away - obvious solution"

Decisions cited:
T 0181/82, T 0164/83, T 0955/96

Catchword:
-



Case Number: T 0378/03 - 3.3.01

D E C I S I O N
of the Technical Board of Appeal 3.3.01
of 4 July 2006

Appellant:
(Patent Proprietor)

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Decision under appeal:

Decision of the Opposition Division of the
European Patent Office posted 13 February 2003
revoking European patent No. 0772609 pursuant
to Article 102(1) EPC.

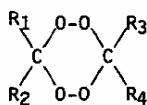
Composition of the Board:

Chairman: A. J. Nuss
Members: P. Ranguis
R. Menapace

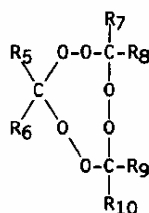
Summary of Facts and Submissions

- I. On 28 March 2003, the Appellant (Proprietor of the patent) lodged an appeal against the decision of the Opposition Division to revoke the European patent No. 0 772 609 (European patent application No. 95 926 943.2).
- II. The decision under appeal was based on the set of nine claims as granted. Independent Claims 1 and 9 read as follows:

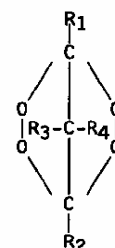
"1. A transportable, storage stable peroxide composition which comprises 1.0-90% by weight of one or more cyclic ketone peroxides selected from peroxides represented by the formulae I-III:



(I)



(II)

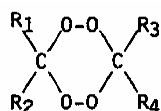


(III)

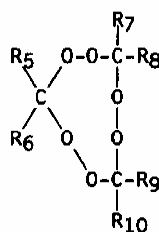
wherein R_1 - R_{10} are independently selected from the group consisting of hydrogen, C_1 - C_{20} alkyl, C_3 - C_{20} cycloalkyl, C_6 - C_{20} aryl, C_7 - C_{20} aralkyl and C_7 - C_{20} alkaryl, which groups may include linear or branched alkyl moieties; and each of R_1 - R_{10} may be optionally substituted with one or more groups selected from hydroxy, C_1 - C_{20} alkoxy, linear or branched C_1 - C_{20} alkyl, C_6 - C_{20} aryloxy, halogen, ester, carboxy, nitrile, and amido; and 10-99% by weight of one or more diluents selected from the group consisting of liquid phlegmatizers for the cyclic ketone peroxides, plasticizers, solid polymeric carriers, inorganic supports, organic peroxides and

mixtures thereof, with the proviso that when said diluent comprises a non-cyclic ketone peroxide, at least 20% of the total active oxygen content of the formulation must be attributable to one or more cyclic ketone peroxides of the formulae I-III".

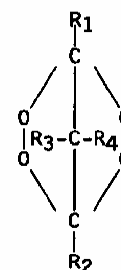
"9. Use of an organic peroxide formulation for the modification of (co)polymers characterized in that said organic peroxide formulation is a transportable, storage stable organic peroxide formulation which comprises 1.0-90% by weight of one or more cyclic ketone peroxides selected from peroxides represented by the formulae I-III:



(I)



(II)



(III)

wherein R₁-R₁₀ are independently selected from the group consisting of hydrogen, C₁-C₂₀ alkyl, C₃-C₂₀ cycloalkyl, C₆-C₂₀ aryl, C₇-C₂₀ aralkyl and C₇-C₂₀ alkaryl, which groups may include linear or branched alkyl moieties; and each of R₁-R₁₀ may be optionally substituted with one or more groups selected from hydroxy, C₁-C₂₀ alkoxy, linear or branched C₁-C₂₀ alkyl, C₆-C₂₀ aryloxy, halogen, ester, carboxy, nitrile, and amido; and 10-99% by weight of one or more diluents selected from the group consisting of liquid phlegmatizers for the cyclic ketone peroxides, plasticizers, solid polymeric carriers, inorganic supports, organic peroxides and mixtures thereof, with the proviso that when said diluent comprises a non-cyclic ketone peroxide, at least 20% of the total active oxygen content of the

formulation must be attributable to one or more cyclic ketone peroxides of the formulae I-III".

III. The opposition sought revocation of the patent in suit on the ground that its subject-matter lacked novelty or did not involve an inventive step (Article 100(a) EPC). It was supported by the following documents:

- (1) N.A. Milas and A. Golubovic, "Studies in Organic Peroxides XXV...", Journal of the American Chemical Society, 81, 5824-6 (1959),
- (2) GB-A-912061
- (3) US-A-3 867 461
- (4) GB-A-1 072 728
- (5) US-A-4 707 524
- (6) M. Xanthos, "Reactive Extrusion, Principles and Practice", 34-41; Hanser Publishers Munich 1992,
- (7) L.F.R. Cafferata et al. "Kinetics and Mechanism of Acetone Cyclic Diperoxide (3,3,6,6 -Tetramethyl-1,2,4,5-tetraoxane) Thermal decomposition in benzene solution", Journal of Organic Chemistry 49,2107-11 (1984),
- (8) G.N. Eyler et al. "Improved procedure for the preparation of diethyl ketone triperoxide and kinetics of its thermal decomposition reaction in solution", Tetrahedron Letters, 34(11), 1745-6(1993),
- (9) Akzo Nobel brochure "Initiators for high polymers", 14-15, 18-19, not dated
- (10) US-A-3 497 372
- (11) N.A. Milas and A. Golubovic, "Studies in Organic Peroxides XXIV...", Journal of the American Chemical Society, 81, 3361-4 (1959),

(12) UN recommendations on transport of dangerous goods (12th ed), 85, 93-94 and 99.

IV. By a decision announced at the oral proceedings held on 28 January 2003 and issued in writing on 13 February 2003, the Opposition Division held that the subject-matter of Claims 1 to 9 was novel over the prior art cited. The subject-matter of Claims 1 to 9 lacked inventive step however for the following reasons:

As recognized in the patent in suit, the technical problem to be solved underlying the claimed subject-matter could be seen in the provision of compositions of cyclic peroxides, transportable, storage stable and useful for the modification of polymers. This resulted in two partial problems independent from each other and to be dealt separately.

The problem of stabilisation of peroxides was addressed *inter alia* in document (4) which described stabilized compositions of ketone peroxides passing the pressure vessel test (PVT). There was an explicit reference in document (4) to documents which described the preparing of suitable ketone peroxides, among them documents (1) and (11) which related to ketone peroxides derived from methyl ethyl ketone (MEK) or diethyl ketone corresponding to formula II of Claim 1. There was thus a clear indication towards the claimed solution of the first partial problem to be solved (transportability and stability).

Document (4) also referred to the use of the stabilized peroxide composition for modification of polymers (crosslinking of an unsaturated polyester). The test

results listed in Table 4 involving as comparative example Butanox[®] LPT, presumably a non-cyclic MEK, was of little relevance for demonstrating an unexpected technical effect since this product did not represent the closest state of the art. The claimed solution to the second partial technical problem related to modification of polymers was, therefore, obvious in view of documents (4) and (11).

- V. With the statement of grounds of appeal, the Appellant submitted a fresh set of nine claims as an auxiliary request. Independent Claims 1 and 9 of the auxiliary request differ from Claims 1 and 9 of the main request in that they are limited to peroxides of formulae I-III wherein R_1 - R_{10} are independently selected from the group consisting of C_1 - C_{12} alkyl (cf. point II above).
- VI. In response, the Respondent (Opponent) declared that it did not any longer intend to contest novelty of the claimed subject-matter but supported the reasons having led the Opposition Division to revoke the patent in suit for lack of inventive step. The auxiliary request was to be rejected for the same reasons.
- VII. In a communication attached to the summons to oral proceedings, the Board pointed out that novelty seemed no longer to be contested and that inventive step appeared to be the sole issue to be discussed at the oral proceedings.
- VIII. Three weeks before the oral proceedings took place, the Respondent went back on his previous position and contested novelty of the main request over documents

(1), (2), (8) and (10) and the day before the oral proceedings provided further documents in support:

(13) Data sheet, already submitted in the opposition proceedings,

(14) Directive 67/578/EEC of the European Commission, Environment section, page 48 of the annex VI, and

(15) Classification of dangerous goods, UNECE, page 160.

IX. At the oral proceedings which took place on 4 July 2006, the Board, having heard the Appellant on the admissibility of the late-filed documents (14) and (15), decided under Article 114(2) EPC not to admit those documents into the proceedings as late-filed and not *prima facie* highly relevant.

X. The arguments of the Appellant in the written proceedings and during the oral proceedings can be summarized as follows:

Regarding novelty, example of document (1) relating to the preparation and isolation of compound VI was repeated and analysis of the solution gave a total active oxygen (AO) content of 2.59%, with 0.11% of the total AO content being attributable to cyclic methyl ketone peroxide. The requirement of Claim 1 under the proviso was not met.

Document (2) reported in the description of the prior art that a process had been described for producing a mixture of non-cyclic and cyclic MEK peroxides wherein the cyclic peroxide was "believed" to predominate. The entire passage was wrapped in expressions such as "it

is thought" or "it is believed" which cast doubt on the certainty of the reported facts. The result of the repeated example 4 showed that the reaction product did not contain any cyclic ketone peroxide. Nowhere was it indicated that the purported mixture was transportable.

The example of document (8) was reworked with a different work-up procedure for safety reasons. Analysis of the resulting solution gave a total active oxygen (AO) content of 2.16% with 0.32% of the total AO content being attributable to cyclic diethyl ketone peroxide. The requirement of Claim 1 under the proviso was not met. Furthermore, this solution did not pass the PVT.

The example of document (10) was repeated and it was found that the peroxide disclosed therein, i.e. 4,4-bis(butyl pentanoate) diperoxide, was not obtained. That disclosure was not enabling.

Regarding inventive step, starting from document (4) as the closest state of the art, the technical problem to be solved based on the results set out in its Table IV was to provide a composition improving the effectiveness of ketone peroxides for polymer modification processes. Although it could not be said that the compositions tested in Table IV were transportable and storage stable, the results showed the improved properties of the claimed compositions vis-à-vis the ketone peroxide compositions containing less than 20% of the total active oxygen content attributable to one or more cyclic ketone peroxides of the formulae I-III. Document (2) taught away from the instant patent in suit since it taught that the non

cyclic peroxides had a higher activity than the cyclic peroxides. Furthermore, documents (1) (3) and (11) did not disclose compositions having the required amount of active oxygen content attributable to cyclic ketone peroxides and, therefore, the combination of documents (4), (2), (3), (1) and (11) did not render obvious the claimed subject-matter. This applied also to the subject-matter according to the auxiliary request.

XI. The arguments of the Respondent in the written proceedings and during the oral proceedings can be summarized as follows:

Regarding novelty, document (1) disclosed a mixture of ketone peroxide comprising 25% of cyclic ketone peroxide. This anticipated the claimed composition given that the properties of being transportable and storage stable were inherent.

Document (2) disclosed a mixture of MEK peroxides wherein the cyclic ketone peroxide predominated anticipating, therefore, the subject-matter of Claim 1.

Document (8) reported the preparing of diethyl ketone cyclic peroxide with a yield of 31%, which meant that 69% was made of non cyclic peroxides. This document further described the preparing of another cyclic ketone peroxide with a yield of 80%. The subject-matter of Claim 1 was as a matter of fact not novel.

Document (10) disclosed 4,4-bis(butyl pentanoate) diperoxide stable at high temperature and useful as cross-linking agent. That document was also novelty destroying.

The claimed subject-matter in the form of the main request or the first auxiliary request did not involve an inventive step either.

Document (4) as the closest state of the art disclosed stabilized ketone peroxide compositions useful as catalyst for polymerising unsaturated polyesters. Thus, that document addressed the same technical problem to be solved as the patent in suit. When considering document (4) in the light of the teaching of documents (1), (3) and (2), the person skilled in the art was directed in an obvious manner to the claimed compositions and their use as catalysts for polymerising unsaturated polyesters.

XII. The Appellant requested as main request that the decision under appeal be set aside and that the patent be maintained as granted or, as auxiliary request, that the patent be maintained on the basis of the set of nine claims filed with the statement of grounds of appeal.

The Respondent requested that the appeal be dismissed.

XIII. At the end of the oral proceedings, the decision was announced orally.

Reasons for the Decision

1. The appeal is admissible.

The Board has verified that an uninterrupted chain of changes of name linked the Opponent ELF ATOCHEM S.A directly to the present Respondent ARKEMA FRANCE.

2. *Novelty*

The Board found that the subject-matter of the main request was novel in view of documents (1), (2) (8) and (10). In view of the outcome of this appeal proceedings, there is no reason to give details in this respect.

Main request

3. *Inventive step*

- 3.1 Independent Claim 1 relates to a transportable, storage stable ketone peroxide composition. Its subject-matter is defined by two separate technical features taken in combination: on the one hand, the chemical definition of the composition, in particular, of the cyclic peroxides and their share in the total active oxygen content of the composition, and, on the other hand, a functional feature, namely "transportable, storage stable", i.e. the requirement to pass the pressure vessel test (see description of the patent in suit, page 7, lines 21 to 34). When properly construed, Claim 1 covers, therefore, the compositions indicated on condition that they are transportable and storage stable. Contrary to the Respondent's contention at the

oral proceedings before the Board, the transportability and storage stability is not to be regarded as a technical feature inherent to any composition within Claim 1. In the judgment of the Board, only those chemical compositions which, **as an additional essential feature**, satisfy the requirement of transportability and storage stability are within the claimed area.

3.2 According to the established jurisprudence of the Boards of Appeal it is necessary, in order to assess inventive step, to establish the state of the art closest to the claimed subject-matter, to determine in the light thereof the technical problem which the invention addresses and successfully solves, and to examine the obviousness of the claimed solution to this problem in view of the state of the art.

3.3 The Board concurs with the parties that document (4) is the closest state of the art in light of which the technical problem to be solved is to be determined.

Indeed, document (4) discloses safe ketone peroxide compositions which pass the pressure vessel test (PVT). Those compositions are used to polymerise unsaturated polyesters. In order to render them safe, they comprise a solution of a ketone peroxide derived from an acyclic ketone having 3 to 8 carbon atoms such as methyl ethyl ketone in such an amount of a safety hydrophilic solvent which may be an alkylene glycol, namely a solvent which is a phlegmatizer within Claim 1 of the patent in suit, that the composition is safe. It is furthermore stated in that document that methyl ethyl ketone peroxide compositions are complex mixtures of peroxides, but that no method is currently available to

determine accurately the percentage of each peroxide component present in such a mixture. For that reason, this document disregards this aspect and puts the focus on the percent active oxygen (A(O)) content of the composition. Preferred compositions comprise acyclic monoketone in an amount to yield 11% active oxygen content. Various examples disclose compositions comprising methyl ethyl ketone in an amount to yield 10.5% to 11% active oxygen content (see page 1, lines 37 to 44 and lines 71 to 80; page 2, lines 29 to 37 and lines 86 to 94; page 3, lines 45 to 49 and 107 to 116; examples 1, 2, 3, 5, 8, 9 and 10).

3.4 Thus, starting from document (4), the technical results or effects successfully achieved by the claimed subject-matter are to be determined for defining the objective technical problem to be solved by the invention.

3.4.1 The Appellant argued that the problem of the stability of the claimed compositions had no relationship with that of the modification of (co)polymers. Examples 14 to 18 and comparative examples D and E of the patent in suit, the results of which are listed in Table 4 of the description, would show an improved efficiency in the modification of (co)polymers for ketone peroxide mixtures containing the amount of cyclic peroxide required in Claim 1. In connection with that, the Appellant declared however at the oral proceedings before the Board that it could not be said that those mixtures were transportable and storage stable in the sense of the patent in suit. He further argued that examples 19 to 22 of the patent in suit disclosed transportable and storage stable compositions but that

no comparative test had been submitted in that respect. In view of that, the Appellant submitted in essence that the technical problem to be solved was to provide stable ketone peroxide formulations having improved efficiency in (co)polymer modification processes.

3.4.2 According to the established jurisprudence of the Boards of Appeal, some beneficial effects or advantageous properties, if appropriately demonstrated by means of truly comparable results, could in certain circumstances properly form a basis for the definition of the problem that the claimed invention sets out to solve and could, in principle, be regarded as an indication of inventive step; the only comparative tests suitable for this are, however, those which are concerned with the structurally closest state of the art to the invention, because it is only here that the factor of unexpectedness is to be sought (see T 181/82, OJ EPO 1984, 401, point 5 and T 955/96, point 5.10). To be relevant in the present case, such comparative tests must include the choice, on the one hand, of a stabilized ketone peroxide formulation taken from the closest state of the art and, on the other hand, a formulation according to Claim 1 (see T 955/96, point 5.7, in particular first sentence).

3.4.3 To show an improvement with respect to the closest state of the art, the Appellant chose to provide a test of degradation of polypropylene with the commercial product Butanox[®] LPT (see Example E of Table IV) which is a methyl ethyl ketone peroxide having a total active oxygen content of 8.5% (see page 6, lines 20-21). Neither in the opposition proceedings nor in the appeal

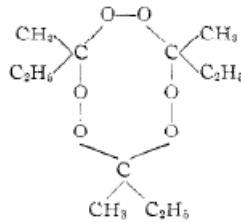
proceedings was it contested that Butanox[®] LPT did not contain any cyclic ketone peroxides.

3.4.4 However, Butanox[®] LPT is not mentioned in the disclosure of document (4). The question arises, therefore, whether or not for this sole reason, the comparison with Butanox[®] LPT is to be disregarded. In that respect, the Board is aware of the established jurisprudence of the Boards of Appeal that the comparison with a marketed product cannot be a substitute for the demonstration of inventive step with regard to the relevant closest state of the art since technical progress is not a requirement under the EPC (see in particular T 164/83, OJ EPO 87, 149). However, in the present case, it is observed that Butanox[®] LPT is a composition containing methyl ethyl ketone peroxide, i.e. a peroxide within the definition of document (4) (see point 3.3 above). Therefore, the Board does not see *prima facie* any objection against the choice of Butanox[®] LPT for comparison on the mere ground that it is a commercial product not explicitly mentioned in document (4).

3.4.5 It is to be noted however that document (4) relates, in particular, to compositions comprising acyclic monoketone peroxide in an amount to yield up to 12.5% and more preferably 11% active oxygen content (see page 3, lines 45 to 49). Butanox[®] LPT having a total active oxygen content of 8.5% (see point 3.4.3 above) is not in line with the preferred teaching of document (4) and for this reason cannot represent the closest state of the art.

- 3.4.6 Furthermore, as set out above, the comparison vis-à-vis the closest state of the art must be made with a formulation according to Claim 1 (see point 3.4.2). Since from the own declarations of the Appellant, the comparison is not made with compositions verifiably exhibiting an essential feature of the claimed subject-matter, namely transportability and storage stability (see points 3.1 and 3.4.1), the Board cannot also for this reason accept Table 4 as a proper basis for recognizing an improvement over document (4).
- 3.4.7 Since an improvement cannot be acknowledged vis-à-vis the closest state of the art, i.e document (4), a less ambitious technical problem must be formulated. In line with the patent in suit, the Board finds that the technical problem to be solved vis-à-vis that document may only be seen in the provision of further transportable, storage stable ketone peroxide compositions which can be employed in (co)polymer modification processes (see page 2, lines 41-42).
- 3.5 As a solution, the patent in suit proposes the compositions as defined in Claim 1. In view of the description, in particular the examples of the patent in suit, the Board is satisfied that the technical problem as above defined is solved within the whole claimed area.
- 3.6 It remains to be decided whether or not the claimed solution was obvious in view of the prior art cited.
- 3.6.1 As set out above (see point 3.3), document (4) specifies neither all the different ketone peroxides encompassed by its disclosure, nor their respective

proportion in the mixture stabilized by a safety solvent. Concerning the methods suitable for preparing these ketone peroxides, it should be however noted that document (4) refers explicitly to document (1) which discloses a mixture of seven peroxides containing the methyl ethyl ketone cyclic peroxide within the formula II of Claim 1 obtained by the reaction of methyl ethyl ketone with hydrogen peroxide, i.e.



(see page 5824).

Although it is contested by the Appellant that this mixture contains the amount of methyl ethyl ketone cyclic peroxide required in Claim 1, the preparation of the pure cyclic peroxide is described in the experimental part with its physical characteristics, i.e. R_f , m.p and I.R. In addition, in section [0015] of the patent in suit it is explicitly stated that the peroxides of formulae I-III in accordance with the patent in suit can be made by reacting a ketone with hydrogen peroxide as described *inter alia* in document (1) (see page 3, lines 36 to 40). The Appellant's argument is thus not convincing. Therefore, in the judgment of the Board, the combination of documents (4) and (1) leads the person skilled in the art to the claimed solution.

- 3.6.2 The Appellant argued that document (2) taught away from the claimed compositions and their use in polymer modification processes given the fact that it taught that the cyclic methyl ethyl ketone peroxide had a lower activity as polymerization activator than its

linear counterparts, leading the person skilled in the art to decrease the content of cyclic ketone peroxide in the ketone peroxide composition.

The Board observes that a piece of prior art is to be considered as teaching away from the claimed subject-matter if it contains an indication which suggests to the person skilled in the art to take a different direction from that leading to the claimed solution. Such a finding may reinforce the credibility that the claimed subject-matter is not obvious over the prior art cited.

Referring now to the content of document (2), it is first to be noted that this document relates to methyl ethyl ketone peroxides as initiators for polymerizing thermosetting resins such as unsaturated polyesters (see page 1, lines 12 to 16). The phrase "peroxides of methyl ethyl ketone" is used in that context to mean a reaction product which is a mixture of non cyclic ketone peroxides of formula (2) and (3) and cyclic peroxide of formula (4) (see page 1, lines 40 to 44). According to the prior art described in this document, a process is known to obtain a mixture wherein peroxide of formula (4) is believed to predominate (see page 2, lines 2-3). Non cyclic ketone peroxides of formulae (2) and (3) have higher activities as polymerisation initiators than cyclic ketone peroxide of formula (4) (see page 3, lines 39 to 45). The object of the invention according to document (2) is to provide a mixture of methyl ethyl ketone wherein relatively less of cyclic methyl ethyl ketone peroxide and more of its precursors, namely non cyclic methyl ethyl ketone

peroxides, and hydrolysis products are present (see page 3, lines 39 to 77).

The Board does not deny that this document suggests decreasing the content of cyclic ketone peroxide in the ketone peroxide composition. Such a document does not however deter the person skilled in the art from using mixtures of ketone peroxides containing cyclic ketone peroxides but invites him rather to control its content. In view of the solution claimed, namely that at least 20% of the total active oxygen content of the formulation is attributable to one or more cyclic ketone peroxides of the formulae I-III", the teaching of document (2) cannot be said to lead away from using compositions having relatively less of cyclic methyl ethyl ketone peroxide compared to a composition wherein the cyclic peroxide predominates, such compositions being nevertheless within the definition of the ketone peroxide composition as claimed.

This is not altered by the fact that when repeated Example 4 of this document yields a mixture of methyl ethyl ketone peroxides containing no cyclic peroxide.

3.6.3 The other documents cited by the Respondent in the course of the opposition/appeal proceedings, i.e. (3), (5), (6), (7), (8), (10) and (11) are either less or not relevant and there is no need to give details in that respect in view of the outcome of the decision.

3.6.4 It follows that in view of the prior art cited, the person skilled in the art would have arrived at a composition transportable, storage stable which can be employed in (co)polymer modification processes falling

within Claim 1 with a reasonable expectation of success. For this reason the subject-matter of Claim 1 does not involve an inventive step.

3.6.5 As Claim 9 is directed to the use in (co)polymer modification processes, such as cross-linking of (co)polymers, of the transportable, storage stable composition defined in Claim 1, the same inventive concept underlies both claims. For this reason, the conclusion reached in respect of Claim 1 also applies to Claim 9.

3.6.6 In view of the above, the present request does not meet the requirement of Article 56 EPC and is to be rejected.

Auxiliary request

4. *Amendments - Article 123(2) EPC*

4.1 Cyclic Peroxides defined in Claims 1 and 9 of this request have been restricted to ketone cyclic peroxides of formulae I-III wherein R_1 - R_{10} are independently selected from the group consisting of C_1 - C_{12} alkyl, encompassing cyclic methyl ethyl ketone peroxides. It is not contested that this amendment finds support in the content of the application as originally filed on page 5, lines 10-11, which corresponds to page 3, lines 50-51 of the patent in suit. There is, thus, no objection under Article 123(2) EPC.

5. *Novelty - Article 54 EPC*

Since the subject-matter of this request represents a limitation of the subject-matter of the main request,

the conclusion reached with regard to the novelty of the main request applies (see point 2 above).

6. *Inventive step*

6.1 In view of the findings set out above regarding the main request, the assessment of inventive step of Claims 1 and 9 of the auxiliary request is not different since no further arguments other than those already submitted were put forward in that respect. The considerations given above for the main request, thus, apply to the subject-matter of Claims 1 and 9 of the auxiliary request. Consequently, the subject-matter of Claims 1 and 9 of the auxiliary request lacks inventive step too (cf. point 3.6.6 above).

6.2 In these circumstances, the Appellant's auxiliary request must also be rejected.

7. None of the requests submitted by the Appellant, therefore, comply with the requirements of the EPC.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar

The Chairman

S. Sánchez Chiquero

A. J. Nuss