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D E C I S I O N
of 9 January 2002

Case Number: T 0948/97 - 3.4.1

Application Number: 92103060.7

Publication Number: 0502395

IPC: G21C 3/62

Language of the proceedings: EN

Title of invention:

Nuclear fuel pellets and method of manufacturing the same

Patentee:

NIPPON NUCLEAR FUEL DEVELOPMENT CO., LTD.

Opponent:

Framatome ANP GmbH

Headword:

-

Relevant legal provisions:

EPC Art. 100(a), 52(1), 56, 87, 123(2)(3), 54

Keyword:

-

Decisions cited:

G 0002/98, T 0150/82

Catchword:

-



Case Number: T 0948/97 - 3.4.1

D E C I S I O N
of the Technical Board of Appeal 3.4.1
of 9 January 2002

Appellant:
(Opponent)

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Respondent:
(Proprietor of the patent)

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Decision under appeal:

Decision of the Opposition Division of the
European Patent Office posted 1 July 1997
rejecting the opposition filed against European
patent No. 0 502 395 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: G. Davies
Members: G. Assi
R. Q. Bekkering

Summary of Facts and Submissions

- I. The appellant (opponent) lodged an appeal, received on 5 September 1997, against the decision of the Opposition Division, dispatched on 1 July 1997, rejecting the opposition against the European patent No. 0 502 395 (application number 92103060.7). The fee for appeal was paid on the same day. The statement setting out the grounds of appeal was received on 1 October 1997.
- II. Opposition was filed against the patent and was based on Article 100(a) EPC, in particular on the grounds that the subject-matter of the patent was not patentable within the terms of Articles 52(1) and 56 EPC.

The Opposition Division held that the grounds of the opposition did not prejudice the maintenance of the patent as granted, having regard *inter alia* to the following documents:

- (D1) EP-A-0 316 623,
- (D2) DE-A-3 242 634,
- (D3) ASTM, 1989 Annual Book of ASTM Standards, Section 12, Volume 12.01, Philadelphia (US), pages 292-294 and 391-393, and
- (D4) JP-A-3-146 895.

III. During appeal proceedings, the Board considered *inter alia* the following further documents:

(D4') German translation of D4 produced by the appellant with the statement setting out the grounds of appeal and

(D.A-D.F) Experimental evidence produced by the respondent (patent proprietor) with the letter of 22 April 1998.

IV. Oral proceedings were held on 9 January 2002.

V. The appellant requested that the decision under appeal be set aside and that the patent be revoked.

The respondent requested that the patent be maintained on the basis of the following documents:

Main request:

Claims: 1 to 3 of the granted patent,

Description: pages 2 to 5 of the granted patent,

Drawings: Figures 1 to 3 of the granted patent,

Auxiliary request I:

Claims: 1 to 3 filed at the oral proceedings on 9 January 2002,

Description: not amended,

Drawings: not amended,

Auxiliary request II:

Claims: 1 to 3 filed at the oral proceedings on 9 January 2002,

Description: not amended,

Drawings: not amended,

Auxiliary request III:

Claims: 1, 2 filed at the oral proceedings on
9 January 2002,
Description: not amended,
Drawings: not amended,

Auxiliary request IV:

Claims: 1, 2 filed at the oral proceedings on
9 January 2002,
Description: pages 2 to 5 filed at the oral
proceedings on 9 January 2002,
Drawings: Figures 1 to 3 of the granted patent.

VI. With regard to the respondent's **main request**, the wording of Claims 1 and 2 reads as follows:

"1. Nuclear fuel pellets including fission substance of UO_2 or UO_2 having Gd_2O_3 added thereto, the nuclear fuel pellets comprising UO_2 or $(U, Gd)O_2$ grains and an aluminosilicate deposition phase, the deposition phase being a glassy and/or a crystalline state, said grains having an average grain diameter of about $20 \mu m$ through about $60 \mu m$, said aluminosilicate deposition phase having an composition including SiO_2 of about 40 wt% through about 80 wt% and Al_2O_3 of the residual on average, the amount of alumina plus silica being about 10 ppm through about 500 ppm with respect to the total amount of said nuclear fuel pellets, said pellets having porosity of 5 vol% at a maximum."

"2. A method of manufacturing nuclear fuel pellets, wherein an oxide powder including UO_2 or UO_2 having Gd_2O_3 added thereto is compacted and then sintered, said method comprising the steps of:

preparing a sintering agent having a composition including SiO_2 of about 40 wt% through about 80 wt% and Al_2O_3 of the residual (and also including their precursors);

mixing said sintering agent with said oxide powder so as to obtain an oxide powder including said sintering agent of about 10 ppm through about 500 ppm with respect to the total amount of said oxide powder and said sintering agent;

compacting the mixed oxide powder so as to obtain green pellets; and

sintering the green pellets at a temperature in a range of about 1500 °C through about 1800 °C so as to obtain sintered pellets."

Claim 3 is dependent on Claim 2.

Claims 1 to 3 of the respondent's **auxiliary request I** correspond to Claims 1 to 3 of the granted patent with the difference that Claims 1 and 2 include the further feature "with the proviso that if the fission substance is UO_2 , then the amount of SiO_2 is 60 wt% through about 80 wt%".

As regards the respondent's **auxiliary request II**, Claims 1 and 2 correspond to Claims 2 and 3 of the granted patent, in which the feature that the fuel oxide powder includes UO_2 alone (i.e. without Gd_2O_3) has been deleted. The wording of Claim 3 reads as follows:

"3. Nuclear fuel pellets, obtainable by a method according to claim 1 or 2."

Claims 1 and 2 of the respondent's **auxiliary request III** correspond to Claims 2 and 3 of the granted patent, in which the feature that the fuel oxide powder includes UO_2 alone has been deleted.

Claims 1 and 2 of the respondent's **auxiliary request IV** correspond to Claims 2 and 3 of the granted patent, in which the feature that the fuel oxide powder includes UO_2 alone has been deleted. The expression between brackets "*(and also including their precursors)*" has also been deleted.

VII. The appellant's objections may be summarised as follows.

Respondent's main request:

The earlier priority application of 4 March 1991 was not valid for Claim 1 because this application did not disclose pellets including UO_2 alone, the average grain diameter range of 20-60 μm , and the expression "on average" with regard to the wt%-values of SiO_2 and Al_2O_3 . The same applied to Claim 2 because the earlier priority application did not disclose the feature concerning the precursors of SiO_2 and Al_2O_3 . Thus, document D4 was comprised within the state of the art. The subject-matter of Claims 1 and 2 lacked novelty with regard to D4.

Respondent's auxiliary request I:

The amended Claims 1 and 2 contravened the provisions of Article 123(2) EPC because the lower value of 60 wt% SiO_2 was disclosed in the originally filed application only in connection with pellets including UO_2 and Gd_2O_3 . Moreover, the original disclosure concerned the range 40-80 wt% SiO_2 and the example 60 wt% SiO_2 but not the smaller range 60-80 wt% SiO_2 *per se*.

Respondent's auxiliary request II:

Having regard to Claim 3, the protection conferred by the granted patent had been extended (Article 123(3) EPC) because this claim covered nuclear fuel pellets having characteristics which could differ from those of the pellets according to Claim 1 or directly obtained by the method according to Claim 2 of the granted patent.

Moreover, a product-by-process claim should only be allowed if the product could not be defined with product features.

Respondent's auxiliary request III:

The priority application of 4 March 1991 was not valid for Claim 1 because this application did not disclose the feature concerning the precursors of SiO_2 and Al_2O_3 .

Thus, document D4 was comprised within the state of the art and the subject-matter of Claim 1 lacked novelty with regard to D4.

Moreover, Claim 1 lacked clarity (Article 84 EPC) because of the feature concerning the precursors.

Respondent's auxiliary request IV:

The subject-matter of Claim 1 lacked inventive step. Document D1 was considered to represent the closest prior art. The subject-matter of Claim 1 differed from the method known from D1 only in that the fuel oxide powder included Gd_2O_3 and the amount of sintering agent was 10-500 ppm. Mixing UO_2 with Gd_2O_3 was a measure known in the art. Moreover, a hint at reducing the amount of sintering agent could be found in document D3.

VIII. The respondent's arguments may be summarised as follows.

Main request:

The earlier priority application of 4 March 1991 was valid for Claims 1 and 2.

As regarded the presence of Gd_2O_3 , this feature was not essential for the invention disclosed by the earlier priority application. Indeed, according to page 3, sinterability of a mixed oxide of UO_2 and Gd_2O_3 was lower than that of pure UO_2 . Moreover, the sintered density and the grain diameters of the mixed oxide were smaller. Thus, if the object of the invention was nevertheless achieved in the presence of Gd_2O_3 , it would also be achieved *a fortiori* without it.

With regard to the further feature concerning the average grain diameter range of 20-60 μm , it formed part of the implicit disclosure of the earlier priority application. The results D.A-D.F of the experimental tests carried out by the respondent showed that the claimed grain diameter range was an inherent feature of the nuclear fuel pellets manufactured according to the method of the earlier priority application.

Furthermore, the expression "on average" with regard to the wt%-values of SiO_2 and Al_2O_3 and the feature concerning the precursors were also implicit features of the disclosure of the earlier priority application. Anyhow, they could be deleted.

Should, however, the priority application of 4 March 1991 not be considered valid, no comments were submitted concerning the objection of lack of novelty with regard to D4.

Auxiliary request I:

The amended Claims 1 and 2 met the provisions of Article 123(2) EPC because the skilled person would understand that the lower value of 60 wt% SiO₂ in the originally filed application was not closely connected with the presence of Gd₂O₃.

Auxiliary request II:

Having regard to Claim 3, the choice of the term "obtainable" rather than "obtained" was in conformity with the Guidelines for examination in the EPO. Moreover, the objection raised under Article 123(3) EPC was not justified in view of the results D.A-D.F of the experimental tests.

Auxiliary request III:

The priority application of 4 March 1991 did not disclose explicitly the feature concerning the precursors, which was, however, obvious for the skilled person. This feature could be deleted. Clarity was not a ground for opposition.

Auxiliary request IV:

The subject-matter of Claim 1 involved an inventive step. Document D1, indeed, represented the closest prior art and did not disclose a fuel oxide powder including Gd₂O₃ as well as the claimed amount of sintering agent. With regard to the latter feature, D1 explicitly taught away from the invention because higher amounts of sintering agent were considered as being necessary (see page 5, lines 30 and 31). A hint at reducing the amount of sintering agent could not be given by D3 because this document concerned ASTM standards that were not compulsory and could be changed. Moreover, the values for impurities mentioned by D3 referred to atomic elements and not to the corresponding oxides.

Reasons for the Decision

1. The appeal is admissible.
2. Respondent's main request
 - 2.1 Priority right
 - 2.1.1 According to the opinion G 2/98 (EPO OJ 2001, 413), "a narrow or strict interpretation of the concept of "the same invention" ", referred to in Article 87(1) EPC, "equating it to the concept of "the same subject-matter" referred to in Article 87(4) EPC ..., is necessary to ensure a proper exercise of priority rights in full conformity inter alia with the principles of equal treatment of the applicant and third parties ... and legal certainty ... and with the requirement of consistency with regard to the assessment of novelty and inventive step ...". Thus, "priority of a previous application in respect of a claim in a European patent application in accordance with Article 88 EPC is to be acknowledged only if the person skilled in the art can derive the subject-matter of the claim directly and unambiguously, using common general knowledge, from the previous application as a whole" (see point 9 of the reasons). The subject-matter of the claim defining the invention in the European application has to be understood as "the specific combination of features present in the claim" (see point 2 of the reasons).
 - 2.1.2 The disclosure of the earlier priority application of 4 March 1991 may be summarized as follows. The single claim refers to a method of manufacturing nuclear fuel pellets with the following steps:
 - preparing an oxide powder including UO_2 and Gd_2O_3 ,

- preparing a sintering agent including SiO_2 and Al_2O_3 , SiO_2 being 40-80 wt% and Al_2O_3 the rest,
- mixing the oxide powder with the sintering agent, the amount of sintering agent being 10-500 ppm with respect to the total amount of oxide powder and sintering agent,
- compacting the mixed oxide powder so as to obtain green pellets,
- sintering the green pellets at a temperature in the range 1500-1800°C.

A particular embodiment is disclosed on page 6, according to which pellets are obtained under the following conditions:

- 10 wt% Gd_2O_3 with respect to the total amount of oxide powder and sintering agent,
- 40 wt% Al_2O_3 and 60 wt% SiO_2 , which are mixed, exposed at a gas flow of 8% H_2/N_2 , heated at 2100°C, and melted,
- addition of a lubricant,
- 30-500 ppm sintering agent with respect to the total amount of oxide powder and sintering agent,
- sintering in a $\text{H}_2/\text{H}_2\text{O}$ (alternatively CO/CO_2 - see page 8, end of first paragraph) atmosphere at 1760° for 5.6 h.

The pellets manufactured in this way have grain diameters in the range 25.6-33.3 μm and sintered densities in the range 10.33-10.40 g/cm^3 (see the table on page 7).

Thus, the disclosure of the earlier priority application of 4 March 1991 does not include, at least explicitly, the following features:

- (i) nuclear fuel pellets including UO_2 without Gd_2O_3 ,
- (ii) an average grain diameter of about $20 \mu\text{m}$ through about $60 \mu\text{m}$,
- (iii) the fact that the wt%-values of SiO_2 and Al_2O_3 are "on average", and
- (iv) the feature "*and also including their precursors*" with regard to SiO_2 and Al_2O_3 .

2.1.3 Applying the principles laid down in the opinion G 2/98 to the case in suit, in order for the earlier priority date of 4 March 1991 to be valid, the subject-matter of Claims 1 and 2 of the granted patent has to be "*directly*" and "*unambiguously*", using common general knowledge, derived from the previous application as a whole.

2.1.3.1 Attention is, first, drawn to feature (ii) which concerns Claim 1. The respondent agrees that the earlier priority application does not explicitly disclose this feature. In his opinion, however, the claimed grain diameter range has to be considered as an inherent feature of the nuclear fuel pellets manufactured according to the method of the earlier priority application. The experimental evidence D.A-D.F supported his conclusion.

According to this evidence, the grain diameter depends on many factors like the green pellet composition, the sintering temperature, the sintering atmosphere and the sintering time. Notwithstanding this dependence, which can be considered as forming part of the

technical knowledge of the skilled person, the experimental data D.A-D.F does not prove that the method according to the earlier priority application indeed "unambiguously" leads to pellets having the claimed grain diameters. On the contrary, although it may be admitted that the values of the claimed range are quite probable, the lower limit of 20 μm and the upper limit of 60 μm do not necessarily result from the experimental data. For instance, from data D.C diameters below 20 μm and over 60 μm are obtained or can be obtained (see the fitting line) with sintering times under 2 hours and over 12 hours, respectively. Moreover, the different data do not appear to be consistent with each other. For instance, from data D.F, grain diameters of both about 40 μm and over 60 μm are obtained for $\text{UO}_2\text{-3wt\%Gd}_2\text{O}_3$ pellets including 250 ppm AlSiO sintered at 1740°C for about 6 hours under $\text{N}_2\text{-13\%H}_2\text{+H}_2\text{O}$.

The feature (ii) is, therefore, not disclosed by the earlier priority application. In view of this, there is no need to examine whether the same conclusion also applies to the other features (i) and (iii) concerning Claim 1.

Hence, the priority date of 4 March 1991 is not acknowledged for Claim 1 of the granted patent. The valid priority date is 11 November 1991.

2.1.3.2 Attention is also drawn to feature (iv) which concerns Claim 2. The respondent agrees that the earlier priority application does not explicitly disclose this feature. If at all, the feature should, therefore, be considered as implicit. It is, however, noted that depending on whether or not the precursors of SiO_2 and

Al₂O₃ are considered, the composition of the sintering agent would change. This means that Claim 2 of the granted patent covers compositions which are not envisaged by the earlier priority application.

Thus, feature (iv) is not disclosed by the earlier priority application. In view of this, there is no need to examine whether the same conclusion also applies to the other feature (i) concerning Claim 2.

Hence, the priority date of 4 March 1991 is not acknowledged for Claim 2 of the granted patent. The valid priority date is 11 November 1991.

2.2 Novelty

Document D4, published on 21 June 1991, is considered to be comprised within the state of the art pursuant to Article 54(2) EPC, as long as the priority date of 11 November 1991 is valid.

2.2.1 Having regard to the German translation, document D4 (see Claim 2) discloses a method of manufacturing nuclear fuel pellets with the following steps:

- preparing an oxide powder including UO₂ or UO₂ having Gd₂O₃ added thereto,
- preparing a sintering agent including Al₂O₃ and SiO₂, the weight ratio between Al₂O₃ and SiO₂ being in the range 1:1-30:1,
- mixing the oxide powder with the sintering agent, the amount of sintering agent being 0.005-0.05%, i.e. 50-500 ppm, with respect to the total amount of oxide powder and sintering agent,

- compacting the mixed oxide powder so as to obtain green pellets,
- sintering the green pellets at a temperature in the range 1600-1750°C.

According to the Example 1, alternative A (see page 8), the weight ratio between Al_2O_3 and SiO_2 is 1:1, i.e. 50 wt% Al_2O_3 and 50 wt% SiO_2 .

Document D4 thus discloses a method of manufacturing nuclear fuel pellets with all the steps recited in Claim 2 of the granted patent.

Hence, the subject-matter of Claim 2 of the granted patent lacks novelty with regard to D4 (Article 54(1) EPC).

2.2.2 In view of the conclusion relating to Claim 2, there is no need to examine novelty with regard to Claim 1.

2.3 For these reasons, the respondent's main request is not allowable.

3. *Respondent's auxiliary request I*

Claims 1 and 2 include the amendment that "*if the fission substance is UO_2 , then the amount of SiO_2 is 60 wt% through about 80 wt%*". The application as filed discloses the value of 60 wt% for the amount of SiO_2 on page 6, line 16. However, this value is disclosed within the frame of an embodiment of the invention, according to which the nuclear fuel pellets include UO_2 having Gd_2O_3 added thereto (see page 7, line 1). Apart from the cited passage, the description as filed consistently mentions the range 40-80 wt% SiO_2 for pellets including UO_2 alone or UO_2 having Gd_2O_3 added thereto.

The respondent's argument that the skilled person would understand that the lower value of 60 wt% SiO₂ in the originally filed application is not closely connected with the presence of Gd₂O₃ is not convincing, because SiO₂ is part of the sintering agent and sinterability depends, *inter alia*, on the presence of Gd₂O₃, as it can be inferred from the original application, page 3, lines 1 to 6.

Therefore, the patent has been amended in such a way that it contains subject-matter which extends beyond the content of the application as filed, contrary to the provisions of Article 123(2) EPC.

For these reasons, the respondent's auxiliary request I is not admissible.

4. *Respondent's auxiliary request II*

Claim 1 of the granted patent has been replaced by a new product Claim 3 with the wording "*Nuclear fuel pellets, obtainable by a method according to claim 1 or 2.*" It is a so-called product-by-process claim defining the product in terms of the process for its preparation. Adopting the line of the decision T 150/82 (EPO OJ 1984, 309), such a claim would be admissible only if the product itself fulfils the requirements for patentability and there is no other information available in the application which could enable the applicant to define the product satisfactorily "*by reference to its composition, structure or some other testable parameter*" (see Headnote, II). In the case in suit, it is indeed possible to define the nuclear fuel pellets by means of their composition and structural parameters (see Claim 1 of the granted patent). Thus, the wording of Claim 3 is not justified.

Moreover, it cannot be excluded that the protection conferred by Claim 3 covers nuclear fuel pellets which, depending on the particular manufacturing steps, some of which are not defined by method Claim 1, for instance the amount of Gd_2O_3 , or the sintering time and atmosphere, are characterised by structural parameters with values extending beyond the limits defined by Claim 1 or implied by Claim 2 of the granted patent. In this respect, contrary to the respondent's opinion, the experimental data D.A-D.F cannot invalidate the objection raised in view of the arguments mentioned above with regard to the respondent's main request. Therefore, the claims of the patent have been amended in such a way as to extend the protection conferred, so contravening the provisions of Article 123(3) EPC.

For these reasons, the respondent's auxiliary request II is not admissible.

5. *Respondent's auxiliary request III*

Claim 1 corresponds to Claim 2 of the granted patent, in which the feature that the fuel oxide powder includes UO_2 , alone has been deleted. This amendment is admissible. However, Claim 1 includes the feature "*and also including their precursors*" with reference to SiO_2 and Al_2O_3 . According to what is stated above with regard to the respondent's main request, the valid priority date is 11 November 1991 and, therefore, the subject-matter of the Claim 1 lacks novelty having regard to document D4.

For these reasons, the respondent's auxiliary request III is not allowable.

6. *Respondent's auxiliary request IV*

6.1 Claims 1 and 2 correspond to Claims 2 and 3 of the granted patent, in which the feature that the fuel oxide powder includes UO_2 alone has been deleted. The expression between brackets "(and also including their precursors)" has also been deleted. The Board agrees with the appellant's opinion that the amendments do not contravene Article 123(2), (3) EPC. As regards, in particular, the feature concerning the precursors, since it can be considered as an alternative implied by the claim, its deletion does not extend the protection conferred by the patent.

6.2 Moreover, the Board agrees with the appellant's view that the priority date of 4 March 1991 is valid for Claim 1. Indeed, the subject-matter of this claim is identical to that of the unique claim of the earlier priority application. As regards Claim 2, its subject-matter can be inferred from Figure 1 of the earlier priority application.

Thus, document D4 is not comprised within the state of the art pursuant to Article 54(2) EPC.

The subject-matter of Claim 1 is new with regard to the cited prior art documents.

6.3 The fact that document D1 represents the closest state of the art is not in dispute between the parties to the proceedings. D1 discloses a method of manufacturing nuclear fuel pellets with the following steps:

- preparing an oxide powder including UO_2 (see page 3, lines 2 to 6),

- preparing a sintering agent including SiO_2 and Al_2O_3 , Al_2O_3 being 20-60 wt%, according to an embodiment, and SiO_2 the rest, i.e. 40-80 wt% (see page 3, lines 18 to 22),
- mixing the oxide powder with the sintering agent (see page 3, lines 41 to 43), the amount of the sintering agent being 0.1-0.5 wt% according to an embodiment, i.e. 1000-5000 ppm, with respect to the total amount of oxide powder and sintering agent (see page 3, lines 32 to 33), the amount of SiO_2 and Al_2O_3 , however, being 0.08 wt%, i.e. 800 ppm, according to the Example 6 in Table I on page 10,
- compacting the mixed oxide powder so as to obtain green pellets (see page 3, line 52),
- sintering the green pellets at a temperature in the range 1500-2000°C, preferably 1540-1750°C, more preferably 1600-1700°C (see page 4, lines 15 to 20).

The subject-matter of Claim 1 thus differs from the method known from D1 in that the oxide powder also includes Gd_2O_3 , and the amount of sintering agent is 10-500 ppm.

6.4 The problem underlying the patent consists in providing nuclear fuel pellets having high density and large grain diameters (see the granted patent, page 2, lines 50 to 55), which aims are indeed achieved by the claimed method (see the granted patent, page 4, lines 21 to 23). Stating this problem does not contribute to the presence of an inventive step because an object of D1 (see page 2, lines 26 and 27) is to achieve large grain diameters and an increased creep rate and, moreover, it is known that low

densities involve disadvantages like, for example, decreased thermal conductivity of the pellets, increased pellet centre temperature and bubble swelling (see the granted patent, page 2, lines 42 to 44).

- 6.5 The choice of uranium dioxide UO_2 having Gd_2O_3 added thereto is well-known and usual in the art (see D2, Claim 2, and D3, pages 391 to 393), this fact being accepted by the respondent. Thus, this feature cannot support an inventive step.

As already stated above, it is known that sinterability of UO_2 having Gd_2O_3 added thereto is lower than that of pure UO_2 . Moreover, the presence of Gd_2O_3 negatively affects both sintered density and grain diameters (see the granted patent, page 2, lines 32 to 34). This means that the amount of sintering agent plays a more critical role in the present invention than in document D1 which concerns pellets including UO_2 alone. According to the teaching of D1 (see page 2, lines 45 to 55), an amount of sintering agent of 0.1-1 wt% is *inter alia* necessary in order to achieve the desired effect that at least 99 vol% of the grains are each coated with a glassy aluminosilicate phase leaving no significant portion thereof exposed. This amount is clearly higher than the claimed one. In this respect, although Example 6 in Table I on page 10 mentions a lower value, i.e. 0.08 wt%, approaching to a certain extent the claimed upper limit of 500 ppm, this Example does not appear to refer to the invention in the sense that parameters essential for the invention concerning the characterisation of the phases present and the creep rate are not determined (see "N.D."). It is beyond doubt that D1 (see page 5, lines 30 and 31) stresses the importance of avoiding values lower than 0.1 wt% and the fact that according to D1, page 3, lines 33 to

34, "the particular amount of sintering agent used is determinable empirically and depends largely on the particular sintered body desired" should not be understood in contradiction with the statement on page 5. In conclusion, D1 teaches away from the teaching of the patent in suit as regards the amount of sintering agent to be used.

The appellant has argued that at least the upper limit of the claimed range of 10-500 ppm could be inferred from document D3, Table 1, on page 392. Apart from the fact that D3 concerns ASTM Standards valid for nuclear energy, which can be changed at any time and have no compulsory character for the nuclear industry, the appellant's comparison is not valid because the values of Table 1 refer to the atomic elements, whereas the claimed range is given with regard to the oxides SiO_2 and Al_2O_3 . Thus, it cannot be stated that D3 gives a hint at the claimed range.

In conclusion, the subject-matter of Claim 1 involves an inventive step having regard to document D1 taken alone or in combination with D3.

6.6 For these reasons, the claims of the respondent's auxiliary request IV are allowable.

7. According to the respondent's auxiliary request IV, the description of the granted patent has been brought into conformity with the amended claims, without contravening Article 123(2) EPC.

Hence, taking into consideration the amendments of the respondent's auxiliary request IV, the Board comes to the conclusion that the patent as amended meets the requirements of the EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to maintain the patent as amended in the following version according to the respondent's auxiliary request IV:

Claims: 1, 2 filed at the oral proceedings on
9 January 2002,

Description: pages 2 to 5 filed at the oral
proceedings on 9 January 2002,

Drawings: Figures 1 to 3 of the granted patent.

The Registrar:

The Chairman:

R. Schumacher

G. Davies

