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**Datasheet for the decision  
of 19 March 2007**

**Case Number:** T 0878/03 - 3.3.05

**Application Number:** 96907449.1

**Publication Number:** 0815062

**IPC:** C03C 13/00

**Language of the proceedings:** EN

**Title of invention:**  
Method of making mineral fibres

**Patentee:**  
Rockwool International A/S

**Opponent:**  
SAINT COBAIN ISOVER

**Headword:**  
Method of making mineral fibres/ROCKWOOL

**Relevant legal provisions:**  
EPC Art. 100(b), 100(a)

**Keyword:**  
"Sufficiency of disclosure (yes)"  
"Novelty (yes)"  
"Inventive step (yes)"

**Decisions cited:**  
T 0541/97

**Catchword:**  
-



Case Number: T 0878/03 - 3.3.05

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.05  
of 19 March 2007

**Appellant:**  
(Patent Proprietor)

Rockwool International A/S  
Hovedgaden 501  
DK-2640 Hedehusene (DK)

**Representative:**

Samuels, Lucy Alice  
Gill Jennings & Every LLP  
Broadgate House  
7 Eldon Street  
London EC2M 7LH (GB)

**Respondent:**  
(Opponent)

SAINT GOBAIN ISOVER  
18, rue d'Alsace  
F-92400 Courbevoie (FR)

**Representative:**

Muller René  
Saint-Gobain Recherche  
39, quai Lucien Lefranc  
F-93303 Aubervilliers Cedex (FR)

**Decision under appeal:**

Decision of the Opposition Division of the  
European Patent Office posted 23 July 2003  
revoking European patent No. 0815062 pursuant  
to Article 102(1) EPC.

**Composition of the Board:**

**Chairman:** M. Eberhard  
**Members:** E. Waeckerlin  
J. Willems

## Summary of Facts and Submissions

- I. European patent No. 0 815 062 was revoked by decision of the opposition division posted on 23 July 2003.

The independent Claim 1 of the patent as granted reads as follows:

*"1. A method of making MMV fibres comprising melting in a furnace raw materials to produce a mineral melt and forming fibres from the melt, in which the raw material charge includes a mixture of at least two types of briquette (a) and (b), of size at least 50 mm, each type of briquette having a different chemical analysis, and at least 30 wt% of the raw material charge is provided by briquettes (b) and in which*

*(1) briquette (a) has an initial melting temperature of 1,240°C or below and briquette (b) has an initial melting temperature of 1,200°C or greater and the initial melting temperature of briquette (b) is at least 20°C greater than the initial melting temperature of briquette (a),*

*or*

*(2) the briquettes have an overall chemical analysis which when provided in the form of a single type of briquette gives an initial melting temperature (I), and in which briquettes (b) have an initial melting temperature which is at least 20°C greater than initial melting temperature (I)."*

II. During the opposition procedure the opponent referred to the following documents:

- D1: Garn, Paul D.: Thermoanalytical methods of investigation. New York : Academic Press, 1965, p. 16- 52.
- D2: Report "*ATD: Analyse thermodifférentielle*" by "Saint-Gobain Recherche / Physique, Chimie, Analyses" dated 31 October 2000, and DTA graphic curves filed by the opponent on 27 March 2003.
- D3: Report "*Tillstånd till ändrad verksamhet vid bolagets mineral-ullsfabrik i Hällekis, Götene kommun, Skaraborgs län. Sökande: Rockwool Aktiebolag*", datestamped 26 January 1995.
- D3a: English translation of document D3: "*Permission for changed operation at the company's mineral wool factory in Hällekis, Götene community, county of Skaraborg. Applicant: Rockwool AB*".
- D4: US-A-4 661 119
- D5: EP-A-0 459 897
- D6: WO-A-93 22251
- D7: Freidenzon, E.Z. et al., "*Production of vanadium-bearing pig iron with the use of highly basic sinter*", *Stal* in English, December 1970, p. 931-934.

D8: Hecht, M. et al.: "*Le rendement en silicium des briquettes de ferrosilicium*", Fonderie - Fondateur d'aujourd'hui 76, 1988, p. 23-39.

D9: Declaration by Donald Bruce Dingwell, submitted by the proprietor of the patent in suit with letter dated 13 February 2003.

In its decision the opposition division held that neither the main request (claims as granted) nor any of the three auxiliary requests submitted by the proprietor of the patent fulfilled the requirements of the EPC.

As far as the main request and the second auxiliary request were concerned, Claim 9, which was identical to Claim 9 as granted, did not comply with the requirements of Article 100(b) EPC, because there was no evidence how the "compression strength" of briquettes could be measured at high temperatures of up to 1340°C.

With regard to the first auxiliary request the opposition division acknowledged that the method defined in Claim 1, which was identical to Claim 1 as granted, was in conformity with Article 100(b) EPC. In particular it was found that the skilled person was able to determine the "initial melting temperature" (IMT) of the briquettes by means of differential thermal analysis as described in "D2" [*recte* D1]. The novelty of the method was also acknowledged. It was found, however, that the method did not involve an inventive step. Having regard to D3 as the closest

prior art, no technical problem could be identified which was solved over the whole scope claimed.

The opposition division further held that the method according to the third auxiliary request did not involve an inventive step either, although it was further characterised by the presence of specified amounts of iron and phosphorus in the overall chemical analysis of the briquette mixture. The opposition division considered that iron and phosphorus were well known compounds in the art of making glass fibres. Moreover it was unclear which effect was produced by the addition of iron and phosphorus.

III. With the grounds of appeal the appellant (proprietor of the patent) submitted five sets of amended claims as first to fifth auxiliary requests. The appellant argued *inter alia* that the invention addressed the problem of improving processing in methods of making man-made vitreous (MMV) fibres which were to be formed from a mineral charge comprising a substantial proportion of briquettes. None of the prior art documents related to this problem. Nothing suggested the use of a system comprising at least two types of briquettes as part of the raw material charge to form a mineral melt. Therefore the claimed process was not obvious on any basis.

IV. In reply the respondent (opponent) denied that the disclosure of the patent was sufficient. In particular the patent in suit contained no information as to how the "initial melting temperature" (IMT) could be determined from the graphic curve obtained by differential thermal analysis (DTA). The melting onset

temperatures could not be determined with a precision sufficient to distinguish the two IMT-values stated in Claim 1.

The respondent introduced a new document D10, GB-A-1 529 288, and argued *inter alia* that the claimed method as set out in Claim 1 did not involve an inventive step in view of the disclosure of D10 (closest prior art) in combination with the teaching of D3 and D4.

- V. Further sets of amended claims were filed later, in particular the three sets of claims submitted by fax on 14 March 2007 as 4th to 6th auxiliary requests.
- VI. Oral proceedings were held on 19 March 2007. The appellant filed a main request (claims 1 to 8) and three auxiliary requests replacing the previous main and auxiliary requests 1 to 3. Claim 1 of the main request was identical to Claim 1 as granted. The independent Claim 9 as granted was not any longer maintained in either the main or the auxiliary requests.
- VII. The appellant requested that the decision under appeal be set aside and that a patent be maintained on the basis of the main request (claims 1 to 8) as filed during the oral proceedings or, alternatively, on the basis of auxiliary requests 1 to 3 as filed during the oral proceedings, or of auxiliary requests 4 to 6 as filed with letter dated 14 March 2007.

The respondent requested that the appeal be dismissed.

VIII. The arguments of the parties can be summarised as follows:

The appellant argued that the patent teaches to deliberately provide a raw material charge of at least two types of briquettes (a) and (b), respectively, whereby the charge comprises at least 30 wt% of type (b) briquettes having a certain minimum initial melting temperature as set out in Claim 1. The "initial melting temperature" is measured by a well-known technique, namely differential thermal analysis (DTA). For the evaluation of the experimental DTA graphic curves the skilled person would use another well-known technique, namely the method of "extrapolated onset temperatures".

With regard to novelty the appellant contended that none of the documents referred to by the respondent disclosed the claimed method of making MMV fibres. Both D3 and D10 concern the use of briquettes in the production of mineral wool, but the raw material charge consists basically of only one type of briquette, not two or more as in the method according to the patent in suit. D4 deals with briquettes containing coke and being suitable as fuel in a furnace for melting of minerals in the manufacture of mineral wool. D5 and D6 disclose mineral fibres having a specific chemical composition, but both documents are completely silent on the method how to make them. D7 and D8 on their part are not about mineral fibres and their production, but about pig iron and briquettes of ferrosilicium, respectively.



In respect of inventive step the appellant explained that it was well known in the prior art to provide MMV fibres by processes comprising melting in a furnace a charge comprising suitable raw materials in the form of moulded briquettes of particulate mineral material. Processing problems may arise, however, if all mineral components stick together in one single type of briquette. These occur in particular when the briquettes melt at too low a temperature. By splitting the components into different types of briquettes as defined in Claim 1 of the patent in suit, each type having a different chemical analysis, these problems are overcome. This gives the process a huge flexibility with regard to the composition of the raw material charge, so that a wide variety of MMV fibres can be produced. Document D10, which represents the closest prior art, does not contain any suggestion that the solution of the technical problem posed consists in splitting the raw material components, let alone in making the splitting in such a manner that the initial melting temperatures of the briquettes meet the specific conditions set out in Claim 1. The same applies to document D3, taken separately or in combination with D10, or to any other combination of documents, for example D3 and D4. Therefore the claimed method involves an inventive step.

The respondent disagreed, contending that the disclosure of the patent in suit was insufficient. Thus, the skilled person could not determine the "initial melting temperature" with the required precision. Documents D3 or D10 contained essentially the same teaching as the patent in suit. The alleged invention

represented nothing other than an obvious alternative to the methods known from D3 or D10.

## **Reasons for the Decision**

### Main request

#### *Article 123(2) and (3) EPC*

1. The claims according to the main request correspond to the set of claims as originally filed, with the exception that Claim 9 has been deleted. The board is satisfied that the amended set of claims is in conformity with Article 123(2) and (3) EPC.

#### *Sufficiency of disclosure - Articles 100(b) and 83 EPC*

2. Claim 1 requires that each type of briquette (a) and (b), respectively, possesses an "initial melting temperature" (IMT) as specified in the claim. The question arises in particular, whether the skilled person is able to determine these IMT-values from the graphic curves obtained by differential thermal analysis (DTA) in the absence of detailed information in the patent in suit as regards the used method of evaluation of the graphic curves.
  - 2.1 In section [0015] of the description of the patent in suit it is explained that the "*initial melting temperature (IMT) is measured by differential thermal analysis (DTA)*". Moreover there is the following statement: "*For the purposes of the commercially used melting process it is the temperature at which melting*

*begins which is particularly important. This is the initial melting temperature, which is defined as the temperature at which the first endotherm peak occurs."* In section [0017] of the description the procedure for carrying out DTA experiments using samples of mineral raw materials is specified in some detail.

2.2 It follows from the foregoing that the measuring method as such, i.e. differential thermal analysis (DTA), is clearly indicated in the patent. This method is well known to the skilled person and described at great length in the relevant literature, for example in D1 referred to in section [0015] of the patent in suit. Specific information on the application of the DTA method to samples of raw materials of the briquettes is given in section [0017]. This has not been denied by the respondent who has conceded that the skilled person is able to establish DTA graphic curves by applying standard techniques. It is also not disputed by the parties that in the case of D2, which is a practical example of a DTA graphic curve, the third peak (called "P3") can be clearly and unequivocally assigned to a melting reaction, thus representing the "first endotherm peak" within the meaning of section [0015] of the patent in suit.

2.3 In the respondent's view, however, the patent does not disclose in a sufficient manner how the DTA graphic curves have to be evaluated in order to derive from them the corresponding IMT values (see respondent's letter dated 14 June 2004, page 2, paragraphs 5 and 6). In this respect the respondent points out that, while in the case of D2 the temperature of the apex of the relevant peak "P3" is 1283,9°C, the temperature at

which melting begins, i.e. the IMT, is significantly lower. The respondent contends that it is not possible to determine the IMT with a precision sufficient to distinguish two IMT-values differing from each other by only 20°C. He concludes, therefore, that the skilled person is unable to put the invention into practice.

2.4 As far as the procedure for evaluating DTA graphic curves is concerned, the appellant has explained at the oral proceedings that it is not the temperature of the apex of the relevant melting peak which is decisive, but the extrapolated onset temperature, i.e. the temperature corresponding to the intersection of a tangent to the primary baseline of the DTA graphic curve with the tangent to the main slope of the endotherm peak. According to the appellant, the determination of extrapolated onset temperatures is one of the most common methods for analysing DTA graphic curves. This was not contested by the respondent, who nevertheless observed that there exists a considerable uncertainty with regard to the drawing of the tangents, the result being that IMT values can be determined with a precision of only about 50°C, which is not sufficient in view of the fact that according to Claim 1 of the patent in suit the difference of the respective IMT values of briquettes (a) and (b) may be as low as 20°C.

2.5 The board is not convinced by the arguments presented by the respondent. Although it has to be admitted that the extrapolated onset temperature cannot be determined with a high precision in view of the unavoidable uncertainties associated notably with the drawing of the tangents, the respondent has not submitted sufficient evidence in support of his allegation that

the lack of precision of the method prevents the determination of the initial melting temperatures of the two types of briquettes as required by Claim 1. In this respect the board notes that the description of the patent in suit contains three specific examples, whereby three values of the respective initial melting temperatures of the briquettes are given for each example, the lowest value being 1000°C and the highest 1260°C (see examples 1 to 3 on pages 6 to 7 of the patent, in particular sections [0059] to [0061], [0064] to [0066] and [0069] to [0071]). The respondent has not reproduced the examples of the patent in suit, and thus has not shown that the initial melting temperatures indicated in the examples cannot be obtained by applying the well-known method of evaluation of the DTA graphic curves stated above, which involves the drawing of the tangents in the determination of the extrapolated onset temperature. Instead of reproducing the examples and comparing the obtained results with the corresponding data contained in the description, the respondent has submitted a single experimental DTA graphic curve, namely D2, obtained from a sample having a composition of raw materials different from those of the examples contained in the patent in suit. In the board's view this is not sufficient, especially since the question whether or not the method allows to distinguish two IMT-values differing by only 20°C cannot be assessed on the basis of a single graphic curve from a single sample. The second graphic curve shown in D11 (submitted by the respondent together with his letter of 14 June 2004) is purely hypothetical and not the result of any empirical testing. It has not been shown that a material having such a DTA trace indeed exists, and thus D11 is not considered as a

convincing piece of evidence. Therefore the conclusions drawn by the respondent cannot be regarded as being conclusive. In this context the board notes that the respondent has not contested that the examples can be reproduced.

- 2.6 The respondent's affirmation during the oral proceedings, that the initial melting temperatures of the examples 1 to 3 have been determined by taking the apex of the DTA graphic curves instead of applying the method of extrapolated onset temperatures, is not supported by any evidence and is not in agreement with the statement in section [0015] of the patent in suit. Thus, it has to be regarded as a mere allegation.
- 2.7 At the oral proceedings a technical expert of the respondent has drawn attention to the fact that the actual form of a melting peak in a DTA graphic curve may be the result of the superposition of two or more separate melting events. Such hidden peaks may distort the determination of the extrapolated onset temperature and thus affect the precision of the result. In the expert's view D2 is an example of such a phenomenon. To this the technical expert of the appellant has replied that experimental DTA graphic curves may, in fact, represent a kind of "smeared overlay" of more than one event. Whether this is the case in D2 can neither be confirmed nor disproved on the basis of a single DTA graphic curve. Therefore the respondent's affirmation that the melting peak "P3" of D2 contains in reality a hidden second peak is an over-interpretation.

The board can accept the explanations given by the technical expert of the appellant. The board notes that the respondent has submitted no relevant evidence in support of his assumption that in the case of D2 the precision of the determination of the initial melting temperature is insufficient because of the problem of a hidden second melting peak.

2.8 The respondent referred to decision T 541/97 in support of his arguments. However the situation in the present case is very different from that depicted in the said decision, in particular in that the method of preparation of the sample for the DTA experiment and the heating rate of the DTA analysis are disclosed in the patent in suit, and the method of evaluation of the DTA graphic curves using the extrapolated onset temperature belongs to common general knowledge. Furthermore no evidence was provided that the determination of the initial melting temperature of a specific sample using said well-known method would lead to results which are not reproducible. Thus, the considerations and conclusions drawn in decision T 541/97 are not relevant to the present case.

2.9 Having regard to the issue of sufficiency of disclosure, the board observes that the burden of proof lies with the respondent. In view of the fact that no convincing evidence in support of the objection under Article 100(b) EPC has been submitted by the respondent, the board concludes that the disclosure of the patent in suit is sufficient.

*Novelty of the method of Claim 1*

3. The method of Claim 1 is novel with regard to the disclosure of the documents relied upon by the respondent. Since this was not disputed by the respondent during the appeal proceedings, no detailed reasoning needs to be given. Differences between the prior art and the claimed subject-matter emanate from the following discussion of the issue of inventive step.

*Inventive step of the method of Claim 1*

4. *Closest prior art*

- 4.1 At the oral proceedings the parties agreed that D10 represents the closest prior art. According to the respondent, D3 may also be taken as the starting point. The board can accept this.

- 4.2 Document D10 relates to a process for the production of mineral wool products comprising melting raw materials to produce a mineral melt and forming mineral wool from the melt, in which the raw material charge is in the form of briquettes obtained from a mixture of finely divided starting materials, hydraulic binder and a finely divided inorganic material containing at least 75 % by weight SiO<sub>2</sub> (see Claim 1 and page 1, lines 25-27). D10 addresses the problem that briquettes tend to disintegrate and be converted into powder or dust before melting when the temperature is raised to above about 500°C. The presence of such fine materials in the furnace adversely affects the melting process because it counteracts the desired flow of air and flue gases through the furnace (see page 1, lines 14-19; 23-24).



By adding the finely divided SiO<sub>2</sub>-containing inorganic material the briquettes maintain their form until an initial melting of the surfaces of the briquettes starts (see page 1, lines 32-34).

D10 does not disclose the use of at least two different types of briquettes having a different chemical analysis. For this reason alone the process of D10 is distinguished from the method of Claim 1 of the patent in suit.

- 4.3 D3/D3a is a documentation filed before the Swedish Community Commission for Environmental Protection. The request being made in D3a is to change the operation of a particular factory for producing mineral wool from providing raw materials in lump form to providing those raw materials as briquettes. The process used at the relevant factory happens to be one which uses coke as a burning material. It is acknowledged that coke can be provided in the form of briquettes (see D3a, page 2, paragraph 5). Thus, D3 discloses a method of making mineral wool in which the raw materials which contribute to the melt are provided in the form of briquettes, whereby coke briquettes may be used as a second type of briquettes.

There is no disclosure in D3, however, to use at least two different types of briquettes of different compositions, which both contribute to produce the mineral melt and have initial melting temperatures as defined in Claim 1.

5. *Technical problem*

5.1 According to the patent in suit, it is standard practice in methods of making MVV fibres to provide a single type of briquette containing the raw materials of the mineral melt. Thus, the raw material charge consists of briquettes having all the same chemical analysis (see section [0003]). In briquettes having a complex chemical analysis, i.e. containing a large number of chemical components, there is a high risk of eutectics being formed between groups of chemical components which result in lowering the melting temperature of the briquettes [see section [0004]]. The reduction of the melting temperature of briquettes making up a substantial portion of the raw material charge can lead to serious processing problems, in particular the disruption of the air flow and pressure control. If the raw material charge melts too rapidly the charge may tend to collapse (see section [0009]).

5.2 Starting from the closest prior art D10 or from D3, the technical problem underlying the present invention can be seen in providing a further process for manufacturing MVV fibres, which allows the use of raw material charges having a complex chemical analysis, while reducing the risk of disruption of air flow and pressure control, in particular in cupola furnaces, without sacrificing the convenience and benefits of using briquettes as a means of providing the raw material charge (see section [0010]).

6. *Solution*

6.1 According to the patent in suit, the technical problem stated above is solved by the splitting of the components of the raw material charge over at least two different types of briquettes, each having a different chemical analysis, whereby the proportions of the various briquettes and the respective initial melting temperatures fulfil the criteria set out in Claim 1.

6.2 Having regard to the information provided by the patent, in particular that given in sections [0014], [0023], [0024] as well as in the examples 1 to 3 (see sections [0058] to [0072]), it is plausible that the technical problem posed has indeed been solved.

Example 1 shows that the claimed method is capable of overcoming the processing problems which occur when only one type of briquette having an initial melting temperature of 1200°C is used (see sections [0062] to [0063]).

Moreover all three examples show that the claimed method can be put into practice without any processing problems, and that they lead to products of good or even excellent quality even in a cupola furnace (see sections [0062], [0067] and [0072]).

6.3 It remains to be seen whether, starting from the closest prior art D10 or from D3, and considering the prior art relied upon by the appellant, the provision of a method as defined in Claim 1 is an obvious solution of the stated technical problem. In this respect the respondent has submitted that the claimed

method does not involve an inventive step having regard to documents D10 or D3, taken separately, or the combination of D10 and D3 or, alternatively, the combination D3 and D4. These documents or combinations of documents are discussed below in turn.

6.4 The teaching of D10, taken separately, does not provide any suggestion to use at least two different types of briquette having a different chemical analysis. Let alone does it suggest the criteria for the proportions of briquettes and their respective initial melting points as defined in Claim 1.

6.5 In respect of the splitting of the mineral components of the raw material charge over two or more types of briquettes, the respondent has argued that this was obvious. If there existed a high risk of eutectics being formed, then it was only natural to split up the components in order to avoid that risk. This led to the use of two or more types of briquette having a different chemical analysis.

The board cannot follow this argument, because it is based on hindsight. The finding that eutectics are formed in certain cases, for example when the number of chemical components is large (see section [0004] of the patent), and that these eutectics can lead to a serious reduction in compression strength (see section [0009] of the patent), explains why processing problems occur in the melting step. This explanation has been given in the context of the method claimed in the patent in suit, and it is not disclosed in prior documents such as D10 or D3. Therefore it has to be considered as forming part of the present invention.

6.6 According to the respondent none of the examples contained in the description of the patent in suit shows clearly that the technical problem cannot be solved by using only one single type of briquette. Since the amount of briquettes of type (a) is not specified in Claim 1, it may be zero or "substantially zero" as stated in section [0037] of the patent. In this case the teaching of the patent in suit is essentially the same as the teaching of D10.

To this the appellant replied that section [0037] of the patent is not properly worded, possibly because of a simple mistake. Claim 1 requires that at least two types of briquette be present, and this means that it is essential that a significant portion of briquettes of type (a) be present, even if the percentage is not explicitly specified in Claim 1.

The board can agree with the explanation given by the appellant. In any case the misleading statement in section [0037] of the patent has to be weighed up against the rest of the description which contains many statements requiring the presence of at least two types of briquette, notably sections [0011], [0012], [0014], [0020], [0023], [0028], [0029], [0037] and examples 1 to 3.

6.7 Having regard to D10 the respondent has further observed that the briquettes according to example 2 of D10 exhibit a compressive strength of  $65 \text{ kp/cm}^2$  at a temperature of  $1100^\circ\text{C}$  (see page 3, table, line 25). He concludes that the problem of the physical integrity of the briquettes is a major issue in D10.

In this respect the board observes that D10, indeed, deals with the form stability of briquettes and investigates the compressive strength at temperatures where the effect of the hydraulic binder decreases, before an initial melting of the surfaces of the briquettes starts, i.e. at 500°C or above (see page 1, lines 30-34). The compressive strength of sample No. 2 after 14 days storage and heat treatment at a temperature of 1100°C is improved with respect to those of the two comparative samples No. 1 and 3, respectively. However, according to D10 this improvement was achieved by introducing a finely divided inorganic material containing at least 70 wt % SiO<sub>2</sub> into the raw material used to produce the briquettes. Only one type of briquette is used in the process of D10. The solution proposed in D10 can thus not provide the skilled person with an incentive to use two types of briquettes as defined in Claim 1.

- 6.8 As far as the combination of D10 with D3 is concerned, it has to be noted that D3 neither suggests the use of raw materials to produce the mineral melt in the form of at least two different types of briquette, each having a different chemical analysis, nor does it deal with the same technical problem as the patent in suit. There is on the contrary a statement in D3 saying that "the use of briquettes can also mean that only one raw material needs to be charged apart from the coke. All these factors give better process technical conditions" (see D3a, page 2, penultimate paragraph). Thus, the teaching of D3 is that the process conditions are improved when only one type of briquette containing the mineral raw materials is used. In this respect D3 leads away from the present invention. Consequently the

skilled person would not arrive at the claimed method by combining the disclosures of D10 and D3. Rather he would conclude that the conventional processes which use only one type of mineral briquette are technically advantageous.

- 6.9 Taking D3 as the starting point, the skilled person would be confronted with the technical problem stated above (see point 5.2). However, D3 does not provide any suggestion which would lead to the claimed method: see the considerations under point 4.3 and 6.8 above.
- 6.10 D4 on its part discloses a briquette for use as an auxiliary fuel in a shaft furnace for melting of mineral in the manufacture of mineral wool, the briquette comprising coke or coal, a hydraulic binder and an oxidic mineral component (see D4, Claim 1). The main problems addressed in D4 are that the production costs for coke or coal briquettes are rather high, and that the coke or coal briquettes may fall apart depending on the heat and pressure, i.e. that they exhibit a bad "fire strength". The briquettes having a low fire strength crumble, thereby blocking the furnace shaft (see col. 1, lines 45-63). Thus D4 does not deal with the technical problem of the patent in suit. Furthermore the briquette of D4 is said to be suitable as an auxiliary fuel in a shaft furnace for melting of mineral in the manufacture of mineral wool, not as a component for introducing the raw material charge. Therefore the skilled person would not be encouraged by the disclosure of D4 to replace the coke briquettes of D3 by those of D4. In other words he would not combine the teachings of D3 and D4 in the expectation that such a combination would solve the present technical problem.

6.11 The remaining prior art documents referred to by the respondent during the opposition procedure, i.e. D1, D7 and D8, do not relate to the production of mineral fibres at all. D5 and D6, which concern mineral fibres capable of dissolving in a physiological medium, and which also disclose their method of production, do not mention at all how the raw material charge was introduced into the furnace, let alone the use of briquettes. In the board's view these documents are so remote from the claimed method that there is no need to discuss them in any detail.

6.12 For all these reasons the board concludes that the process of Claim 1 of the patent in suit was not obvious to the skilled person having regard to the prior art relied upon by the respondent. Hence it involves an inventive step.

*Dependent claims*

7. Claims 2 to 8 all depend on the independent Claim 1. Consequently the subject-matter of these claims is also novel and inventive.

*Auxiliary requests*

8. Since the appellant's main request is allowed, there is no need to deal with the six auxiliary requests.



**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 on the basis of the set of claims of the main request as filed during the oral proceedings and the description to be adapted.

The Registrar:

The Chairman:

C. Vodz

M. Eberhard