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D E C I S I O N
of 20 April 2004

Case Number: T 1065/02 - 3.2.7

Application Number: 91305161.1

Publication Number: 0460966

IPC: C23C 14/08

Language of the proceedings: EN

Title of invention:
Barrier film having high colorless transparency and method of manufacture thereof

Patentee:
FLEX PRODUCTS, INC.

Opponent:
REXAM HIGH PERFORMANCE FLEXIBLES LTD.
Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V.

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56, 114, 123

Keyword:
"Late submitted material - post-published documents not admitted"
"Main request - amendments - added subject-matter (no), novelty (yes), inventive step (no)"
"Auxiliary request filed four days before oral proceedings - not admitted because not clearly allowable"

Decisions cited:
T 0112/00, T 0786/00, T 0026/85

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 1065/02 - 3.2.7

D E C I S I O N
of the Technical Board of Appeal 3.2.7
of 20 April 2004

Appellant I: (Opponent I)
REXAM HIGH PERFORMANCE FLEXIBLE LTD.
Burrel Way, Thetford
Norfolk IP24 3QY (GB)

Representative:
Curtis, Philip Anthony
A.A. Thornton & Co.,
235 High Holborn
London WC1V 7LE (GB)

Appellant II: (Opponent II)
Fraunhofer-Gesellschaft zur Förderung
der angewandten Forschung e.V.
Leonrodstrasse 54
D-80636 München (DE)

Representative:
Hertz, Oliver, Dr.
v. Bezold & Sozien,
Akademiestrasse 7
D-80799 München (DE)

Respondent: (Proprietor of the patent)
FLEX PRODUCTS, INC.
2793 Northpoint Parkway
Santa Rosa
California 95407 (US)

Representative:
Bayliss, Geoffrey Cyril
BOULT WADE TENNANT
Verulam Gardens
70 Gray's Inn Road
London WC1X 8BT (GB)

Decision under appeal:
Interlocutory decision of the Opposition Division of the European Patent Office posted 20 August 2002 concerning maintenance of European patent No. 0460966 in amended form.

Composition of the Board:

Chairman: A. Burkhart
Members: H. E. Hahn
C. Holtz

Summary of Facts and Submissions

I. Appellants I and II (opponents I and II) lodged an appeal against the interlocutory decision of the opposition division maintaining European patent No. 0 460 966 on the basis of claims 1 to 16 of the second auxiliary request dated 9 July 2002.

II. Both oppositions had been filed against the patent as a whole. The opposition of opponent I was based on Article 100(a) EPC (lack of novelty and lack of inventive step) and Article 100(b) EPC (that the patent does not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art) while the opposition of opponent II was based only on Article 100(a) EPC (lack of novelty and lack of inventive step).

The Opposition Division held that the invention was sufficiently disclosed but that the subject-matter of the independent claims 1 and 11 of the main request lacked novelty with respect to the disclosure of document D1. The first and second auxiliary request were considered to meet the requirements of Articles 123(2) and (3) EPC. The Opposition Division held that subject-matter of claims 1 and 11 of the first auxiliary request was also not novel with respect to document D1. The subject-matter of claims 1 and 10 of the second auxiliary request was considered to be novel and inventive with respect to the prior art documents concerned.

III. Oral Proceedings were held on 20 April 2004.

(a) Appellants I and II requested that the decision under appeal be set aside and the patent be revoked.

(b) The respondent/patentee requested that the appeal be dismissed; alternatively, that the decision be set aside and the patent be maintained on the basis of claims 1 to 5 of a first auxiliary request as filed with letter of 16 April 2004.

(c) The following prior art documents mentioned during the oral proceedings are relevant to the decision:

D1: GB-A-2 210 826

D3: Journal of Materials Science, vol. 18, 1983, pages 64 to 80, E.H.H. Jamieson et. al.

D4: CRC Handbook of Chemistry, 77th edition, 1996-1997, page 4-38

D5: US-A-3 442 686

D9: Publication of Aluminium Wire & Cable Co Ltd., reprinted in July 1975

IV. The independent claims 1 and 10 of the main request, corresponding to the second auxiliary request dated 9 July 2002 underlying the appealed decision, read as follows:

"1. A barrier film comprising a flexible plastic substrate ranging from approximately 1.3 x 10^{-5}m to 10.4 x 10^{-5}m (1/2 mil to 4 mils) in thickness and having a barrier coating formed on a surface thereof, said barrier coating being formed as a single layer of a single material having a thickness ranging from approximately 50 x 10^{-10}m to 180 x 10^{-10}m (approximately 50 to 180 Angstroms) and being formed of a dielectric material selected from the group of Al_2O_3 and Y_2O_3 and a mixed oxide alloy consisting of 65% SiO_2 and 35% MgO, the Al_2O_3 and Y_2O_3 having a purity of at least 99%, said barrier coating in combination with said flexible plastic substrate forming a film having a water white colourless transparency and providing a barrier to water and oxygen."

"10. A method of forming a barrier film having high colourless water white transparency, comprising providing a flexible plastic substrate, evaporating by electron beam evaporation a material selected from the group of Al_2O_3 and Y_2O_3 or a mixed oxide consisting of 65% SiO_2 and 35% MgO, the Al_2O_3 and Y_2O_3 having a purity of at least 99%, to form a barrier layer directly onto a surface of the substrate and having a thickness of 50 x 10^{-10}m to 180 x 10^{-10}m (approximately 50 to 180 Angstroms)."

V. Appellant I argued essentially as follows:

The objection under Article 100(b) EPC is withdrawn.

The post-published documents (D7: Society of Vacuum Coaters, 505/856-7188, Schiller et al., "Plasma-Activated High-Rate Deposition of Oxides on Plastic

Films"; D8: Alumina - An Overview; D10: US-A-5 084 356; D11: US-A-5 213 878; D12: US-A-5 462 779; and D13: CH-A-681 530) submitted by the respondent have no relevance for the decision.

The respondent's test results of 20 January 2004 show that no special, surprising effect occurs. The products according to the general disclosure of document D1 meet all the requirements of claim 1. The process of making the laminated structures of document D1 includes the step of making the intermediate single structure. Based on the density value of document D4 (cf. page 4-38) for aluminium oxide and on the general disclosure for the coating weight according to document D1 a minimum thickness of the deposited barrier layer of about 8 nm can be calculated for D1. There is no evidence on file that the transparency is influenced by the thickness within said coating weight range. A substrate thickness value of 12 µm such as disclosed in Example 1 of document D1 is also comprised by claim 1 of the patent (cf. page 3, line 29) and is based on the conversion of the unit "mil" to the SI-unit "µm". The intended use for food packaging implicitly implies the use of high purity Al_2O_3. A coating layer made by reactive evaporation having a thickness up to 5 nm immediately converts into stoichiometric Al_2O_3.

The skilled person in order to carry out the process of document D1 would have to select a purity which provides an adequate material for the intended purpose. Normally the skilled person would start with an almost 100% pure material. There exists no prejudice to use a high purity alumina. But even if the skilled person would have started with a less pure material, such as

90% pure alumina, he would have tried a more pure alumina, e.g. 95%. Thereby the skilled person would have found a tendency for the barrier property to be linked to the purity of the used material (compare the test results submitted by the respondent). From such a comparison it is evident that a purity of 99% is arbitrarily chosen. Furthermore, for reactive evaporation deposition of alumina the same purity of the Al source material of 99.95% as for the metallization process as described in document D3 is used. The resulting alumina will thus also have a purity above 99.0%. Consequently, the skilled person only has to carry out the process described in document D1 in order to arrive at the barrier film defined in claim 1.

VI. Appellant II argued essentially as follows:

The post-published documents D7, D8 and D10 to D13 are not relevant; only the knowledge of the skilled person before the priority date should be considered.

It is not clear whether the purity definition "of at least 99%" of claim 1 is related to the starting material or to the deposited layer. The patent does not disclose "a purity of at least 99%" of the deposited coating. An implicit disclosure is also not given, particularly not for changing the thin "nucleation layer" into a thicker "barrier layer". The single layer embodiments with alumina and yttria (cf. patent, page 8, lines 27 to 31) were only made with a specific substrate material in combination with a specific thickness range so that such a generalisation in claim 1 contravenes Article 123(2) EPC. Furthermore,

according to the used processes the purity of the starting material will not be identical with that of the deposited barrier layer.

All features of claim 1 except the purity value are expressly known from document D1. Thus the question to be answered is how the skilled person reads the disclosure of document D1 with respect to the purity requirement. According to document D1 the material Al_2O_3 is disclosed as stoichiometric compound (cf. page 4, second paragraph) so that in connection with the disclosed e-beam evaporation and reactive evaporation starting from Al-wire a high purity of the resulting coating layer represents an inherent property. A purity of 99% will always be attempted by the skilled person. The thickness of the barrier layer can be easily calculated from the disclosed general coating weight range of 0.03-0.5 g/m^2 (cf. page 4, third paragraph) using the density of α-Al_2O_3 (ρ = 3.97 g/cm^3) and assuming that the density of the barrier layer as deposited will be about 80-90% of the said theoretical density (using the equation $\Delta m/\Delta A = \rho * \Delta V/\Delta A = \rho * \Delta d$; with m being the coating mass, A being the surface area, V being the volume, ρ being the density, and d being the thickness of the layer). It is contested that hydrated alumina is obtained according to the process conditions of the processes in accordance with document D1, which should be the same as those of the patent in suit. The respondent's arguments that the microwave property allows the presence of large amounts of impurities while still obtaining microwave transparency cannot be accepted since document D1 aims at obtaining a desired barrier effect which excludes the presence of large amounts of impurities. Decisions T 112/00 and

T 786/00 cited by the respondent are not particularly relevant since also the respondent does not know the specific basis thereof.

For carrying out the process of document D1 the skilled person would chose a very pure material as the starting material and not an impure one, since he would try to avoid holes or pores in the coating layer. Furthermore, the value of 99% shows no specific effect as is evident from the submitted test results.

Therefore, the subject-matter of claim 1 is not novel, or, at least lacks an inventive step.

The late filing of the first auxiliary request on 16 April 2004 only four days before the oral proceedings represents an abuse of procedure. The amended claim 1 of this auxiliary request does not represent a simple amendment but rather a complex one since a feature from the independent process claim, which was limited to an e-beam evaporation process, has been incorporated into product claim 1 without the said limitation. Thus it is questionable whether the requirements of Article 123(2) EPC are met. Furthermore, the lamination technique is disclosed by document D1. Thus, inventive step would still be an issue for discussion.

VII. The respondent argued essentially as follows:

The post-published documents D7, D8 and D11 to D13 were submitted as evidence of the knowledge of the skilled person and should therefore be admitted.

The amendments in claims 1 and 10 with respect to purity values do not contravene Article 123(2) EPC. The purity specified in paragraph [0031] of the patent is applicable over the whole breadth of the specification, i.e. both the starting material and the coating layer have a purity of 99% or better.

The product of claim 1 differs from the products according to document D1 in at least the purity feature of "at least 99%". Additionally, the thickness of the alumina layer calculated by the appellants is based on the coating weight of document D1. When calculating the thickness, the skilled person has to make many assumptions, e.g. which density value of which alumina type should be used. The skilled person would also consider using the density of hydrated alumina which is much lower than that of α-Al_2O_3 (sapphire), in spite of the fact that for the Patentee's product a density of almost or about the theoretical value of sapphire has been reached. Furthermore, in agreement with T 26/85 the skilled person would not contemplate working at the lower level of the coating weight because all examples are made with higher coating weights (cf. D1, examples) and also because document D5 states, that only coating layers above 20 nm are successful (cf. D5, column 3, lines 17 to 29). According to document D1 a laminate structure is essential to obtain the desired barrier effect (cf. pages 2 to 3, page bridging paragraph). For the intended microwave application there exists no requirement for purity so that the skilled person would use impure Al_2O_3. Document D3 although mentioning very pure starting materials concerns a different process, namely metallization of polymer substrates.
Appellant I's calculations of MVTR values based on

Examples 1 and 4 of document D1 (cf. letter of appellant I dated 27 December 2002, pages 3 to 4,paragraph "Other Points Relevant to Inventive Step") imply that an impure Al_2O_3 has been deposited since the barrier layer has to be three times as thick as the pure barrier layer in accordance with the patent in suit in order to reveal the same barrier effect. In accordance with decisions T 112/00 and T 786/00 novelty should be acknowledged because document D1 does not disclose a numerical purity value. Alternatively, with respect to the test results the purity represents a purposive selection based on the improved barrier properties. Thus the product of claim 1 is novel.

Document D1 represents the closest prior art and since the purity is not mentioned at all, the appellants' arguments are based on an *ex-post facto* approach. The skilled person would have chosen an impure alumina and even if he would have tried a more pure material such as 95% Al_2O_3, he would have stopped at such a purity value since he would have obtained the desired barrier effect. The skilled person could not expect a triple improvement of the barrier effect when changing from 95% purity to 99% purity (cf. test results of 20 January 2004). Therefore the subject-matter of claim 1 is also inventive.

The first auxiliary request was late filed because discussions between the Patentee and the representative could not be arranged earlier. Claim 1 of the first auxiliary request comprises the features of claim 12 of the main request, so that the requirements of Article 123(2) EPC are met. The technical effect of this feature is a protection of the laminate, which

then represents a usable final product, and which causes a simpler laminate structure than that of document D1.

Reasons for the Decision

1. *Admissibility of post-published documents D7, D8 and D10 to D13*

The Board exercises its discretion under Article 114(2) EPC and disregards documents D7, D8 and D10 to D13 as *prima facie* irrelevant since they are post-published.

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

2.1 The amendments of the main request concern the features "(iii) and being formed of a dielectric material selected from the group of **Al_2O_3** and **Y_2O_3** and a mixed oxide alloy consisting of 6**5**% SiO_2 and 35% MgO" and "(iv) **the Al_2O_3 and Y_2O_3 having a purity of at least 99%**" of claim 1, and "a material selected from the group of **Al_2O_3** and **Y_2O_3** or a mixed oxide consisting of 65% SiO_2 and 35% MgO" and "**the Al_2O_3 and Y_2O_3 having a purity of at least 99%**" of claim 10.

2.2 The subject-matter of granted claim 5 (which is identical with originally filed claim 6) specified that "the material for the barrier coating has a purity of 99% or better" (cf. the patent as granted and the originally filed application). The passage cited in point 1 of the reasons of the impugned decision (namely page 3, lines 31 to 32 of the patent) represents the basis for the "at least 99%" purity definition of the

deposited barrier layer since the wording "the nucleation layer is formed of …" has to be interpreted as meaning "the nucleation layer consists of a single material selected from pure Al_2O_3, pure Y_2O_3, with pure meaning 99.0% purity or better". Thus, the patent actually comprises an explicit basis for this feature. According to the aforementioned granted claim 5, which referred back to claim 1, all barrier materials to be used for the barrier layer should preferably have the specified minimum purity of 99%. Claim 1 included e.g. aluminum oxide (as defined in originally filed claim 3) or yttrium oxide which is mentioned in the description as another barrier layer material (cf. originally filed application, page 10, lines 34 to 36 and page 12, lines 18 to 21).

Consequently, the Board concurs with the respondent that the purity specified in paragraph [0031] of the patent (corresponding to page 5, line 23 to page 6, line 9 of the originally filed application) is applicable over the whole breadth of the specification and covers the starting material and the coating layer material, which both have to have a purity of "at least 99%" (= 99% or better). This implies that the purity does not change during the deposition reaction.

2.3 Furthermore, it is also derivable from the most general embodiment covered by the wording of originally filed claim 1 which defined a thickness of a barrier layer formed from the specified materials which ranges from approximately 50 to 180 Ångström without defining the polymeric substrate (cf. originally filed claim 1; page 5, lines 13 to 20). A specific embodiment thereof, which comprises on a polyester substrate a nucleation

layer of Al_2O_3 and Y_2O_3 of the specified purity of at least 99%, is stated to have extremely good barrier properties when the thickness is in the range of 7.5 to 17.5 nm (cf. originally filed application, page 12, lines 18 to 21; Table 4; and claim 29). Hence the thickness range of 7.5 to 17.5 nm represents only a preferred embodiment of the broader range of approx. 5.0 to 18.0 nm of the originally filed claim 1.

The other single layer embodiments mentioned in the originally filed application at page 15, line 33 to page 16, line 4, having a typical barrier layer thickness of 150 to 275 Ångström show only a small overlap with the thickness of claim 1 and thus cannot serve as a basis.

2.4 The amendment of "consisting of 65% SiO_2 and 35% MgO" (from "consisting of 60% SiO_2 and 35% MgO") of claim 1 represents the correction of an obvious error under Rule 88 (cf. the patent, claim 11 as granted, and page 7, line 37).

2.5 The amendment concerning the limitation to stoichiometric "Al_2O_3 and Y_2O_3" from the more general "aluminum oxide and yttrium oxide" of the claims 1 and 10 is supported by the originally filed application (cf. page 5, lines 16 to 20 and lines 31 to 34; Tables 1 to 6; Figures 6, 8 and 14).

2.6 Both claims 1 and 10 of the main request have been limited compared with the independent claims 1 and 11 as granted.

The Board therefore considers that the claims 1 and 10 of the main request meet the requirements of Article 123(2) and (3) EPC.

3. *Novelty*

3.1 Document D1 discloses microwave transparent packaging material products having good barrier properties to oxygen and/or water vapour and processes for making the same (cf. page 1, first paragraph). These products comprise a plastic film A, *inter alia* polyester (preferably poly (ethylene glycol) terephtalate =PET), polypropylene, polyethylene, polyamide, etc., which is coated with an oxide B having good barrier properties, preferably silicon oxide (SiO_2) or aluminium oxide (Al_2O_3) (cf. page 4, third paragraph). The coating can be applied using existing techniques such as electron beam (EB) evaporation or sputtering, and both techniques start with the oxide as feedstock. A coat weight of each oxide layer of 0.03-0.5 g/m^2 is preferred (cf. page 4, third paragraph). Furthermore, document D1 discloses reactive evaporation of the metal or element rather than the oxide (cf. page 5, first paragraph). According to the examples aluminium oxide was coated onto PET, polyethylene and polypropylene films using the reactive evaporation process (which evaporates metallic aluminium which then reacts with oxygen to form the transparent aluminium oxide) as well as the electron beam evaporation method using aluminium oxide as the starting material (cf. Examples 1, 4 to 5 and 7 to 8). The polymer films according to Examples 1, 7 and 8 have thicknesses of 12, 40 and 20 µm, respectively, which fall into the range of approximately 13 to 104 µm claimed in claim 1, which due to the conversion of the

value "0.5 mil" of the originally filed unit "mil" into the unit "µm" includes the value "12 µm" (cf. patent, page 3, line 29).

3.2 It is undisputed that the feature "a film having a water white colourless transparency" is the result of the combination of the product features which were defined in claim 1 as granted.

3.3 According to simple calculations of the appellants, which are either based on the theoretical density of 3.9 g/cm^3 for a barrier layer of α-Al_2O_3 or a density based on only 80-90% thereof, a range of the coating weight of from 0.03-0.5 g/m^2 corresponds to a thickness range of the Al_2O_3 oxide barrier layer of from **7.5** to 125.5 nm (for the theoretical density value) or to a thickness of from **9.4** to 157.4 nm (for 80% of said theoretical density value) which broadly overlaps with the range of approximately 5 to 18 nm of claim 1.

3.4 The respondent's technical expert stated that the deposited layer could also be a hydrated aluminium oxide but confirmed that the process of the patent in suit allows to obtain almost the theoretical density values of α-Al_2O_3.

Taking account of the fact that the patent is silent with respect to any special process measures to be taken in order to obtain the aluminium oxide coatings and taking account of the fact that besides EB-evaporation and sputtering (cf. patent, page 3, lines 32 to 36), i.e. the same methods as mentioned in document D1, other methods of vacuum deposition can be used for the deposition process (cf. patent, page 10,

lines 36 to 39), the Board considers that the assumption made by the appellants appears to be credible, since identical standard vacuum processes should result in identical products. This implies that the layer cannot be a hydrated aluminium oxide.

3.5 The respondent's arguments that the skilled person would not seriously contemplate applying the technical teaching (see T 26/85) of document D1 in the range of claim 1 in the calculated overlap of the thickness of from 9.4 nm to approximately 18 nm (corresponding to 0.03-0.5 g/m^2; cf. paragraph 3.2 above) cannot be accepted.

The Board concurs with the appellants that there is a clear disclosure in document D1 that the coating weight of the single layer is **preferably** within said coating weight range of 0.03-0.5 g/m^2 which thus represents a preferred range while the other range of 0.15-0.3 g/m^2 is more preferred (cf. page 4, third paragraph; claims 6 and 18).

It is true that document D5 (originating from March 1964 and published May 1969) mentions that a minimum thickness of the barrier layer of 0.02 µm (= 20 nm) has to be used to be effective (cf. column 3, lines 17 to 54; Figure 2). However, there are more than 20 years of huge technical progress between the state of the art according to document D5 and that of document D1 (originating from October 1987 and published in June 1989). Hence document D1 represents a much more recent and thus more reliable state of the art than document D5. In this context it is remarked that the products of document D5 are stated to be insufficient in some

respects (cf. D1, page 2, second paragraph). Thus, it would make a big difference if the reasoned statement dissuading the person skilled in the art from practising the technical teaching would have been comprised in a document which originates from about the same time period as the other document, as was the case in the cited decision T 26/85, and not in a document of a period about 20 years before. Therefore the Board holds that it is much more probable that the skilled person would work in the range of the said minimum thickness according to document D1, at least in order to verify the correctness of the said old statement according to D5.

3.6 The Board remarks that claim 1 does not exclude the intermediate product according to document D1 having a single Al_2O_3 barrier layer.

3.7 It is undisputed that document D1 does not mention any purity of the used SiO_2 and Al_2O_3.

According to established case law when considering the question of novelty, a prior art document must be interpreted in the light of common general knowledge available at its publication date (cf. e.g. decision T 786/00, point 3.7.1 of the reasons).

3.7.1 The Board considers that the skilled person would read document D1 (cf. page 4, second paragraph; examples) in the sense that a single material is used which besides unavoidable impurities either consists of SiO_2 or Al_2O_3. It is undisputed that Al_2O_3 is available in a wide variety of grades up to highly purified Al_2O_3.

3.7.2 Based on the intended purpose as a barrier layer of a packaging material for food stuff the Board considers that it is neither credible that the skilled person would select the cheapest technical grade of relatively impure Al_2O_3 nor that the skilled person would select the highest purity grade which would be the most expensive Al_2O_3. In this context the Board remarks that none of the parties has submitted any evidence in order to support its respective allegations.

3.7.3 Thus, the skilled person would use a technical grade Al_2O_3 for the EB evaporation which - due to the available purity grades thereof - implies a range starting at about 90% purity.

3.7.4 Similarly, it has not been proven that the skilled person would select an at least 99% pure Al wire for the alternative reactive evaporation process of document D1. Document D9 only proves that four grades of Al wire having a purity in the range of from 99% to 99.99% Al were available (cf. D9, Table 1). It has, however, not been proven by appellant I that these wires, which are intended to be used for the purpose of welding aluminium, were the only grades available at the time before the priority of document D1. There existed many more suppliers of Al or Al wire at that time all over the world. Therefore, appellant I's conclusion cannot be accepted.

3.7.5 Consequently, the value of "at least 99% purity" is not directly and unambiguously derivable for the skilled person from document D1 and his general knowledge.

3.8 Taking account of the fact that document D1 is silent with respect to any definition of a value or range of purity of the specified starting materials or resulting barrier layers, the parameter "a purity of at least 99%" cannot be considered as a sub-range of a broader range, as would be assessed in terms of the classical selection invention, because the parameter "purity" is not mentioned in D1 (cf. decision T 112/00, point 2.6.3 of the reasons). As a consequence thereof it is not necessary to verify whether the criteria for a new selection invention are met, which would include whether the said purity parameter results in a surprising effect, or not.

3.9 The decision T 786/00 cited by the respondent is not considered to be relevant for the present case since it concerns the purity of starting materials to be used in a preparative chemical process, which can only be carried out in the required range of purity but not in all available grades of purity of the starting materials (cf. point 3.8.2 of the reasons, page 26, lines 7 to 16).

3.10 Consequently, the disclosure of document D1 when interpreted in the light of the common general knowledge of the skilled person, is not novelty destroying for the product of claim 1. The same conclusion is valid with respect to document D5 which is also silent with respect to the purity of the described Alundum® material.

3.11 All other cited documents are less relevant than documents D1 and D5.

3.12 The Board therefore concurs with the Opposition Division's view and concludes that the subject-matter of claim 1 is novel with respect to the submitted documents.

Inventive step

4. *Closest prior art*

It is undisputed by all parties that document D1 represents the closest prior art.

4.1 The Board considers that in the present case the typical problem-solution approach does not represent the best approach for evaluating inventive step of the subject-matter of claim 1 when starting from the closest prior art D1. The subject-matter of the independent product claim 1 of the main request is, however, obvious for the person skilled in the art for the following reasons.

4.2 The subject-matter of claim 1 differs from the intermediate product according to the general disclosure of document D1 only in the purity of the Al_2O_3 coating layer.

4.3 As already discussed with respect to novelty (cf. points 3.7.1 to 3.7.3 above), there exists a number of technical grades of purity of the source materials starting at about 90% purity. Therefore, in order to carry out the EB evaporation process described in document D1 the skilled person would select a first purity of about 90% Al_2O_3 and select another purity of e.g. 95% in order to make sure, that the selection of

the starting material has no influence on the barrier function of the coating, and then would carry out routine tests. Thereby the skilled person would find a tendency, namely that an increase of the purity results in an improvement of the barrier property (compare in this context the test results of 20 January 2004). Based on this result the skilled person would further increase the purity and thereby, by carrying out the process of document D1, would arrive at the subject-matter of claim 1 by routine experiments.

4.4 The Board thus considers that the subject-matter of the product claim 1 lacks an inventive step within the meaning of Article 56 EPC.

Therefore the main request is not allowable.

5. *Admissibility of a first auxiliary request filed by fax in the afternoon of 16 April 2004*

Although the date of the oral proceedings had been fixed about 6 months in advance (cf. summons dated 16 October 2003) in order to give the respondent the opportunity to provide test results to prove an alleged effect of the purity, the respondent submitted its auxiliary request only four days before the date of the oral proceedings, i.e. clearly outside the one month period as mentioned in the communication annexed to the summons. Thus, this request is filed late. In this context, the Board remarks that the period between sending the summons and the date of the oral proceedings normally is within the range of from 2 to 4 months based on the workload of the Board. Furthermore, no new evidence had been submitted by the two

appellants and no new matter arose which had not been addressed in the communication annexed to the summons.

The respondent argues that there were difficulties in arranging discussions between the Patentee and its representative which caused the late filing of the auxiliary request.

Appellant II argued that this late filing represents an abuse of procedure. Furthermore, amended claim 1 of this auxiliary request does not represent a simple amendment but rather a complex one since a feature from the independent process claim, which was limited to an e-beam evaporation process, has been incorporated into product claim 1 without the said limitation. Thus it is questionable whether the requirements of Article 123(2) EPC are met, or not. The respondent also remarked that the lamination technique is disclosed by document D1.

The Board concurs with appellant II's view that claim 1 of the first auxiliary request is not clearly allowable, at least with respect to inventive step since document D5 mentions such laminates.

The Board additionally remarks that, in view of the negative opinion which it had expressed in the communication annexed to the summons with respect to the then single set of claims on file, the respondent could and should have filed an auxiliary request earlier. It is within the respondent's own responsibility to arrange for discussions with its representative well in advance in order to be able to file any auxiliary request within reasonable time limits. However, the respondent failed to do so. By not

filing an auxiliary request within the time limit set in the summons the respondent took the risk that a late-filed auxiliary request could be considered to be non-admissible if it is not clearly allowable.

It is established jurisprudence of the Boards of Appeal that in such a case late-filed amended claims should be rejected as inadmissible (see Case Law of the Boards of Appeal of the European Patent Office", 4th Edition 2001, chapter VII.D.14.2).

Taking account of all circumstances the Board exercises its discretion not to admit the first auxiliary request of the respondent.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The European patent is revoked.

The Registrar: The Chairman:

A. Wolinski A. Burkhart