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**Datasheet for the decision  
of 1 October 2014**

**Case Number:** T 1815/11 - 3.2.05

**Application Number:** 01946117.7

**Publication Number:** 1286841

**IPC:** B41M7/00

**Language of the proceedings:** EN

**Title of invention:**  
Packaged food product and method of packaging a food product

**Patent Proprietor:**  
Cryovac, Inc.

**Opponent:**  
Alcan Technology and Management Ltd.

**Headword:**

**Relevant legal provisions:**  
EPC 1973 Art. 56  
EPC Art. 123(2)  
RPBA Art. 12(4)

**Keyword:**  
Late-filed document - admitted (yes)  
Inventive step - (no)  
Amendments - extension beyond the content of the application  
as filed (yes)

**Decisions cited:**

**Catchword:**



**Beschwerdekammern  
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Case Number: T 1815/11 - 3.2.05

**D E C I S I O N  
of Technical Board of Appeal 3.2.05  
of 1 October 2014**

**Appellant:** Alcan Technology and Management Ltd.  
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**Decision under appeal:** Interlocutory decision of the Opposition  
Division of the European Patent Office posted on  
9 June 2011 concerning maintenance of the  
European Patent No. 1286841 in amended form.

**Composition of the Board:**

**Chairman** M. Poock  
**Members:** P. Lanz  
M. J. Vogel

## **Summary of Facts and Submissions**

I. The opponent's appeal is against the interlocutory decision of the opposition division of the European Patent Office posted on 9 June 2011 concerning maintenance of European patent No. 1 286 841 in amended form on the basis of the first auxiliary request.

II. The opposition was against the patent as a whole and was initially based on the grounds set out in Article 100(a) EPC 1973 (lack of novelty, Article 54(2) EPC 1973, lack of inventive step, Article 56 EPC 1973), as well as Articles 100(b) and 100(c) EPC 1973.

During the oral proceedings before the opposition division, the opponent withdrew the grounds for opposition under Articles 100(b) and 100(c) EPC 1973.

III. Oral proceedings were held before the board of appeal on 1 October 2014.

IV. The appellant (opponent) requested that the decision under appeal be set aside and that the European patent No. 1 286 841 be revoked.

The respondent (patent proprietor) requested that the appeal be dismissed or as an auxiliary measure that the patent be maintained on the basis of any of the auxiliary requests 1 to 7, all filed on 20 February 2012.

V. The documents referred to in the appeal proceedings included the following:

E1: EP-B-737 593

E6: JP-A-9 302 264 (E6' being the English translation thereof)

E67: "Advantages of Low Voltage Electron Beam Processing (80 kV - 110 kV)", Europe '99 RadTech Conference Proceedings, Berlin, Germany, pages 357-366 (November 8-10, 1999)

E69: "The New Electron Beam for the New Millennium", Ink World, April 2000, pages 31 to 35

VI. The independent claim of the main request and of the fourth auxiliary request reads as follows:

"A method of packaging a food product, said method comprising:  
providing a substrate film comprising one or more thermoplastic materials, the substrate film having a print side, an opposing food side, and an average thickness of less than 0.381 mm (15 mils);  
printing an image on the print side of the substrate film;  
coating the printed image with a radiation-curable varnish comprising one or more polymerizable reactants;  
and subsequently exposing the radiation-curable varnish to an electron-beam radiation source having an energy of less than 100 keV in an amount sufficient to polymerize at least 90 weight % of the polymerizable reactants to form a coated, printed film;  
forming a package comprising the coated, printed film;  
and enclosing a food product in the package."

VII. The subject-matter of claim 1 according to the first and fifth auxiliary requests differs from the subject-matter of claim 1 of the main request in that the

claimed energy is less than 75 keV instead of less than 100 keV.

- VIII. Compared with the main request, the subject-matter of claim 1 of the second and sixth auxiliary requests contains the following additional substantive feature:

*"wherein the radiation curable varnish includes less than 20% monofunctional monomer based on the weight of the radiation-curable varnish"*

- IX. Compared with the first auxiliary request, the subject-matter of claim 1 of the third and seventh auxiliary requests contains the following additional substantive feature:

*"wherein the radiation curable varnish includes less than 20% monofunctional monomer based on the weight of the radiation-curable varnish"*

- X. The appellant's arguments can be summarised as follows:

Document E69 filed together with the statement setting out the grounds of appeal should be admitted into the appeal proceedings. It was *prima facie* highly relevant for the issue of inventive step, in particular regarding the distinguishing feature of the electron-beam radiation having an energy of less than 100 keV, which, according to the opposition division, rendered the contested claim inventive. The submission of document E69 was thus a direct reaction to the opposition division's reasoning in the impugned decision.

Regarding the question of inventive step, document E6 could be considered the closest prior art. It disclosed

a method of packaging a food product, from which the subject-matter of claim 1 according to the main request differed only in that the electron-beam radiation source had an energy of less than 100 keV.

The objective technical problem to be solved was to provide an improved method of packaging a food product, the method having a lower energy consumption and avoiding damage to the package.

The proposed solution was not inventive in view of document E69, which emphasised that a lower acceleration voltage reduced the beam penetration depth and thus the damage to the substrate. More specifically, it suggested using electron-beams with an acceleration voltage of 90 kV or 100 kV in order to reduce the operation cost and the size of the equipment required, while achieving a polymerisation degree of more than 99%. In summary, the subject-matter of claim 1 of the main and fourth auxiliary requests was not inventive over a combination of documents E6 and E69.

The general principle that a lower acceleration voltage reduced the damage to the substrate at the expense of the dose speed was known from document E69. Hence, it would be obvious to the skilled person that the acceleration voltage could be reduced to below 75 kV, if the circumstances required focusing on avoiding the substrate being damaged rather than on a high dose speed. The subject-matter of claim 1 of the first and fifth auxiliary requests was thus likewise not based on an inventive step.

Turning to the second and sixth auxiliary requests, the additional feature of the radiation-curable varnish including less than 20% monofunctional monomer based on

the weight of the radiation-curable varnish had no surprising effect and was not inventive in view of document E6, page 5, paragraph [0018] and the common general knowledge. In fact, according to paragraphs [0109] and [0110] of the patent in suit (and page 34 of the priority document), a varnish having the claimed properties was commercially available at the priority date for the claimed purpose under the trade name of "Mor-Quik 477". Consequently, the subject-matter of claim 1 of the second and sixth auxiliary requests was not based on an inventive step.

Finally, regarding the modified claim 1 of the third and seventh auxiliary requests, neither the original claims 23 and 24 nor the description provided an appropriate basis for the proposed amendment. In particular, the table on page 33 of the PCT-application as originally filed did not reveal curing the "Mor-Quick 477" varnish having the claimed monofunctional monomer content at a voltage of less than about 75 kV. Hence, the PCT-application as originally filed did not disclose the curing of the radiation-curable varnish including less than 20% monofunctional monomer to an electron-beam radiation having an energy of less than about 75 keV. Consequently, claim 1 of the third and seventh auxiliary requests did not meet the provisions of Article 123(2) EPC.

XI. The respondent's arguments can be summarised as follows:

Document E69 should not be admitted into the appeal proceedings since it was very similar to and thus not more relevant than document E67, which was itself filed late during the opposition proceedings. Additionally, in view of the fact that the opposition division



maintained the granted independent method claim 1 in unamended form, the late filing of document E69 could not be excused.

Regarding the issue of inventive step, it was observed that document E6 had two separate disclosures. A first disclosure related to a prior art polymerisation method using an acceleration voltage of 150 kV (E6, paragraph [0006] of the translation and the comparative example). However, the actual teaching of the document was disclosed separately and directed to a combination of an initial, incomplete electron-beam polymerisation and a subsequent, complete polymerisation using UV radiation. The acceleration voltage used for the initial electron-beam polymerisation was at 100 to 3000 kV or preferably at 150 to 300 kV in the general part of the description and at 150 kV in the examples. The solution suggested in the embodiment of document E6 to only partly polymerise the varnish using electron-beam radiation did thus not anticipate, and was even contrary to, the method step of *"exposing the radiation-curable varnish to radiation sufficient to polymerize at least 90 weight % of the polymerizable reactants"* according to the contested claim 1 of the main request. Additionally, the claimed aspect of *"exposing the radiation-curable varnish to an electron-beam radiation source having an energy of less than about 100 keV"* was not derivable from either of the two disclosures in document E6.

The problem to be solved was to enhance the abrasion and solvent-rub resistance of the coated, printed film.

The solution to the problem was not obvious, since none of the prior art documents on file addressed the issues of abrasion and solvent-rub resistance. In fact, Figure

5 on page 34 of document E69 suggested using an acceleration voltage of greater than 100 kV in order to achieve a 30% higher curing speed compared to 90 kV. In view of this teaching, the skilled person had no motivation to expose the radiation-curable varnish to an electron-beam radiation source having an energy of less than about 100 keV. The subject-matter of claim 1 of the main request and of the fourth auxiliary request was thus based on an inventive step.

This was a *fortiori* the case for the subject-matter of claim 1 of the first and fifth auxiliary requests, which specified the energy to be lower than 75 keV. In view of the fact that the lowest voltage disclosed in document E69 was 80 kV, the subject-matter of claim 1 of the first and fifth auxiliary requests was not obvious.

Finally, none of the prior art identified the migration of monofunctional monomers into the food packaging as a problem. The subject-matter of claim 1 of the second, third, sixth and seventh auxiliary requests addressed this issue by reducing the presence of monofunctional monomers and was thus based on an inventive step.

## **Reasons for the Decision**

### *1. Admission of late-filed document E69*

1.1 Generally, the admission of a late submission is at the discretion of the board, Article 12(4) of the Rules of Procedure of the Boards of Appeal (RPBA). Following established case law, a late filing is exceptionally justifiable if it is an appropriate and immediate reaction to developments in the previous proceedings,

in particular a finding in the contested decision, since the appellant who lost the opposition proceedings can be given the opportunity to fill the gaps in its arguments by presenting further evidence in the second instance. Moreover, it is to be taken into account whether the late-filed document is *prima facie* highly relevant for the issues to be decided (cf. Case Law of the Boards of Appeal of the European Patent Office, 7th edition, 2013, IV.C.1.4.5 a)).

- 1.2 Document E69 was filed with the statement setting out the grounds of appeal. It is directed to the advantages of using low voltage electron-beams for curing a varnish, where the suggested electron-beam voltage is at 90 or 100 kV. The board thus considers the content of document E69 *prima facie* highly relevant for the question of inventive step. Its late filing constitutes an appropriate and immediate reaction to the findings in the contested decision, in particular regarding the teaching of document E67 in view of the distinguishing feature of the electron-radiation beam having an energy of less than 100 keV, which, according to the opposition division, rendered the contested claim inventive. Document E69 is hence admitted into the proceedings, Article 12(4) RPBA.

## 2. *Main request*

- 2.1 The board agrees with both parties that document E6 is a suitable starting point for assessing the presence of an inventive step. In a first part of document E6 (cf. paragraph [0006] of its translation E6' and the comparative example), a prior art polymerisation method using an electron-beam is presented in general terms and its drawbacks are identified, in particular that the resulting films, although having a low level of

residual monomers, are too brittle. Paragraph [0008] of this document goes on to propose in as a solution to this problem curing the varnish on the printed plastic film substrate with a combination of an initial (incomplete) electron-beam polymerisation and a subsequent completion of the polymerisation with UV radiation. The resulting plastic food packaging product still has a reduced level of residual monomers but without changing the physical properties of the film (E6/E6', paragraph [0009]). In view of this teaching, the skilled person would start from the method achieving satisfactory results and not from a disclosure presented as non-working prior art in document E6. Document E1 is also a less promising starting point because it is directed to a package on the basis of a substrate made of cardboard.

Hence, the solution according to the embodiment of document E6 disclosed in paragraphs [0008] to [0033] of the translation represents the closest prior art, from which the subject-matter of claim 1 differs in the method step of

exposing the radiation-curable varnish to radiation sufficient to polymerize at least 90 weight % of the polymerizable reactants, and of exposing the radiation-curable varnish to an electron-beam radiation source having an energy of less than about 100 keV.

- 2.2 The objective technical problem to be solved can be seen in reducing the degradation of the substrate film, while keeping the low level of residual monomers (cf. paragraph [0087] of the patent in suit).

2.3 Seeking a solution to this problem, the skilled person would consult document E69, which is directed to electron-beam curing of food packages (cf. E69, page 34, last paragraph) and thus belongs to the same technical field as the contested patent. It generally presents the use of a low acceleration voltage as ideally suitable for heat and radiation sensitive substrates (E69, page 35, left column, last paragraph). The polymerisation degree achieved is at 99% (cf. E69, page 32, left column). Moreover, according to Figure 5, increasing the acceleration voltage beyond 100 kV will not further increase the curing speed, which is reflected in the suggested acceleration voltages of 90 or 100 kV (E69, page 34, left column, last paragraph to right column, paragraph 4). The teaching of document E69 to a skilled reader is thus to select an acceleration voltage not higher than 100 kV (corresponding to an energy of 100 keV) in order to address the issues of avoiding a degradation of the substrate film (cf. E69, page 32, middle column, last paragraph, and page 34, left column, last paragraph to right column, first paragraph), of achieving a low level of residual monomers (cf. E69, page 32, left column) and of obtaining a superior look and quality of the package (cf. E69, page 32, middle column).

In view of this teaching, the method step of exposing the radiation-curable varnish to an amount of radiation sufficient to polymerise at least 90 weight % of the polymerizable reactants and exposing the radiation-curable varnish to an electron-beam radiation source having an energy of less than about 100 keV is rendered obvious for a person skilled in the art.

Hence, the subject-matter of claim 1 of the main request is not based on an inventive step, Article 56 EPC 1973.

3. *First auxiliary request*

Compared with the main request, the subject-matter of claim 1 according to the first auxiliary request specifies the energy as being less than 75 keV instead of less than 100 keV as in the main request.

It is uncontested that a person skilled in the field of electron-beam curing is aware of the general principle that a lower acceleration voltage reduces the damage to the substrate at the expense of the dose speed (cf. document E69, page 32, middle column and Figure 5). In view of this known relationship between the acceleration voltage, the substrate damage and the dose speed, the board judges the claimed selection of an acceleration voltage of less than 75 kV to be the result of a simultaneous optimisation of these process parameters depending on the particular circumstances, including the sensitivity of the substrate material, the choice of the varnish to be cured, the required efficiency of the curing process and the limitations of the available electron-beam equipment.

Moreover, no unexpected effects which would appear when reducing the acceleration voltage below the value of 80 kV mentioned in Figure 5 of document E69 have been disclosed or put forward by the respondent. Hence, the choice of an acceleration voltage of less than 75 kV leading to an energy of less than 75 keV, as claimed in claim 1 of the first auxiliary request, has the character of a discretionary selection on the basis of

known effects. This is regarded to be obvious for a skilled person.

The subject-matter of claim 1 of the first auxiliary request does not involve an inventive step within the meaning of Article 56 EPC 1973.

4. *Second auxiliary request*

Compared with the main request, the subject-matter of claim 1 of the second auxiliary request contains the additional feature of the radiation curable varnish including less than 20% monofunctional monomer based on the weight of the radiation-curable varnish.

The closest prior document E6 (see paragraphs [0006] and [0007] of the translation) already discloses that the migration of unreacted monomers has to be avoided. Furthermore, it is acknowledged in paragraphs [0109] and [0110] of the patent in suit (and on page 34 of the priority document) that, at the priority date, a varnish having the claimed properties, in particular less than 20% monofunctional monomer, was commercially available under the trade name of "Mor-Quik 477" as an overprint varnish for food packages. In view of that, the selection of such a varnish as an overprint varnish for food packages would be an obvious choice for a skilled person and can thus not justify the presence of an inventive step, Article 56 EPC 1973.

5. *Third auxiliary request*

Claim 1 according to the third auxiliary request constitutes a combination of the features of the independent claims of the first and second auxiliary requests.

However, the claims as filed do not provide a basis for such a combination, since original claim 24 is not dependent on original claim 23. Equally, the table on page 33 of the PCT-application as originally filed does not reveal the curing of the "Mor-Quick 477" varnish having the claimed monofunctional monomer content at a voltage of less than about 75 kV. Hence, the PCT-application as originally filed does not disclose the amended method step of exposing the radiation-curable varnish including less than 20% monofunctional monomer to an electron-beam radiation having an energy of less than about 75 keV.

With the proposed amendment the skilled person would be confronted with information which is not directly and unambiguously derivable from that previously presented by the PCT-application as a whole. Following established case law of the Boards of Appeal, such an amendment is to be regarded as introducing subject-matter which extends beyond the content of the application as filed and hence as unallowable under the provisions of Article 123(2) EPC (cf. Case Law of the Boards of Appeal of the European Patent Office, 7<sup>th</sup> edition, 2013, chapter II.E.1).

6. *Fourth, fifth, sixth and seventh auxiliary requests*

The independent claims of the fourth, fifth, sixth and seventh auxiliary requests correspond to those of the main, first, second and third auxiliary requests. Hence, the reasoning presented for the main, first, second and third auxiliary requests applies to claim 1 of the fourth, fifth, sixth and seventh auxiliary requests, which equally do not meet the requirements of the EPC.



**Order**

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

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:



D. Meyfarth

M. Poock

Decision electronically authenticated